



Faculty of Law and Criminology
Center for Philosophy of Law



Faculty of Law
Centre for IT & IP Law

TOWARDS REDESIGNING THE PLANT COMMONS

A CRITICAL ASSESSMENT OF THE MULTILATERAL SYSTEM OF ACCESS AND BENEFIT-SHARING OF THE INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Christine FRISON

Dissertation presented in partial fulfillment of the requirements for the degree of Doctor in Law

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*To my sons,
Théodore and Charlie*

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List of Acronyms and Abbreviations

3PB	Third Party Beneficiary (Plant Treaty)
ABS	Access and Benefit-sharing
ACFS	<i>Ad Hoc</i> Advisory Committee on the Funding Strategy (Plant Treaty)
ACSU	<i>Ad Hoc</i> Technical Committee on Sustainable Use of Plant Genetic Resources for Food and Agriculture (Plant Treaty)
AEGIS	A European Genebank Integrated System
BSF	Benefit-sharing Fund (Plant Treaty)
CBD	Convention on Biological Diversity
CAPRI	System Wide Program on Property Rights and Collective Action (CGIAR)
CePaCT	Centre for Pacific Crops and Trees
CFS	Committee on World Food Security (UN, FAO)
CG Centres	or CGIAR
CGIAR	Consultative Group for International Agricultural Research
CGRFA	Commission on Genetic Resources for Food and Agriculture (FAO)
COP	Conference of the parties (CBD)
CPR	Common Pool Resource (<i>theory of the commons</i>)
CPGR	Commission on Plant Genetic Resources (then CGRFA, FAO)
DNA	Desoxyribonucleic Acid
DUS	Distinct Uniform and Stable criteria (UPOV)
EMBRAPA	Brazilian Agricultural Research Corporation, Ministry of Agriculture, Livestock, and Food Supply
EPC	European Patent Convention
EPO	European Patent Office
ESA	European Seed Association
ETC Group	Action Group on Erosion, Technology and Concentration (formerly RAFI)
EU	European Union
FRs	Farmers' Right (Plant Treaty)
FAO	Food and Agriculture Organization (UN)
G-77	Group 77 - Loose coalition of developing nations in UN fora
GATT	General Agreement on Tariffs and Trade (WTO)
GCDT	Global Crop Diversity Trust
GEF	Division of Global Environment Facility Coordination – UNEP
GFAR	Global Forum on Agricultural Research
GMO	Genetically Modified Organism
GPA	Global Plan of Action (voluntary instrument in PGRFA, FAO)
GRULAC	Latin American and Caribbean Group (FAO)
GURT	Genetic Use Restriction Technology
IAARD	Indonesian Agency for Agricultural Research and Development
IAASTD	International Assessment of Agricultural Science and Technology for Development (under sponsorship of the UN and the World Bank)
IARC	International Agricultural Research Centres (supported by CGIAR)
IBPGR	International Board for Plant genetic Resources (then IPGRI, then Bioversity International)
IBP	International Biological Programme
IDLO	International Development Law Organization

List of Acronyms and abbreviation

IFAD	International Fund for Agricultural Development (UN agency)
IGC	Inter-governmental Committee on Intellectual Property, Genetic Resources, Traditional Knowledge and Folklore (WIPO)
INGO	International Non Governmental Organizations
INRA	Institut National de Recherche Agronomique (France)
IP	Intellectual Property
IPGRI	International Plant Genetic Research Institute (the Bioversity International, CGIAR)
IPC	International Planning Committee for Food Sovereignty (alliance of small scale producers)
IPES-Food	International Panel of Experts on Sustainable Food
IPR	Intellectual Property Right
IR	International Relations
ISF	International Seed Federation (formerly ASSINSEL)
ITPGRFA or the Treaty	International Treaty on Plant Genetic Resources for Food and Agriculture (or the Plant Treaty)
IU	International Undertaking on Plant Genetic Resources (FAO)
IUCN	International Union for Conservation of Nature
MDGs	Millennium Development Goals
MLS	Multilateral System of access and benefit-sharing (Plant Treaty)
MTA	Material Transfer Agreement
Nagoya Protocol	Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the CBD
NSSL	National Seed Storage Laboratory (Genebanks)
OECD	Organisation for Economic Co-operation and Development
PBR	Plant Breeders' Right
PGR	Plant Genetic Resource
PGRFA	Plant Genetic Resources for Food and Agriculture
PUD	Product Under Development (Plant Treaty)
PVP (A)	Plant Variety Protection (Act)
R&D	Research & Development
SEARICE	Southeast Asia Regional Initiatives for Community Empowerment
SPC	Pacific Community (scientific and technical organisation in the Pacific region 26 countries and territories)
SDGs	Sustainable Development Goals
SMTA	Standard Material Transfer Agreement (Plant Treaty)
SPC-Community	South Pacific Community
TK	Traditional Knowledge
TRIPS	Trade related Aspects of Intellectual Property Rights (Agreement, WTO)
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UPOV	International Union for the Protection of New Varieties of Plant
USDA	United States Department of Agriculture
WG-MLS	Ad Hoc Open ended Working Group on the Multilateral System
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

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Chapter 1 Introduction – Harvesting the Benefits of the Commons to Grow a Food Secure World

“Le premier qui, ayant enclos un terrain, s'avisait de dire : Ceci est à moi, et trouva des gens assez simples pour le croire, fut le vrai fondateur de la société civile. Que de crimes, de guerres, de meurtres, que de misères et d'horreurs n'eût point épargnés au genre humain celui qui, arrachant les pieux ou comblant le fossé, eût crié à ses semblables: Gardez-vous d'écouter cet imposteur; vous êtes perdus, si vous oubliez que les fruits sont à tous, et que la terre n'est à personne.”

Jean-Jacques Rousseau (1755), *“Discours sur l'origine et les fondements de l'inégalité parmi les hommes”*¹

On 25 March 2015, the Enlarged Board of Appeal of the European Patent Office (EPO) ruled² that plants or seeds obtained through conventional breeding methods are patentable; thereby widening the extent of patent claims over plants and plant varieties.³ This loose interpretation of the European Patent Convention (EPC) Article 53 (b)⁴ widens breeders' rights to protect plants under a patent,⁵ whereas up to then in Europe, such intellectual protection was mainly possible under Plant Breeders' Rights (PBRs).⁶ This decision extends further the

¹ J.-J. ROUSSEAU, 1755, *“Discours Sur L'origine Et Les Fondements De L'inégalité Parmi Les Hommes”*, Amsterdam, Marc Michel Rey. Republié en 2012 sur Presses Électroniques de France, Second partie, at p. 68.

² *Enlarged Board of Appeal*, decisions taken on 25 March 2015, case number G 0002/12 (relating to the so called Tomatoes II case) and G 0002/13 (relating to the Broccoli II case), which state that plant products such as fruits, seeds and parts of plants are patentable in principle under the European Patent Convention even if they are obtained through essentially biological breeding methods involving crossing and selection. This decision goes counter to a *European Parliament Resolution*, (which is not binding) adopted on 10 May 2012 on the patenting of essential biological processes (2012/2623(RSP)).

³ In 1995 the Board of Appeal of the European Patent Office had rejected such patent claims: “a product claim which embraces within its subject-matter *plant varieties* (...) is not patentable”. *Plant Cells/Plant Genetic Systems*, T 356/93, paragraph 24.

⁴ Article 53(b) *“Exceptions to patentability”* of the *European Patent Convention* states that: “European patents shall not be granted in respect of: (b) plant or animal varieties or essentially biological processes for the production of plants or animals.”

⁵ This was already the case in the USA under the *Plant Patent Act* of 1930 (enacted on 17 June 1930, codified as title 35 United States Code) Section 161 which states: “Whoever invents or discovers and asexually reproduces any distinct and new variety of plant, including cultivated sports, mutants, hybrids, and newly found seedlings, other than a tuber propagated plant or a plant found in an uncultivated state, may obtain a patent therefor, subject to the conditions and requirements of title (Amended September 3, 1954, 68 Stat. 1190).”

⁶ *International Convention for the Protection of New Varieties of Plants (UPOV Convention)* of December 2, 1961, as revised at Geneva on November 10, 1972, on October 23, 1978, and on March 19, 1991. Text available at <http://www.upov.int/upovlex/en/conventions/1991/content.html> /; see also *Council Regulation 2100/94/CE on Community Plant Variety Rights*. For an extensive description of these matters see C. CHIAROLLA, 2006, “Commodifying Agriculture Biodiversity and Development-Related Issues”, *Journal of world intellectual property*, Vol. 9, (1) pp. 31-42. For a comparison of European and American approaches to patent protection of plants before the widening of protection scope, see G. VAN OVERWALLE, 1998, “Patent Protection for Plants: A Comparison of American and European Approaches”, *Idea*, Vol. 39. See also G. VAN OVERWALLE, 1996, “Octrooierbaarheid Van Plantenbiotechnologische Uitvindingen. Een Rechtsvergelijkend Onderzoek Naar Een Rechtvaardiging Van Een Uitbreiding Van Het Octrooirecht Tot Planten.-Patentability of Plant

appropriation and enclosure of plants and seeds which accelerated at the end of the twentieth century,⁷ and shrinks even more the rights of farmers to save, grow and sell their seeds.⁸ This first trend strengthens the increasing domination of food and agriculture markets by a few corporate multinational companies.⁹

As a reaction, farmers,¹⁰ researchers,¹¹ breeders¹² and citizens¹³ are acting collectively worldwide to promote the free conservation, use, and exchange patterns¹⁴ for so called “non-

Biotechnological Inventions. A Comparative Study Towards a Justification of Extending Patent Law to Plants " (KU Leuven, 1996).

⁷ Sabrina Safrin names this trend “hyperownership”; see S. SAFRIN, 2004, “Hyperownership in a Time of Biotechnological Promise: The International Conflict to Control the Building Blocks of Life”, *The American Journal of International Law*, Vol. 98, (4). The upsurge of intellectual property rights over plants progressed over time. For an exhaustive analysis of the rise and expansion of these rights see L. R. HELFER, “International Property Rights in Plant Varieties: International Legal Regimes and Policy Options for National Governments”, 2004 ; see also C. CHIAROLLA, 2006 *op.cit.* and O. DE SCHUTTER, “Seed Policies and the Right to Food: Enhancing Agrobiodiversity and Encouraging Innovation”, 2009 .

⁸ This right had already been reduced to nothingness with the revision of the *UPOV Convention* in its 1991 Act, where Articles 14(1), 14(5), 15(1)(iii), and 15(2) define the scope and exceptions of Breeders’ Rights. Previously, under the 1978 Act, the UPOV Convention allowed a farmer to replant seeds from the crop produced by protected seeds for his own subsequent use (save seeds); to exchange seeds with other farmers without paying additional royalties to the breeder; and to use a protected variety to create new varieties without prior authorization of the original breeder. The 1991 Act suppressed the right to freely exchange seeds and imposed limitations on their replanting. As for the right to use seeds for further breeding, the 1991 Act limits it to new varieties that are not “essentially derived” from protected varieties. The overall result of the amendment has narrowed the exemption and expanded the rights of first-generation breeders (see HELFER, *op. cit.* at p. 20-32).

⁹ A. MORLEY, J. MCENTEE, AND T. MARSDEN, “Food Futures - Framing the Crisis”, in T. MARSDEN AND A. MORLEY (eds), *Sustainable Food Systems - Building a New Paradigm*, Oxon, Routledge, 2014 at p. 47. See also O. DE SCHUTTER, “Agribusiness and the Right to Food”, 2009 at pp. 4-5; and M. A. ALTIERI AND C. I. NICHOLLS, “Agroecology Scaling up for Food Sovereignty and Resiliency”, 2012 at pp. 6-7; FORESIGHT, 2011, “The Future of Food and Farming: Challenges and Choices for Global sustainability”, The Government Office for Science (GO-Science), at pp. 99-100; and finally see J. CLAPP AND D. A. FUCHS, 2009, “*Corporate Power in Global Agrifood Governance*”, Cambridge, Mass., MIT Press; N. LOUWAARS *et al.*, “Breeding Business. The Future of Plant Breeding in the Light of Developments in Patent Rights and Plant Breeder’s Rights”, 2009 at p. 27-38 and p. 60; see also O. DE SCHUTTER, “Addressing Concentration in Food Supply Chains - the Role of Competition Law in Tackling the Abuse of Buyer Power,” (United Nations Report of the Special Rapporteur on the right to food, 2010).

¹⁰ *La Via Campesina* is the most active and widespread farmers’ association worldwide. It was born in 1993 and defends small-scale sustainable agriculture as a way to promote social justice and dignity. It strongly opposes corporate driven agriculture and transnational companies that are destroying people and nature. It comprises about 164 local and national organizations in 73 countries from Africa, Asia, Europe and the Americas. Altogether, it represents about 200 million farmers. It is an autonomous, pluralist and multicultural movement, independent from any political, economic or other type of affiliation. See <http://viacampesina.org/fr/>

¹¹ The *Open Source Seed Initiative*, promoted by Prof. Jack Kloppenburg at the University Wisconsin-Madison campus, is inspired “by the free and open source software movement that has provided alternatives to proprietary software, OSSSI was created to free the seed - to make sure that the genes in at least some seed can never be locked away from use by intellectual property rights. Through our Pledge, OSSSI asks breeders and stewards of crop varieties to pledge to make their seeds available without restrictions on use, and to ask recipients of those seeds to make the same commitment. OSSSI is working to create a pool of open source varieties, to connect farmers and gardeners to suppliers of open source seed, and to inform and educate citizens about seed issues.” Available at <http://osseeds.org/>

¹² To cite only the most popular: *Association Kokopelli* (see <https://kokopelli-semences.fr/>), or the *Garden Organic* UK based association and its *Heritage Seed Library* aims to conserve and make available to its members, through an annual catalogue, vegetable varieties, mainly of European varieties, that are not widely available (see <http://www.gardenorganic.org.uk/>).

¹³ “Graines de Troc” is one example out of many of a participatory platform for the exchange of seeds and related knowledge. It is a non-commercial association where members exchange their seeds and related knowledge for free, and which objective is to protect biodiversity against standardization of varieties by sharing old varieties. See <http://www.grainesdetroc.fr/>

¹⁴ An example in France: *Réseau Semences Paysannes* functions as a network of local and national associations of farmers, citizens, NGOs and other actors involved in organic agriculture production and conservation (see <http://www.semencespaysannes.org/>).

industrial varieties”.¹⁵ This second trend represents an alternative path to produce local, diverse, sustainable and healthy food.¹⁶

In between these two trends, emerges the global challenge of feeding a growing world population in the face of increasing social, economic and environmental vulnerabilities,¹⁷ and the more specific issue of access to seeds¹⁸ for food security and sustainable agriculture.¹⁹

Since the middle of the twentieth century, policies (through the green revolution)²⁰ have promoted the large scale production of uniform, high yielding monocultures of a few staple crops as the solution to feed a growing population.²¹ The focus was on increasing yields through the development of new breeding technologies, thereby quickly replacing local and diverse varieties with uniform crops worldwide,²² and shifting the qualification of seeds from

¹⁵ I call “non-industrial seeds” seeds that are not registered in official plant variety catalogs, thereby seeds that do not fulfil one or several of the criteria for certification of seed i.e. distinctness; uniformity; stability; and value for cultivation and use - for agricultural crops. This notion covers “non-conventional seeds, “old / ancient / forgotten varieties”, etc.; see C. HECQUET, “Comment Faire Circuler Les Semences? Enjeux Et Perspectives Pour Les Alternatives,” (2015), unpublished.

¹⁶ M. A. ALTIERI AND C. I. NICHOLLS, 2012. See also the very recent report produced by the International Panel of Experts on Sustainable Food Systems (IPES-Food) which recognizes that “[t]he key is to establish *political* priorities, namely, to support the emergence of alternative systems which are based around fundamentally different logics, and which, over time, generate different and more equitable power relations. Incremental change must not be allowed to divert political attention and political capital away from the more fundamental shift that is urgently needed, and can now be delivered, through a paradigm shift from industrial agriculture to diversified agroecological systems.” See their first report IPES-Food, “From Uniformity to Diversity: A Paradigm Shift from Industrial Agriculture to Diversified Agroecological Systems”, 2016 at p. 7. IPES-Food brings together expert voices representing different disciplines and different types of knowledge, to inform the policy debate on how to reform food systems across the world. and their website <http://www.ipes-food.org/>

¹⁷ F. BURCH, J. FANZO, AND E. FRISON, 2011, “The Role of Food and Nutrition System Approaches in Tackling Hidden Hunger”, *International Journal of Environmental Research and Public Health*, Vol. 8 ; Burch et al contend that “one of the World’s greatest challenges is to secure sufficient and healthy food for all, and to do so in an environmentally sustainable manner.” They promote an integrated system approach to reduce hidden hunger and explore the interrelationships of food, health, and environment, and their role in addressing chronic micronutrient deficiencies, affecting over two billion people worldwide.

¹⁸ In the present work, the words ‘seed’, ‘plant’, ‘PGRFA’, ‘material’ or ‘genetic resource’ are used interchangeably to talk about the ‘plant genetic resources for food and agriculture’ (PGRFA) as defined under Article 2 of the Plant Treaty. In simple terms, PGRFA are crops and forages used as nutriment for humans and animals.

¹⁹ On 25 September 2015, the United Nations Sustainable Development Summit adopted 17 Sustainable Development Goals, of which “Goal 2 Zero Hunger”, provides in target 2.5 that “[b]y 2020, [States should] maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed. Available at <https://sustainabledevelopment.un.org/sdgs>. See also, P. CULLET, 2004, “Intellectual Property Rights and Food Security in the South”, *The Journal of World Intellectual Property*, Vol. 7, (3); P. CULLET, 2004, “Food Security and Intellectual Property Rights in Developing Countries”, RIBios (Réseau interdisciplinaire biosécurité): Institut universitaire d’études du développement (IUED); P. CULLET, 2005, “Seeds Regulation, Food Security and Sustainable Development”, *Economic and Political Weekly*, Vol.

²⁰ R. E. EVENSON AND D. GOLLIN, 2003, “Assessing the Impact of the Green Revolution, 1960 to 2000”, *Science*, Vol. 300, (5620); L. TANGLEY, 1987, “Beyond the Green Revolution”, *BioScience*, Vol. 37, (3); see also S. B. BRUSH, 2001, “Genetically Modified Organisms in Peasant Farming: Social Impact and Equity”, *Indiana Journal of Global Legal Studies*, Vol. 9, (1).

²¹ R. E. EVENSON AND D. GOLLIN, 2003 *op.cit.*

²² FAO’s *The State of the World’s Plant Genetic Resources for Food and Agriculture* first report shows that one of the most important reasons for genetic erosion is the replacement of traditional varieties with modern, high yielding, and genetically uniform ones. See FAO, “The State of the World’s Plant Genetic Resources for Food and Agriculture”, 1998 at p. 33.

public goods to highly privatized goods.²³ Today, numerous studies show that this approach has had various serious consequences: first, a rapid diversity loss resulting from the widespread intensive monocultures;²⁴ second, despite the significant yield increases, the objectives of eradicating hunger and malnutrition were not achieved;²⁵ third, the domination of a few multinational corporations over the entire agriculture input sector;²⁶ fourth, the hyper-ownership and enclosure of seeds through legal and technological means,²⁷ leading to the increasing brittleness of traditional informal seed systems²⁸ and movements worldwide;²⁹ fifth, the continuing reduction in numbers of small-scale farms on which most of developing countries' population rely for their food production;³⁰ etc.

While agro-chemical companies have systematically used the argument of reducing hunger and malnutrition to promote policies³¹ that strengthen their dominant position worldwide³² and expand the commodification process,³³ it is undeniable that these strategies

²³ See L. R. HELFER, 2004; see also C. CHIAROLLA, 2006 *op.cit.*

²⁴ Ibid. See also J. ESQUINAS-ALCAZAR, 2005, "Protecting Crop Genetic Diversity for Food Security: Political, Ethical and Technical Challenges", *Nature Reviews Genetics*, Vol. 6, (12) at pp. 946-953.

²⁵ A. MORLEY, J. MCENTEE, AND T. MARSDEN, *op. cit.* at pp. 37-42 and 47-48 referring to several FAOSTAT data.

²⁶ See O. DE SCHUTTER, "Agribusiness and the Right to Food", 2009 At pp. 4-5; see also the failed tentative US\$46.5B takeover bid of Monsanto over Syngenta, available at http://www.nytimes.com/2015/08/27/business/dealbook/monsanto-abandons-47-billion-takeover-bid-for-syngenta.html?_r=0. With Monsanto being the world leader in seeds and genetically engineered traits and Syngenta in insecticides, fungicides and herbicides, the merger would have created an agricultural behemoth with the largest market share in the world in both seeds and agricultural chemicals.

²⁷ *Op. cit.* all references under note 9; see also A. MORLEY, J. MCENTEE, AND T. MARSDEN, *op. cit.* at p. 49.

²⁸ Louwaars defines 'informal seed systems' as "covering methods of local seed selection, production and diffusion." They are also called 'traditional', 'local' or 'farmers' seed systems' since "they operate mainly at farmer and community levels both in terms of production and exchange mechanisms." Louwaars prefers referring to 'farmers' seed systems' as "being the most neutral term and one that made clear that the ones operating this system are the farmers themselves." Informal seed systems are opposed to 'formal seed systems', i.e. commercial seed systems which developed in industrialised countries in the second half of the nineteenth century. "The development of a commercial breeding and seed sector in the USA was especially enhanced by the discovery of the phenomenon of heterosis and the subsequent introduction of hybrid varieties of maize. This trend separated crop improvement and seed production from other regular farm operations, creating different specialised actors, including breeders, seed producers and seed conditioners." N. LOUWAARS, 2008, "Seeds of Confusion. The Impact of Policies on Seed Systems" (Wageningen Universiteit, 2008) at p. 32.

²⁹ O. DE SCHUTTER, "Seed Policies and the Right to Food: Enhancing Agrobiodiversity and Encouraging Innovation", 2009 at p. 4 § 7. See also N. LOUWAARS, "Seeds of Confusion. The Impact of Policies on Seed Systems," At p. 29. Louwaars points to the problematic coexistence between farmers' seed systems (i.e. informal networks between farmers operating at local or community levels) and commercial seed systems (including the fact that the commercial seed systems aims at reducing further and further the informal networks).

³⁰ M. A. ALTIERI AND C. I. NICHOLLS, 2012 at pp. 6-7.

³¹ R. B. SHAPIRO, "Growth through Global Sustainability: An Interview with Monsanto's Ceo, Robert B. Shapiro," ed. J. MAGRETTA (Harvard Business Review, 1997); R. B. SHAPIRO, "Open Letter from Monsanto Ceo Robert B. Shapiro to Rockefeller Foundation President Gordon Conway and Others", Monsanto Company; see also E. SIMANIS, "The Monsanto Company: Quest for Sustainability," ed. S. HART (Kenan-Flagler Business School: Sustainable Enterprise Program of the World Resources Institute, 2001).

³² See for example Monsanto's website <http://www.monsanto.com/pages/default.aspx>, Syngenta's website <http://www.syngenta.com/global/corporate/en/Pages/home.aspx>, or Bayer CropScience's website, available at <http://www.cropscience.bayer.com/>.

³³ C. CHIAROLLA, 2006 *op.cit.* at pp. 25-26 & 42. Chiarolla "considers the extent to which the patent system needs to be modified in order to prevent agricultural exemptions, enjoyed by plant breeders and farmers under sui generis plant variety protection, from being overridden by patent claims that extend to plants and plant varieties. It is suggested that sui generis

have not reached the “official objective” of eliminating hunger and malnutrition.³⁴ Indeed, although the number of hungry people has diminished,³⁵ the first Millennium Development Goal (MDG) to eradicate poverty and hunger and the “Zero Hunger” 2015 Sustainable Development Goal (SDG) are far from being achieved.³⁶

The problem is therefore not so much about our capacity of producing enough food (indeed studies have shown that within our limited world resources, we are able to feed our population),³⁷ but rather about managing and facilitating the access to food and the seeds needed for its production in a fair and equitable manner.³⁸

PVP regimes should respond to broad societal objectives and promote sustainable agriculture.” For an earlier similar proposal, see P. CULLET, 1999, “Revision of the Trips Agreement Concerning the Protection of Plant Varieties”, *The Journal of World Intellectual Property*, Vol. 2, (4).

³⁴ SUSTAINABLE AGRICULTURE AND FOOD SYSTEMS THEMATIC GROUP, “Solutions for Sustainable Agriculture and Food Systems”, 2013 U.N.S.D.S. NETWORK at p. 1; see also O. DE SCHUTTER AND G. VANLOQUEREN, 2011, “The New Green Revolution: How Twenty-First-Century Science Can Feed the World”, *Solutions Journal*, Vol. 2, (4); and A. DORWARD *et al.*, 2004, “A Policy Agenda for Pro-Poor Agricultural Growth”, *World Development*, Vol. 32, (1).

³⁵ *Ibid.* See the *Millennium Development Goals* (MDG) and in particular Target 1.C to halve, between 1990 and 2015, the proportion of people who suffer from hunger. See <http://www.un.org/millenniumgoals/>. The 2015 MDG report states that “Current estimates suggest that about 795 million people are undernourished globally. This means that nearly one in nine individuals do not have enough to eat. The vast majority of them (780 million people) live in the developing regions. However, projections indicate a drop of almost half in the proportion of undernourished people in the developing regions, from 23.3 per cent in 1990–1992 to 12.9 per cent in 2014–2016. This is very close to the MDG hunger target. Rapid progress during the 1990s was followed by a slower decline in hunger in the first five years of the new millennium and then a rebound starting around 2008. The projections for the most recent period mark a new phase of slower progress.” UNITED NATIONS, “Millennium Development Goals Report 2015”, 2015 at p. 20.

³⁶ *Ibid.* MDG Goal 1 Eradicate extreme poverty and hunger. “Although the MDG targets of halving the proportion of people living in extreme poverty and hunger have been met or almost met, the world is still far from reaching the MDG goal of eradicating extreme poverty and hunger. In 2015, an estimated 825 million people still live in extreme poverty and 800 million still suffer from hunger.” Eradicating poverty and hunger remains at the core of the post-2015 development agenda. at p.23. FAO, “The State of Food Insecurity in the World 2014 - Strengthening the Enabling Environment for Food Security and Nutrition”, 2014 ; see also O. DE SCHUTTER, “Building Resilience: A Human Rights Framework for World Food and Nutrition Security”, 2008 at pp. 4-6; finally see A. P. KAMERI-MBOTE AND P. CULLET, 1999, “Agro-Biodiversity and International Law-a Conceptual Framework”, *Journal of Environmental Law*, Vol. 11, (2).

³⁷ M. A. ALTIERI AND C. I. NICHOLLS, 2012 at pp. 4-5, Altieri states that “seventy eight percent of all malnourished children under five who live in the Third World are in countries with food surpluses”. Although the UN Food and Agriculture Organization claims that to feed nine billion people in 2050, and as people become more affluent, global agricultural production will need to increase by 70 per cent, various critics including Altieri dispute this claim. See also the Background Document Prepared by the UN Special Rapporteur on the Right to Food Olivier De Schutter on his Mission to the World Trade Organization (WTO), Presented to the Human Rights Council in March 2009 where he shows that poverty is one of the major cause for people to be undernourished, and that the majority of the world’s undernourished people are small farmers in developing countries who are net buyers of food. These farmers’ income is often too low to enable them to purchase the food available on the market. See Background Study to UN Doc. A/HRC/10/005/Add.2.

³⁸ F. M. LAPPE, J. COLLINS, AND P. ROSSET, 1998, “*World Hunger; Twelve Myths*”, New York, A Grove Press Book; see also O. DE SCHUTTER, “Building Resilience: A Human Rights Framework for World Food and Nutrition Security”, 2008 at p. 6 § 6; see also A. MORLEY, J. McENTEE, AND T. MARSDEN, *op. cit.* at p. 56. See also Pautasso *et al.* who stresses that “The conservation and management of agrobiodiversity is a key issue in the struggle to achieve food security for a growing world population in the face of global change”, in M. PAUTASSO *et al.*, 2013, “Seed Exchange Networks for Agrobiodiversity Conservation. A Review”, *Agronomy for Sustainable Development*, Vol. 33, (1), at p. 153; see also A. SEN, 1981, “*Poverty and Famines: An Essay on Entitlement and Deprivation*”, Oxford university press.

A growing number of studies show that a different type of agriculture could better address the above mentioned needs,³⁹ taking into account the social, economic and environmental hazards.⁴⁰ In December 2010, Special rapporteur on the Right to Food Olivier De Schutter was pointing out that “States can and must achieve a reorientation of their agricultural systems towards modes of production that are highly productive, highly sustainable and that contribute to the progressive realization of the human right to adequate food.”⁴¹ Drawing on an extensive review of the scientific literature published in the last five years,⁴² the Special Rapporteur identifies agroecology⁴³ as a mode of agricultural development to be promoted. Ecological agriculture⁴⁴ demonstrates that yields can be

³⁹ See above note 16 on the first report of IPES-FOOD, 2016. See also the Sustainable Agriculture and Food Systems Thematic Group, which foresees that regions are likely to suffer moderate to high costs in the Business-As-Usual scenario of unsustainable agricultural development. “In the absence of change towards a new, shared global framework for sustainable development of agriculture and food systems, a Business-As-Usual trajectory would have severe implications for food and nutritional security, economic and social development, public health as well as environmental sustainability”. SUSTAINABLE AGRICULTURE AND FOOD SYSTEMS THEMATIC GROUP, 2013 at pp. 10-12. See also the results of a 30 years research comparing organic and conventional farming by the Rodale Institute (a non-profit organization dedicated to pioneering organic farming through research and outreach). RODALE INSTITUTE, “The Rodale Institute’s 30-Year Farming Systems Trial Report”, 2011 . Their landmark Farming Systems Trial® is the longest- running side-by-side comparison of organic and conventional agriculture. For over sixty years, the Institute has been researching the best practices of organic farming and sharing findings with farmers and scientists throughout the world, advocating for policies that support farmers, and educating consumers about how going organic is the healthiest option for people and the planet.

⁴⁰ Numerous studies exist for different plants. Here are few examples. For wheat: S. S. JONES, 2004, “Breeding Resistance to Special Interests”, *Organic Farming Research Foundation Information Bulletin*, Vol. Fall 2004, (14); for sown grasslands: I. PRIETO *et al.*, 2015, “Complementary Effects of Species and Genetic Diversity on Productivity and Stability of Sown Grasslands”, *Nature Plants*, Vol. 1; for fungi see P. STAMETS, 2005, “*Mycelium Running : How Mushrooms Can Help Save the World*”, Berkeley, Ten Speed Press. Paul Stamets obtained a patent for his invention ‘application Ser. No. 09/678,141 for MYCOPESTICIDES, filed Oct. 3, 2000, now U.S. Pat. No. 6,660,290’; and for a general overview see J. CAPLAT, 2014, “*Changeons D’agriculture-Réussir La Transition*”, Paris, Actes Sud; for an example in El Salvador see M. LAPLACE, “Le Salvador Bannit Le Roundup De Monsanto Et Connait Des Récoltes Records”, *L’info Ecologique au Quotidien*, 27 April 2015 (accessed on 14 September 2015).

⁴¹O. DE SCHUTTER, “Agroecology and the Right to Food”, 2010 at p. 1. See also O. DE SCHUTTER AND G. VANLOQUEREN, 2011 *op.cit.*. See also M. PAUTASSO *et al.*, 2013 *op.cit.* at p. 153; O. DE SCHUTTER, “Towards More Equitable Value Chains: Alternative Business Models in Support of the Right to Food”, 2011 .

⁴² Miguel Altieri, Professor of Agroecology at the University of California, Berkeley in the Department of Environmental Science, Policy and Management, is one of the most eminent experts in the field. He published extensively on topic, *inter alia* M. A. ALTIERI *et al.*, “Agroecology: The Scientific Basis of Alternative Agriculture”, 1987 ; M. A. ALTIERI AND L. MERRICK, 1987, “In Situ Conservation of Crop Genetic Resources through Maintenance of Traditional Farming Systems”, *Economic Botany*, Vol. 41, (1); M. A. ALTIERI, 1999, “The Ecological Role of Biodiversity in Agroecosystems”, *Agriculture, Ecosystems & Environment*, Vol. 74, (1); M. A. ALTIERI, 2002, “Agroecology: The Science of Natural Resource Management for Poor Farmers in Marginal Environments”, *Agriculture, ecosystems & environment*, Vol. 93, (1).

⁴³Altieri defines agroecology as an application of ecological science to the study, design and management of sustainable agro-eco systems. This is applied at the farm-level, but also across the global network of food production, distribution and consumption (i.e. including food production systems, processing and marketing, the role of the consumer, and the policy level). Agroecology uses knowledge from many disciplines, *inter alia* agricultural and ecological science and traditional knowledge systems. It questions conventional approaches which are centered on the use of science to promote economic growth. See M. A. ALTIERI AND M. D. FAMINOW, 1996, “Agroecology: The Science of Sustainable Agriculture”, *Canadian Journal of Agricultural Economics*, Vol. 44, (2). De Schutter further specifies that agroecology seeks ways to enhance farming systems by mimicking natural processes, using biological interactions and synergies to support production, O. DE SCHUTTER, “Agroecology and the Right to Food”, 2010. See also D. SÁNCHEZ CARPIO AND S. BECHEVA, “Agro-Ecology: Building a New Food System for Europe”, ed. F.O.T.E. EUROPE (2014)

⁴⁴ “Agroecology-based production systems are biodiverse, resilient, energetically efficient, socially just, and comprise the basis of an energy, productive and food sovereignty strategy. (...) Agroecological systems are deeply rooted in the ecological rationale

doubled within ten years' time;⁴⁵ and that favouring diversity increases productivity while facing environmental challenges.⁴⁶ Steve Wratten, Professor of Ecology at Lincoln University, confirms these observations.⁴⁷ He says we “have the protocols or recipes” to do this, “but getting governments to adopt it has a major barrier: international corporations.”⁴⁸ Wratten points here to a crucial issue: the necessity for political will to cooperate and promote collectively a fair and equitable access regime to food and seeds (i.e. against the agro-chemical giants).

This observation highlights the imperative need for all stakeholders in the world food chain – and especially States – to cooperate in order to operate a transition towards a sustainable agriculture and food system. As mentioned above, of access to seeds for producing food and reaching food security worldwide is of vital importance.⁴⁹ Indeed, States are highly interdependent with regard to the provision of food and agriculture plant varieties.⁵⁰ Countries' interdependence justifies a “compulsory” cooperation between States in establishing and protecting a fair and equitable access to seeds. This international

of traditional small-scale agriculture, representing long established examples of successful agricultural systems characterized by a tremendous diversity of domesticated crop and animal species maintained and enhanced by ingenious soil, water, and biodiversity management regimes, nourished by complex traditional knowledge systems. Such systems have fed much of the region's population for centuries and continue to feed people in many parts of the planet.” In M. A. ALTIERI, F. R. FUNES-MONZOTE, AND P. PETERSEN, 2012, "Agroecologically Efficient Agricultural Systems for Smallholder Farmers: Contributions to Food Sovereignty", *Agronomy for Sustainable Development*, Vol. 32, (1) at p. 2.

⁴⁵ Steve Wratten, Professor of Ecology at Lincoln University http://www.nzherald.co.nz/element-magazine/news/article.cfm?c_id=1503340&objectid=11489292 See also the results of the 30 years comparative research project between organic and conventional agriculture conducted by the Rodale Institute, *op cit.* RODALE INSTITUTE, 2011.

⁴⁶ Altieri states that “the global south has the agroecological potential to produce enough food on a global per capita basis to sustain the current human population, and potentially an even larger population, without increasing the agricultural land base. The reason why the potential resides in the South and not in the North, is because in developing countries still resides a large peasant-indigenous population, with a rich traditional agricultural knowledge and a broad genetic diversity which conforms the basis of resilient diversified agroecosystems.” M. A. ALTIERI AND C. I. NICHOLLS, 2012 at p. 25. See also M. ALTIERI, F. FUNES-MONZOTE, AND P. PETERSEN, 2012, "Agroecologically Efficient Agricultural Systems for Smallholder Farmers: Contributions to Food Sovereignty", *Agronomy for Sustainable Development*, Vol. 32, (1).

⁴⁷ Although a recent study from the Metaforum thinktank of the KU Leuven University doubts that agroecology can really feed the world, pointing to the vague definition of the concept, to the fact that agroecology cannot replace conventional agriculture and questioning whether it is judicious to replace a performant system with an agricultural system, which objectives and producing techniques are not sufficiently clear. See METAFORUM KU LEUVEN, "Voedselproductie En Voedselzekerheid: De Onvolmaakte Waarheid", 2015, in particular at pp.30-33. However, this report is easily contestable on these points when looking at the very limited number of studies and references referred to on agroecology and when keeping in mind that “the funding available for organic research is again negligible, remaining at about 2% of the total investment into agricultural research in Flanders” (showing that conventional agriculture strongly remains the dominant position). For this last argument, see P. BARET *et al.*, "Research and Organic Farming in Europe", 2015 at p. 8.

⁴⁸ M. A. ALTIERI AND C. I. NICHOLLS, 2012.

⁴⁹ E. A. FRISON, J. CHERFAS, AND T. HODGKIN, 2011, "Agricultural Biodiversity Is Essential for a Sustainable Improvement in Food and Nutrition Security", *Sustainability*, Vol. 3.

⁵⁰ C. KHOURY *et al.*, "Estimation of Countries' Interdependence in Plant Genetic Resources Provisioning National Food Supplies and Production Systems", 2015; FAO, 1998 at pp. 20-23. See also C. FOWLER AND T. HODGKIN, 2004, "Plant Genetic Resources for Food and Agriculture: Assessing Global Availability", *Annual Review of Environment & Resources*, Vol. 29, (1) at p. 147; and J. ESQUINAS-ALCAZAR, 2005 *op.cit.* at pp. 949-950.

cooperation challenge can be addressed by setting up (global) institutional arrangements.⁵¹ This is precisely why the International Treaty on Plant Genetic Resources for Food and Agriculture⁵² (hereafter the Treaty or Plant Treaty) was shaped and adopted in 2001. Steered by sustainable development principles, the Plant Treaty designs several tools to help countries reach their food security and sustainable agriculture overall goals.⁵³ Two major provisions – the Multilateral System of access and benefit-sharing (MLS)⁵⁴ and the recognition of Farmers' Rights (FRs)⁵⁵ – are designed as incentives for Contracting Parties to provide a facilitated access to seeds to all food and agriculture stakeholders, including smallholder farmers. The MLS is viewed as a global commons system,⁵⁶ where stakeholders manage together the access to seeds, their conservation and sustainable use. Both tools – the Multilateral System and Farmers' Rights – aim at proposing an alternative path to the current food and agriculture system blocked in the middle of a private/public good dilemma. However, little thorough research has been conducted on analysing whether these tools adequately respond to the need for reaching food security and sustainable agriculture through collective management of plant genetic resources for food and agriculture (PGRFA, or seeds).⁵⁷

The present research explores the consideration of seeds and the MLS as a global commons system to facilitate the provision of seeds worldwide for food security and sustainable agriculture. The aim is to (Part I) set the contextual field in which the Plant Treaty has its origins and identify the general challenges related to PGRFA management; (Part II) understand why seed exchanges remain problematic notwithstanding the implementation of

⁵¹ R. O. KEOHANE AND E. OSTROM, "Introduction", in R.O. KEOHANE AND E. OSTROM (eds), *Local Commons and Global Interdependence: Heterogeneity and Cooperation in Two Domains*, London, Sage Publications, 1995, at p. 13. See also S. JUNG CURT, 2007, "Institutional Interplay in International Environmental Governance: Policy Interdependence and Strategic Interaction in the Regime Complex on Plant Genetic Resources for Food and Agriculture" (Humboldt Universität, 2007) at p. 33. Jungcurt states that "analyses of international interdependence start from the observation that in many areas of public policy issues that were once considered purely national concerns now spill across borders and are global in reach and impact. A key problem in such cases is how to induce contributions from a sufficiently large number of states to provide an adequate level of benefits. When there are many beneficiaries, each of whose contribution is small relative to the cost of provision, the good will not be provided in optimal quantity, unless institutional arrangements exist that induce incentives to provide it."

⁵² International Treaty on Plant Genetic Resources for Food and Agriculture, FAO Res. 3/2001, 3 November 2001 (entered into force 29 June 2004); 2400 UNTS 379. Throughout the present research, the words 'Treaty', 'Plant Treaty', and 'ITPGRFA' are used interchangeably. The Treaty can be found in Annex 1 to this book.

⁵³ C. FRISON, 2006, "The Principles of Sustainable Development in the Context of the International Treaty on Plant Genetic Resources in Food and Agriculture", *McGill International Journal of Sustainable Development Law & Policy*, Vol. 2, (2).

⁵⁴ Plant Treaty, Articles 11-13.

⁵⁵ Plant Treaty, Article 9.

⁵⁶ M. HALEWOOD, 2013, "What Kind of Goods Are Plant Genetic Resources for Food and Agriculture? Towards the Identification and Development of a New Global Commons", *International Journal of the Commons*, Vol. 7, (2). See also J. SANTILLI, 2011, "Agrobiodiversity and the Law: Regulating Genetic Resources, Food Security and Cultural Diversity", New York, NY, Earthscan.

⁵⁷ The terms "seed" is used in lay term to designate PGRFA. This use is not in conformity with the actual definition of PGRFA or seeds. It is done so for simplicity of writing.

the Plant Treaty; and (Part III) overcome the deficit of Contracting Parties' obligations in reaching their food security and sustainable agriculture overall goals by elaborating on the *Theory of the Commons*⁵⁸ (in particular regarding States' recognition of FRs, their conservation and sustainable use responsibilities, as well as their access and benefit-sharing obligations). The present chapter is divided into seven sections. Section 1 describes the research approach; section 2 outlines the research map; section 3 explains the theoretical framework, i.e. the theory of the Commons; section 4 clarifies research motivations; section 5 sketches complementary research methods, i.e. the contextual analysis; section 6 delineates the scope of the work; and section 7 ends by identifying how the present work contributes to the state of the art.

Section 1. Research approach

The Treaty creates a facilitated access to the world's major crops and forages, with a provision for benefit-sharing. The facilitated access mechanism of the Treaty constitutes a shift in the concepts pertaining to PGRFA management and thereby is an important first step towards food security and sustainable agriculture.⁵⁹ However, preliminary findings reveal that the Treaty only partially answers the actors' need for an easy access to seeds.⁶⁰ Understanding why current PGRFA exchanges are problematic and how conservation, sustainable use, access and benefit-sharing provisions under the Treaty can be promoted for food security and sustainable agriculture purposes, requires taking a rather interdisciplinary research approach (§1). Furthermore, while different research methodologies are possible, an inductive research approach has been chosen to carry out the work (§2).

⁵⁸ The theory of the commons developed following Hardin's paper on the "Tragedy of the Commons". It was then widely addressed by Elinor Ostrom, whose seminal book "Governing the Commons" revolutionized the field. The theory is explained below under Section 3 and is detailed in Chapter 6.

⁵⁹ O. DE SCHUTTER, "The Role of the Right to Food in Achieving Sustainable Global Food Security", 2009 UNITED NATIONS.

⁶⁰ C. FRISON, T. DEDEURWAERDERE, AND M. HALEWOOD, 2010, "Intellectual Property and Facilitated Access to Genetic Resources under the International Treaty on Plant Genetic Resources for Food and Agriculture", *European Intellectual Property Review*, Vol. 32, (1). This article was published as a response to the paper published by C. LAWSON, 2009, "Intellectual Property and the Material Transfer Agreement under the International Treaty on Plant Genetic Resources for Food and Agriculture", *ibid.* Vol. 31, (5).

§ 1 Underlying interdisciplinarity for a sustainable development perspective

A researcher trained in law who is studying an international Treaty will generally produce a purely legal piece of work, which necessarily applies classic legal research methods. Notwithstanding the fact that the present work is rooted in legal methods, it is also profoundly inspired by interdisciplinary approaches (including economic, social and above all political sciences) and even more a transdisciplinary approach.⁶¹ Like any sustainable development topic, fully understanding the international seed regulatory system requires taking a 360° view of the problems related to seed conservation, use and exchange. Therefore, following the direction that major scholars have paved promoting interdisciplinary research,⁶² I widened my spectrum and stepped out of the strict legal field by enriching my analysis with concepts (sustainable development principles), theories (governance) and research methods (sociology and anthropology tools) from other disciplines. Indeed, combining methods, theories and concepts from other scientific fields have fed my analysis and recommendations with proposals that better reflect stakeholders' diversity of interests at stake. Notwithstanding this transdisciplinary-inspired research, I do not claim that my research is one hundred percent transdisciplinary. Undeniably, only collaboration between several researchers with different background and trainings, as encouraged by Ostrom, can achieve a truly inter- and transdisciplinary work.⁶³ My hope is that looking at my work with other additional lenses has enriched my legal research with "an interdisciplinary bundle of methods",⁶⁴ apt to respond to the complex requirements of any sustainable development discipline.

§ 2 Inductive research approach

The purpose of the thesis is to bring a theoretical insight to the Treaty, using the theory of the commons, in order to understand how the Treaty is (dys-)functioning and to make

⁶¹ Transdisciplinarity goes further than interdisciplinarity. As stated by Klein *et al.* "[t]he core idea of transdisciplinarity is different academic disciplines working jointly with practitioners to solve real-world problem." J. T. KLEIN *et al.*, 2012, "Transdisciplinarity: Joint Problem Solving among Science, Technology, and Society: An Effective Way for Managing Complexity", Birkhäuser at p. 4; see also A. WIEK AND A. I. WALTER, 2009, "A Transdisciplinary Approach for Formalized Integrated Planning and Decision-Making in Complex Systems", *European Journal of Operational Research*, Vol. 197, (1); G. H. HADORN *et al.*, 2006, "Implications of Transdisciplinarity for Sustainability Research", *Ecological Economics*, Vol. 60, (1).

⁶² A. R. POTEETE, M. A. JANSSEN, AND E. OSTROM, 2010, "Working Together: Collective Action, the Commons, and Multiple Methods in Practice", Princeton University Press, at pp. 255-257; see also L. A. FENNELL, 2011, "Ostrom's Law: Property Rights in the Commons", *International Journal of the Commons*, Vol. 5, (1), at pp. 22-23.

⁶³ A. R. POTEETE, M. A. JANSSEN, AND E. OSTROM, *cit.*, at pp. 255-257.

⁶⁴ E. VAN ZIMMEREN, 2011, "Towards a New Patent Paradigm in the Biomedical Sector? Facilitating Access, Open Innovation and Social Responsibility in Patent Law in the Us, Europe and Japan" (KU Leuven, 2011) at p. 24.

normative proposals so as to improve its implementation. Different approaches can reach this purpose: a deductive approach (starting from the theoretical framework of the commons and moving down towards the case-study of the Treaty); or a more inductive approach (starting from the field and moving up towards the theory). Depending on what approach is taken, the theoretical framework will be used at a different moment in the research process. In a deductive approach, the theoretical framework will come early in the thesis structure. This approach allows reaching a high abstract theoretical level of reasoning.⁶⁵ On the contrary, when taking a more inductive approach,⁶⁶ the theoretical framework is mobilized later, only after the analysis of the case-study, i.e. the Treaty. Indeed, it is the very results of the Treaty analysis that leads to choosing the theory of the commons as theoretical framework.

Coming from the experts' field of the Plant Treaty, it was more natural for me to begin my research with a bottom-up, inductive approach. Therefore, Part I starts by analyzing the context and history from which the Treaty is born. This first step in the inductive research is important as it sketches the tensions and problems in the international management of PGRFA. Based on this contextual identification, Part II moves on to assess the Treaty by carrying out a legal and a stakeholder analyses. Guided by the identified tensions in Part I, this second step in the inductive research allows to draft a list of problems in the implementation of the Treaty. Finally, from the results of this Treaty assessment, Part III makes the link with the theory of the commons, and reaches the final step of the inductive approach: build on the theory of the commons to provide normative proposals in order to improve the Treaty functioning and implementation.

Section 2. Research map

As said above, the present thesis is divided into three main Parts, each of which covers a time period. (§1) Part I is descriptive and looks at the past (i.e. what existed before the Plant

⁶⁵ While I fully understand and agree with the fact that a deductive approach is common for a PhD research and that it allows reaching strong theoretical arguments that enrich the state of the art of the said theory, it is not the path I have chosen to follow.

⁶⁶ The inductive approach is less common in legal research. However, some authors advocate that implementing such approach in legal research enriches the research field. See for example R. FOQUÉ, 2012, "Grondslagen En Methoden Van Juridisch Onderwijs", *Law and Method*, Vol. 2, (2) at pp. 17-18. See also H. R. BERNARD, 2012, "Social Research Methods: Qualitative and Quantitative Approaches", Sage; and W. L. NEWMAN, 1991, "Social Research Methods: Qualitative and Quantitative Approaches", Allyn and Bacon.

Treaty?); (§2) Part II is evaluative and analyses the present (i.e. how does the Treaty function?); and (§3) Part III is normative and envisages the future (i.e. how should the Treaty be implemented to effectively reach its objectives?). Each Part is composed of one or two chapters and is outlined below following an identical internal structure: first research objectives are framed, then research hypothesis and question(s) are posed, and finally methodologies used are explained.

§ 1 (Thesis Part I) Plant genetic resources for food and agriculture management: digging the soil to assess fertility for collaboration

A. Objectives: understanding the past seed management system

Part I of this PhD aims at drawing a picture of the international seed regulatory system that developed during the twentieth century in order to understand on what basis the Plant Treaty was designed and set up. Throughout the analysis of all major international instruments related to seeds, the objective of Part I is to point out the shift from the consideration that seeds were public goods available to all, to the consideration that seeds are overly privatized goods, accessible to few following strict (legal, economic or technical) access conditions. Part I comprises two chapters. Chapter 2 describes the historical evolution of PGRFA management and the international instruments that have an impact on seed management. Chapter 3 analyses the tensions arising from this multifaceted international regime complex.

This descriptive first Part highlights major tensions resulting from the above-mentioned developments: i.e. the international regime complex for PGRFA and the hyper-ownership of seeds. These tensions express an imbalance of recognition in the rights pertaining to seeds: private hyper-ownership of seeds (through legal and technological tools) overpower collective rights over seeds (e.g. through (in-)effective Farmer's Rights). Part I demonstrates that the international community needed to design a new international convention to overcome these tensions: the International Treaty on Plant Genetic Resources for Food and Agriculture, which is investigated in Part II.

B. Hypothesis

The historical evolution of PGRFA management has shifted the consideration that seeds are public goods freely available to all to the consideration that seeds are overly privatized goods, accessible to few following strict (legal, economic and technical) access conditions. This evolution has crystallised an imbalance of rights pertaining to seeds and contributed to further limit access to and exchanges of seeds between all stakeholders, thereby endangering seed conservation and sustainable use.

C. Research questions

What is the historical evolution of the international seed management system before the Plant Treaty came into force? (Chapter 2)

What core tensions render the international seed management system so complex? (Chapter 3)

D. Methods

To answer these questions, three steps were taken simultaneously. First, a legal analysis of the international instruments relating to seed management has been carried out. The method applied for this analysis is the same as the one used to study the Plant Treaty (see Part II below).⁶⁷ Nevertheless, it has not been conducted in as much depth because, contrary to the Treaty, these conventions are not central to this work.

Second, a wide literature review on the PGRFA management history was undertaken at the international level – from the mid twentieth century to nowadays – both from scientific legal and non-legal literature. For the non-legal literature, there was a lot of literature on PGRFA management, from a very wide range of actors and from different perspectives and disciplines. As for legal scientific literature on the Plant Treaty, there was very little until recently.⁶⁸ Today, scholars have become interested in the issue and there is a growing body of

⁶⁷ Articles 31-33, Vienna Convention on the Law of Treaties, 23 May 1968, 8 I.L.M. 679. To avoid repetition, this method is detailed below.

⁶⁸ P. CULLET, "Food Security and Intellectual Property Rights in Developing Countries", *op. cit.* at pp. 12-21.

scientific literature on the topic, although still very limited compared to other fields of law.⁶⁹ This reading enabled me to grasp a fairly comprehensive picture of the international PGRFA management system.

Third, as explained below,⁷⁰ “law in books” and “law in practice” are two different things. While gathering information from publications, my concomitant experience as negotiator and observer in Treaty meetings also provided me with other useful knowledge. This knowledge is examined following a *modus operandi* described under Section 5 “Contextual Analysis” below. This contextual approach (inspired from socio-anthropological methodologies) is distinguished from the methods described here because it has been used throughout the research as a support tool to clarify the context and understand the law accordingly. There is no specific output from this method, apart from guiding the research all along. This has enabled, when necessary, to choose research directions and take decisions accordingly.

The literature review, legal study and supporting contextual analysis provide a thorough historical-legal description of the international instruments managing seeds between 1950 and 2001, which have highlighted specific tensions between stakeholders in the international management of PGRFA. These results allow to move towards the second step of the inductive research by evaluating the current International Treaty regulatory setting, covered in Part II of this thesis.

§ 2 (Thesis Part II) The plant genetic resources for food and agriculture regime: an assessment of the Plant Treaty

A. Objectives: analyzing the current international seed regime

The objective of Part II is to draw a precise portrait of the Plant Treaty functioning, of the constraints in the Treaty text and of the difficulties in its implementation, in order to understand why the Treaty does not reach its objectives. The analysis is twofold. First, a

⁶⁹ The Treaty is still a young instrument of international law: it was signed in 2001, it entered into force in 2004, but only started to be effectively ‘in function’ after the adoption of the Standard Material Transfer Agreement by the Governing Body in 2006. Several operationalizing tools have been adopted at later meetings (e.g. the compliance mechanism has only been finalized in 2013).

⁷⁰ See below section 4.

classical legal analysis of the Treaty is conducted (Chapter 4), to explain if and how it attempts to overcome the public/private good dichotomy for seed management. However, this legal study provides insufficient appreciation to fully understand the slow implementation of the Treaty and the difficulties in fulfilling its objectives. Therefore, as a complementary step, a stakeholder analysis is carried out (Chapter 5), where actors have identified limitations and constraints they face in their experience with the Treaty negotiation and implementation.

B. Hypothesis

By creating the MLS, Contracting Parties have attempted to strike an equitable balance between public and private interests in access to seeds, but countries face difficulties in implementing the Treaty. The *de facto* imbalance of rights pertaining to seeds needs to be re-balanced in order to implement efficiently the MLS and allow stakeholders to reach the Treaty's objectives.

C. Research questions

How do the Treaty and more specifically the MLS function? (Chapter 4)

What are the constraints identified by stakeholders that limit an efficient Treaty implementation? (Chapter 5)

D. Methods

Part II is the second step of the inductive approach and constitutes the core analysis of my work. For each chapter a different method is implemented. The legal study of an international Treaty requires applying classical legal research methods. Therefore, Chapter 4 performs a reading of the Treaty text following the international law rules on Treaty interpretation. Then, through a stakeholder analysis, Chapter 5 confirms and complements the results of the legal analysis by recognizing concrete limits and constraints in the Treaty implementation identified by stakeholders. Combining these results provides a comprehensive set of information which allows to assess the implementation of the Treaty by its Contracting Parties and to propose paths for a better congruence between the Treaty's implementation tools and the Treaty's objectives.

(1) The legal analysis

A classical legal analysis of the Treaty is conducted following the international law interpretation principles of the 1969 Vienna Convention on the Law of Treaties,⁷¹ to understand the legal rules established by the Treaty.⁷² The legal analysis is based on the text of the Treaty and other relevant international agreements; decisions taken by the Governing Body of the Treaty; reports of the negotiation meetings of the Treaty; etc. A caveat is made regarding the fact that access to some preliminary documents is not possible (e.g. audio records or verbatim proceedings of preparatory and negotiation meetings do not always exist and when they do, they are hardly accessible). This is an important note to make as this reduces the degree of transparency of the negotiations.⁷³ This is one of the reasons justifying the use of complementary methods of research. Furthermore, the findings from the legal analysis are cross-checked with data and statistics found mainly on the Treaty secretariat website.⁷⁴ This cross-check evaluation is necessary in the assessment of the Treaty implementation and was only possible after several years of functioning.⁷⁵

To facilitate the reading and understanding of this thorough legal analysis, Treaty Articles are clustered into eight topics. These topics are important themes within the Treaty, but they are also relevant and related to the theory of the commons. These topics are: 1) sustainable agriculture and food security; 2) scope of the Treaty; 3) Farmers' Rights; 4) facilitated access to PGRFA; 5) benefit-sharing and the Benefit-sharing Fund; 6) legal procedural aspects (Third Party Beneficiary); 7) information and knowledge; and 8) participation and governance. Each topic is presented in the following manner: first all relevant Treaty Articles are clustered; then a historical and legal explanation of the Articles is

⁷¹ Articles 31-33, Vienna Convention on the Law of Treaties, 23 May 1968, 8 I.L.M. 679.

⁷² Several methods are used to conduct this interpretative task, such as systematic interpretation, grammatical interpretation, technical interpretation or teleological interpretation. See Lina Kestemont (2015), « Methods for traditional legal research », in Reader 'Methods of Legal Research', (work in progress), at pp. 5-14.

⁷³ Several negotiators reported that this was desired by some member states and that important steps have occurred during informal discussions whether inside or outside the doors of the negotiating meeting room. Moreover, negotiators have reported that when verbatim proceedings were recorded, negotiators could still request to modify the text of the proceedings after the meeting was held. Notably, this has happened with several countries, including the US.

⁷⁴ <http://www.planttreaty.org/fr>

⁷⁵ The data I refer to was collected in 2015 and includes inter alia: the number of Contracting Parties (35), which have included PGRFA collections in the MLS and an estimated total number of accessions; data on CGIAR Centres' acquisition and distributions of PGRFA using the Standard Material Transfer Agreements (SMTA); data on the flow of PGRFA and on the SMTAs signed; list of countries, which passed legislation on Farmers' Rights; etc.

provided; finally the impact of their implementation is assessed using the above-mentioned cross-check evaluation.

(2) Stakeholder analysis

The legal analysis is confirmed and complemented with information provided directly by actors involved in the Treaty negotiation and implementation, through a stakeholder analysis.

A classical definition of stakeholders is “any group of individual who can affect or is affected by the achievement of the organization objectives.”⁷⁶ Stakeholders may be natural persons,⁷⁷ groups or legal entities; they are not limited to insiders within the organization. The stakeholder analysis is constituted by the edition of a book where 29 major stakeholders⁷⁸ within the Plant Treaty policy area agreed to share their views, experience and hopes on the past, present and future challenges in the negotiation and implementation of the Treaty.⁷⁹ Based on the content of stakeholders’ chapters, the needs and constraints spotted by authors were analysed and listed into 17 “specific implementation challenges and constraints”.⁸⁰ For the last step of the inductive research approach in Part III, these problems are addressed where the theory of the commons is proposed as one way to mitigate them and allow stakeholders to reach the Treaty’s objectives.

⁷⁶ R. E. FREEMAN, 2010, *Strategic Management : A Stakeholder Approach*, Cambridge [u.a.], Cambridge Univ. Pressat p. 46. Modern stakeholder theories include any group or individual that can be influenced by, or can itself influence, the activities of the organisation, see A. L. FRIEDMAN AND S. MILES, 2002, “Developing Stakeholder Theory”, *Journal of Management Studies*, Vol. 39, (1).

⁷⁷ According to Bjornstad, “Individuals earning the label entrepreneurial leaders seem to have been crucial for the adoption of the ITPGRFA, thus supporting Young’s assumption that leadership is a necessary condition for regime formation. These leaders have in several aspects also been fundamental in addressing the issues in such a way that the developing countries partly got their interests included. »I. B. BJORNSTAD, “Breakthrough for ‘the South’? An Analysis of the Recognition of Farmers’ Rights in the International Treaty on Plant Genetic Resources for Food and Agriculture”, 2004, p. 90.

⁷⁸ See Appendix 4 of the online PDF file of this thesis for the list of Stakeholders, available on my ResearchGate profile.

⁷⁹ C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T. (eds.), *Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*, Washington, DC, Earthscan, FAO and Bioversity International, 2011.

⁸⁰ See Table 20.1 “Constraints, needs and implementation tools” in C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., *Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*, at pp. 276-277.

§ 3 (Thesis Part III) Planting the commons: towards redesigning the global seed commons

A. Objectives: moving towards an efficient Treaty by providing an equitable access to the global seed commons

Part III contains one chapter (Chapter 6). Its objective is so make normative proposals as to what can be done in the implementation of the Treaty for it to reach its objectives. Based on the results of Part II, six underlying principles derived from the coupled analysis of the theory of the commons and the Treaty are used to try solving the above identified Treaty constraints. These underlying principles are: sustainability, interdependence, anticommons dilemma, physical and informational components inextricably bound to the use of seeds; community; and diversity, heterogeneity and complexity. Eight recommendations are made to enhance the functioning of the global seed commons, presented as an alternative to overcome the limits of the current seed regulatory setting resulting from the public/private good dichotomy. One cross-cutting aspect that appears all along the analysis is the lack of recognition of the role and rights of smallholder farmers. Recognition of Farmers' Rights at the international level could overcome the imbalance of rights pertaining to seeds and contribute to reach the food security and sustainable agriculture overall goals of the Treaty.

B. Hypothesis

Enhancing the MLS as a global seed commons contributes to a more efficient implementation of the Treaty and to better reaching the Treaty's goals of food security and sustainable agriculture. It constitutes an alternative way to overcome the dichotomy that appeared in the Treaty analysis between seeds defined exclusively as private goods and seeds characterized as public goods.

C. Research question

What underlying principles of the theory on the commons are useful to overcome the identified constraints in the Treaty implementation, and how? (Chapter 6)

D. Method

Chapter 6 includes a governance approach to integrate the multilateral and multi-stakeholder cooperation dimension in support of the legal analysis of the Treaty. Looking at the governance dimension⁸¹ is helpful to analyse the role played by stakeholders in the creation and implementation of the Treaty as a set of international, formal and binding norms.⁸² The necessity of using such a wider “lens” is intrinsically linked to the universal and “common good nature” of PGRFA (i.e. the fact that all countries are highly interdependent). It implies that the success of the Treaty is rooted in a common interest of the main actors involved in the exchange of seeds, which leads to the creation of global common management mechanisms.⁸³ Moreover, the importance of informal means and channels cannot be made visible with a classic legal analysis, as they are not recognized by the formal system. Understanding law in a broad sense, as the creation of norms and rules to regulate actors, which includes informal norms, social norms,⁸⁴ and self-regulation,⁸⁵ can be done using political and social science concepts and methods. For these reasons, the theory of the commons (developed by Ostrom and others subsequently) is applied to see if and how managing seeds as a commons can mitigate the constraints identified in the Treaty implementation and overcome the problems raised by the legal imbalance of rights pertaining to seeds. The theoretical framework of the commons is explained below.

Section 3. Theoretical framework – the theory of the commons

The international management for the conservation, sustainable use and access to seeds is a global challenge that requires multilateral and multi-stakeholder cooperation. Globalization has significantly increased this fundamental interdependence between States and between stakeholders. Analysing the Plant Treaty from an exclusively legal perspective

⁸¹ D. LEVI-FAUR, 2012, *The Oxford Handbook of Governance*, Oxford University Press.

⁸² Understanding why and how stakeholders interact is rooted in the general theory on Collective Action. See M. OLSON, 1971, *The Logic of Collective Action : Public Goods and the Theory of Groups*, Harvard University Press; T. SANDLER, 2004, *Global Collective Action*, Cambridge, England ; New York, Cambridge University Press. Olson insists on the free rider problem raised by any collective action. Some Treaty stakeholders view Northern countries as free-riders when taking resources from the South, using them, profiting from their benefits without sharing with the South.

⁸³ M. ZÜRN, "Global Governance as Multi-Level Governance", in D. LEVI-FAUR (eds), *The Oxford Handbook of Global Governance*, Oxford, Oxford University Press, 2012, at p. 730.

⁸⁴ L. LESSIG, 1995, "The Regulation of Social Meaning", *The University of Chicago Law Review*, Vol. ; R. C. ELLICKSON, 1998, "Law and Economics Discovers Social Norms", *The Journal of Legal Studies*, Vol. 27, (S2).

⁸⁵ I. AYRES AND J. BRAITHWAITE, 1992, *Responsive Regulation: Transcending the Deregulation Debate*, Oxford University Press.

would miss out much of the issues at stake. Indeed, policy is deeply intertwined with the international law-making process. To integrate this multilateral and multi-stakeholder cooperation dimension in support to the legal analysis of the Plant Treaty, this research is framed by a major theory from political sciences: the theory of the commons. Indeed, it provides a governance dimension⁸⁶ necessary to understand the role played by stakeholders in the creation and implementation of the Treaty as a set of international, formal and binding norms. Such a governance approach allows examining the legal shortcomings of the Treaty and understanding the interplay between stakeholders in the negotiation and implementation of the Treaty.

In this dissertation, it is argued that the wide international cooperation⁸⁷ between all stakeholders for the provision of PGRFA has resulted in the creation of a seed commons-type mechanism through the design of the Treaty's MLS. Indeed, the Treaty is the result of global cooperation based on commons principles;⁸⁸ and the mechanism that the Treaty puts in place is evidence of a "new multilateralism", echoing what UN Secretary General Ban Ki-moon called for at the Fifth Summit of the Americas in 2009:

"We need a new vision, a new paradigm, a new multilateralism. A multilateralism that is organized around delivering a set of global goods. A multilateralism that harnesses both power and principle. A multilateralism that recognizes the interconnected nature of global challenges."⁸⁹

The legal and stakeholder analyses⁹⁰ carried out in the central Part to this work highlight this multilateralism in managing global challenges, but they also point to constraints in the Treaty implementation that need to be overcome for an efficient provision of the Treaty's objectives. Analysing these limitations through the lens of governance may contribute to clarify why the system is not functioning well and propose actions and directions for all stakeholders to improve the implementation of the Treaty. The theory of the commons is

⁸⁶ See Chapter 6 for details.

⁸⁷ B. VOLLAN AND E. OSTROM, 2010, "Cooperation and the Commons", *Science*, Vol. 330, (6006) at pp. 923-924.

⁸⁸ J. B. HOLDER AND T. FLESSAS, 2008, "Emerging Commons", *Social & Legal Studies*, Vol. 17, (3); W. P. FALCON AND C. FOWLER, 2002, "Carving up the Commons - Emergence of a New International Regime for Germplasm Development and Transfer", *Food Policy*, Vol. 27, (3); see also G. VAN OVERWALLE, "Lessons from the Genetic Resource Commons for Governance," in *Reflexive Governance in the Public Interest. Democratic Governance and Collective Action - Global public services and common goods* (Brussels 2010).

⁸⁹ B. KI-MOON, "Official Remarks of the United Nations Secretary-General Ban Ki-Moon at the Plenary Session of the Fifth Summit of the Americas," in *Fifth Summit of the Americas* (Port of Spain, Trinidad & Tobago April 17-19, 2009).

⁹⁰ See below Chapters 4 and 5 for the detailed content.

proposed as the governance approach to study the Treaty.⁹¹ The concept of commons is not very well defined, and has even grown fuzzier with globalization and the complexification of wider resource governing systems. In 1968, Garrett Hardin published an (over-exploited) allegory named the “Tragedy of the Commons”⁹², where he analyzed the problems related to over-exploitation of finite resources under unlimited and free access conditions to all. He took the example of grazing and posed the pre-condition that rational people would always try to get the maximum and immediate profit from the use of a “common resource”,⁹³ and therefore lead to overgrazing and the destruction of the common pasture.⁹⁴ Hardin proposes three solutions to his tragedy: reducing world population to avoid overconsumption; or establishing an external institution to regulate the use of the resource, whether through public management (State) or through the market (i.e. enclose the commons).⁹⁵ Yet, his “explanation for the need to enclose the commons confounded the resource with its governance regime”.⁹⁶

Later on, as a reaction to the supremacy of property rights (whether state or private) as the “best” system to manage resources, Elinor Ostrom⁹⁷ studied the management of common

⁹¹ Authors have applied such mechanism to microbial resources or PGRFA: T. DEDEURWAERDERE *et al.*, 2009, “The Use and Exchange of Microbial Genetic Resources for Food and Agriculture”, *Commission on genetic resources for food and agriculture*, Vol., (46); and M. HALEWOOD, 2010, “Governing the Management and Use of Pooled Microbial Genetic Resources: Lessons from the Global Crop Commons”, *International Journal of the Commons*, Vol. 4, (1).

⁹² G. HARDIN, 1968, “The Tragedy of the Commons”, *Science*, Vol. 162, (3859).

⁹³ In game theory, this has been modeled under the prisoner’s dilemma. See A. RAPOPORT AND A. M. CHAMMAH, 1965, “*Prisoner’s Dilemma: A Study in Conflict and Cooperation*”, University of Michigan press.

⁹⁴ Hardin states that “[e]ach man is locked into a system that compels him to increase his herd without limit – in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom of the commons brings the ruin to all.” G. HARDIN, 1968 *op.cit.* at p. 1244. This view is supported by Mancur Olson in his work on the logic of collective action, who states that “unless the number of individuals is quite small, or unless there is coercion or some other special device to make individuals act in their common interest, *rational, self-interested individuals will not act to achieve their common or group interest*” (emphasis in original text). M. OLSON, 1965, “*The Logic of Collective Action : Public Goods and the Theory of Groups*”, Harvard University Press, at p. 2. Although Olson was much more precautionary than Hardin in the proposed solution to the “tragedy”, leaving the question of common management open.

⁹⁵ “The tragedy of the commons as a food basket is averted by private property, or something formally like it.” G. HARDIN, 1968 *op.cit.* at p. 1245.

⁹⁶ E. BERGE AND F. VAN LAERHOVEN, 2011, “*Governing the Commons for Two Decades: A Complex Story*” at p. 161. Other criticism can be formulated against Hardin’s views, including the fact that in real life, people communicate and are rarely put in a situation where a common resource is used by different person who do not talk to each other and discuss how to manage the resource commonly. See also E. OSTROM, 1990, “*Governing the Commons : The Evolution of Institutions for Collective Action*”, Cambridge ; New York, Cambridge University Press at p. 7. Another criticism relates to the rational character of the human being. According to Sen, who worked on welfare economics, peoples’ values and commitments will also influence economic policies in terms of their effects on the well-being of the community. Therefore, ethical aspects are also important and may counterbalance the “rational part” of human’s behavior. A. SEN, 2003, “*Éthique Et Économie*”, Paris, PUF at p. 15 and 40; and more generally A. K. SEN, 1970, “*Collective Choice and Social Welfare*”, Elsevier. More details on the criticism to Hardin’s vision are provided below in Chapter 6.

⁹⁷ The theory of the Commons gained much visibility in 2009 when Elinor Ostrom received the Nobel Prize in Economic Sciences.

resources using a “bundle of rights” approach,⁹⁸ where she distinguishes between operational-level property rights and collective-choice property rights.⁹⁹ Indeed, according to Schlager and Ostrom, “[a]ssigning full ownership rights does not guarantee an avoidance of resource degradation and overinvestment”.¹⁰⁰ To get a deeper comprehension of the conditions for sustainable resource use and governance regimes, she analyzed Common Pool Resource (CPR) institutional arrangements¹⁰¹ based on extensive field studies.¹⁰² In her famous book “Governing the Commons”, Ostrom focused on case studies in agricultural production systems, e.g. irrigation, forestry, or fishery management systems. In her understanding, a commons is “any natural or manmade resource that is or could be held and used in common.”¹⁰³ Ostrom showed that stakeholders¹⁰⁴ can effectively set up rules together (i.e. self-organization) to manage resources established in a local common pool for their own use, and outside of the market or governmental intervention (i.e. self-governance). Thanks to these data and to her observations, she designed eight principles useful to govern an efficient CPR system¹⁰⁵:

1. Clearly defined boundaries (i.e. effective exclusion of external unentitled parties);
2. Congruence between appropriation and provision rules and local conditions;
3. Collective-choice arrangements (i.e. allow most resource appropriators to participate in and modify the operational rules);
4. Effective monitoring (by monitors who are part of or accountable to the appropriators);

⁹⁸ The objective for Schlager and Ostrom is “to propose a property-rights scale ranging from authorized user, to claimant, to proprietor, and to owner, that provides a better analytical scheme for beginning to explain outcomes achieved by joint users of a common-pool resource (...). By examining the evidence (...), we are calling attention to the importance of discriminating among a range of incentives.” E. SCHLAGER AND E. OSTROM, 1992, “Property-Rights Regimes and Natural Resources: A Conceptual Analysis”, *Land economics*, Vol. at p. 259.

⁹⁹ “Operational activities are constrained and made predictable by operational-level rules regardless of the source of these rules. By the term “rules” we refer to generally agreed-upon and enforced prescriptions that require, forbid, or permit specific actions for more than a single individual. (...) Operational rules are changed by collective-choice actions. Such actions are undertaken within a set of collective-choice rules that specify who may participate in changing operational rules and the level of agreement required for their change. With regard to common-pool resources, the most relevant operational-level property rights are “access” and “withdrawal” rights. In regard to common-pool resources, collective-choice property rights include management, exclusion, and alienation.” E. SCHLAGER AND E. OSTROM, 1992 *op.cit.* at pp. 250-251.

¹⁰⁰ E. SCHLAGER AND E. OSTROM, 1992 *op.cit.* at p. 259.

¹⁰¹ E. OSTROM, *cit.*.

¹⁰² Ostrom conducted wide meta-analysis of existing common-pool resources case studies.; see E. OSTROM, *cit.*

¹⁰³ E. BERGE AND F. VAN LAERHOVEN, *cit.* at p. 161.

¹⁰⁴ Ostrom takes stakeholders as a point of departure for her research (whether empirical or theoretical); see E. OSTROM, *cit.* This approach is close to the research method I have implemented; see Section 1.

¹⁰⁵ Ostrom, (2009) *Governing the Commons*, table 3.1, at p. 90.

5. Graduated sanctions (scale of sanctions for appropriators violating community rules);
6. Conflict-resolution mechanisms (cheap and of easy access);
7. Minimal recognition of rights to organize (the self-determination of the community is recognized by higher-level/governmental authorities);

Plus, for CPRs that are parts of larger systems:

8. Nested enterprises (organization in the form of multiple layers of nested enterprises, with small local CPRs at the base level).

These design principles are helpful (but not compulsory) to identify whether other resource-management systems can be qualified as CPR or not.¹⁰⁶ Indeed, Ostrom leaves much space for heterogeneity and diversity in systems and places, insisting on the fact that the institutional arrangement should always be adapted to local needs and conditions in order to be efficient (which implies that other design principles may be better adapted to different situations).¹⁰⁷

In 2008, there was little legal scientific literature talking about the Plant Treaty,¹⁰⁸ and hence very little on the relationship between the Treaty and the commons theory. Since then, some authors, including non-academics, have assimilated the Treaty's MLS to a commons-type management regime.¹⁰⁹ The MLS, as a virtual pool management mechanism for selected plants, has been qualified as "global commons" or "global crop commons",¹¹⁰ "PGRFA

¹⁰⁶ E. OSTROM AND P. L. DELVILLE, 2009, "Pour Des Systèmes Irrigués Autogérés Et Durables: Façonner Les Institutions", Groupe de recherche et d'échanges technologiques, at p. 8 and 13 ; see also C. H. QUINN *et al.*, 2007, "Design Principles and Common Pool Resource Management: An Institutional Approach to Evaluating Community Management in Semi-Arid Tanzania", *Journal of Environmental Management*, Vol. 84, (1).

¹⁰⁷ E. OSTROM, *cit.*; later confirmed in E. OSTROM (eds.), "Understanding Institutional Diversity", Princeton University Press, 2005; E. OSTROM, 2009, "Design Principles of Robust Property-Rights Institutions: What Have We Learned?", *PROPERTY RIGHTS AND LAND POLICIES*, K. Gregory Ingram, Yu-Hung Hong, eds., Cambridge, MA: Lincoln Institute of Land Policy, Vol. ; see also M. COX, G. ARNOLD, AND S. V. TOMÁS, 2010, "A Review of Design Principles for Community-Based Natural Resource Management", *Ecology and Society* Vol. 15, ((4))

¹⁰⁸ End of 2007, less than 25 scientific publications on the Plant Treaty were collected, more than half of which are authored by non-academics. FAO documents and publications are not counted in this list. To cite examples: D. COOPER, 2002, "The International Treaty on Plant Genetic Resources for Food and Agriculture", *Review of European Community and International Environmental Law*, Vol. 11, (1); I. B. BJORNSTAD, 2004; M. RUIZ-MULLER, 2006, "Non-Conventional Uses of Plant Genetic Resources for Food and Agriculture: The Situation of International Centres under the International Treaty on Plant Genetic Resources for Food and Agriculture", *Yearbook of International Environmental Law*, Vol. 15, (1); E. TSIJOMANI, *ibid.* International Treaty on Plant Genetic Resources for Food and Agriculture: Legal and Policy Questions from Adoption to Implementation", Vol. ; C. GERSTETTER *et al.*, 2007, "The International Treaty on Plant Genetic Resources for Food and Agriculture within the Current Legal Regime Complex on Plant Genetic Resources", *Journal of world intellectual property*, Vol. 10, (3/4).

¹⁰⁹ T. DEDEURWAERDERE, 2010, "Institutionalizing Global Genetic Resource Commons: Towards Alternative Models for Facilitating Access in the Global Biodiversity Regime", *International Journal of Ecological Economics and Statistics*, Vol.

¹¹⁰ M. HALEWOOD, I. L. NORIEGA, AND S. LOUAFI, 2012, "Crop Genetic Resources as a Global Commons: Challenges in International Law and Governance", Routledge.

Commons”,¹¹¹ “communal seed treasury”,¹¹² “common seed pool”,¹¹³ “global genetic commons”,¹¹⁴ “positive commons”,¹¹⁵ etc. These terms are often used loosely in relation to the Treaty, without a precise definition or application¹¹⁶ of existing solid scientific literature on the commons theory.¹¹⁷ Building on this trend, Ostrom’s theory is used as a framework to screen the MLS through the lens of the commons. The aim is to analyse whether the MLS, as it has been created by Contracting Parties to the Treaty, can be understood as a CPR, according to Ostrom’s definition. My analysis leads to the conclusion that it is not fully the case.¹¹⁸ One of the difficulties relates to the global dimension of the MLS.¹¹⁹ Another problem lies in the fact that Contracting Parties have designed the institutional arrangement (even if it is based on prior existing practices by specific PGRFA stakeholders), and are managing it, with no formal space for all stakeholders to participate in the management of the MLS,¹²⁰ and with little trust emanating from stakeholders’ collaboration in the Governing Body forum.¹²¹ Recent developments in the theory of the commons have expanded its frontier to other disciplines (law, philosophy, sociology) and have allowed for reconceptualising Ostrom’s institutional analysis into envisaging the commons as a collective political construct.¹²² These new

¹¹¹ M. HALEWOOD AND K. NNADOZIE, "Giving Priority to the Commons: The International Treaty on Plant Genetic Resources for Food and Agriculture", in G. TANSEY AND T. RAJOTTE (eds), *The Future Control of Food - a Guide to International Negotiations and Rules on Intellectual Property, Biodiversity and Food Security*, London, Earthscan, 2008 at p 120.

¹¹² K. RAUSTIALA AND D. G. VICTOR, 2004, "The Regime Complex for Plant Genetic Resources", *International Organization*, Vol. 58, (2) at p. 303; and L. R. HELFER, 2004 at p. 87.

¹¹³ K. RAUSTIALA AND D. G. VICTOR, 2004 *op.cit.* at p. 303.

¹¹⁴ S. SAFRIN, 2004 *op.cit.* at p. 644. W. P. FALCON AND C. FOWLER, 2002 *op.cit.* at p. 200; see also L. R. HELFER, "Using Intellectual Property Rights to Preserve the Global Genetic Commons: The Itpgrfa", in K. MASKUS AND J. REICHMAN (eds), *International Public Goods and Transfer of Technology under a Globalized Intellectual Property Regime*, Cambridge, Cambridge University Press, 2005 at pp. 219-220.

¹¹⁵ G. VAN OVERWALLE, "L'intérêt Général, Le Domaine Public, Les Commons Et Le Droit Des Brevets D'invention", in M. BUYDENS AND S. DUSSOLIER (eds), *L'intérêt Général Et L'accès À L'information En Propriété Intellectuelle*, Bruxelles, Bruylant, 2008.

¹¹⁶ With the notable exception of the following publication: M. HALEWOOD, 2013, "What Kind of Goods Are Plant Genetic Resources for Food and Agriculture? Towards the Identification and Development of a New Global Commons", *op.cit.*

¹¹⁷ To cite only the most famous authors from an economic perspective on 'negative commons': G. HARDIN, 1968 *op.cit.*; on 'positive commons' E. OSTROM, "Governing the Commons : The Evolution of Institutions for Collective Action", *op. cit.* And E. OSTROM *et al.*, 1999, "Revisiting the Commons: Local Lessons, Global Challenges", *Science*, Vol. 284, (5412); and finally on a more legal perspectives of common goods see U. MATTEI, 2011, "Beni Comuni : Un Manifesto", Roma, Laterza And F. CAPRA AND U. MATTEI, 2015, "The Ecology of Law : Toward a Legal System in Tune with Nature and Community", Berrett-Koehler.

¹¹⁸ See Chapter 6 below.

¹¹⁹ See T. DEDEURWAERDERE, 2012, "Design Principles of Successful Genetic-Resource Commons for Food and Agriculture", *International Journal of Ecological Economics and Statistics*, Vol. 26, (3); and E. BROUSSEAU *et al.*, 2012, "Global Environmental Commons: Analytical and Political Challenges in Building Governance Mechanisms", Oxford University Press. As confirmed by Henry and Dietz or by Stern, a transposition of the design principles from the local to a global setting is not self-evident. A. D. HENRY AND T. DIETZ, 2011, "Information, Networks, and the Complexity of Trust in Commons Governance" or P. C. STERN, *ibid.* "Design Principles for Global Commons: Natural Resources and Emerging Technologies".

¹²⁰ For more details, see Chapter 6 section 8.

¹²¹ B. SIX *et al.*, 2015, "Trust and Social Capital in the Design and Evolution of Institutions for Collective Action", *International Journal of the Commons*, Vol. 9, (1), at pp. 164-167.

¹²² P. DARDOT AND C. LAVAL, 2014, "Commun: Essai Sur La Révolution Au Xxie Siècle", la Découverte; see also P. DARDOT AND C. LAVAL, 2010, "Du Public Au Commun", *Revue du MAUSS*, Vol. 35, (1).

“commons narratives”¹²³ are concisely explored and used to make normative proposals to mitigate the identified conceptual constraints in the Treaty functioning.

Section 4. Research motivation

Hearing about this new Treaty in 2004, I was fascinated by the way it attempted to strike a balance between public and private interests: alleviate poverty, secure food for all and at the same time protect and promote innovation in breeding activities.¹²⁴ The MLS, as an international tool to manage access and benefit-sharing for food and agriculture plants, creatively addresses these public/private objectives in its legal provisions.

However, studying “law in books” is restrictive. As a researcher, one can gain a lot of information and experience from the study of “law in action”.¹²⁵ Investigating actively the Plant Treaty from the inside, allowed me to gain a thorough contextual understanding of this international law in formation.¹²⁶ During my participation in Plant Treaty meetings as a negotiator and observer, I could comprehend better the issues at stake, and had a direct access to important informal information and to networking stakeholders. Most of all, this field experience facilitated my comprehension of underlying and sometimes hidden issues in the negotiations. It contributed to my choice of combining research methods as a support to

¹²³ For an economic perspective see the French economist Benjamin Coriat: B. CORIAT, 2013, "Le Retour Des Communs. Sources Et Origines D'un Programme De Recherche", *Revue de la régulation. Capitalisme, institutions, pouvoirs*, Vol., (14) and B. CORIAT, 2015, "Le Retour Des Communs: & La Crise De L'idéologie Propriétaire", Éditions Les Liens qui libèrent. For a legal perspective, see the Italian school with Ugo Mattei, Alberto Lucarelli and others: F. CAPRA AND U. MATTEI, 2015, "The Ecology of Law: Toward a Legal System in Tune with Nature and Community", Berrett-Koehler Publishers; U. MATTEI, 2011, "Beni Comuni-Un Manifesto (in Italian)"; A. LUCARELLI, 2011, "Note Minime Per Una Teoria Giuridica Dei Beni Comuni", *Espaço Jurídico*, Vol. 12, (2); A. LUCARELLI, 2013, "La Democrazia Dei Beni Comuni", Editore Laterza; A. DANI, 2014, "Il Concetto Giuridico Di "Beni Comuni" Tra Passato E Presente", *Historia et ius*, Vol. and also S. RODOTÀ, 2012, "Il Diritto Di Avere Diritti", Laterza Roma-Bari. For a socio-philosophical perspective see the works from Pierre Dardot and Christian Laval: P. DARDOT AND C. LAVAL, 2010, "Du Public Au Commun", *op.cit.*; and P. DARDOT AND C. LAVAL, "Commun: Essai Sur La Révolution Au Xxie Siècle", *op. cit.*; see also S. GUTWIRTH AND I. STENGERS, 2016, "Le Droit À L'épreuve De La Résurgence Des Commons", Vol.

¹²⁴ In 2003-2004, I wrote my LL.M Master thesis on "the influence of "communalism" in the International Treaty on Plant Genetic Resources for Food and Agriculture".

¹²⁵ The phrase "law in action" is attributed to Roscoe Pound: R. POUND, 1910, "Law in Books and Law in Action", *American Law Review*, Vol. 44. Further work following *legal realists scholars in the law-and-society tradition*, developed a "bottom up" approach. See J.-L. HALPERIN, 2011, "Law in Books and Law in Action: The Problem of Legal Change", *Maine Law Review*, Vol. 64. For an easy approach to the topic, read the blog post by Bill Clune, Voss-Bascom Professor of Law Emeritus, University of Wisconsin Law School, "Law in action and law on the books: A primer", posted on 12 June, 2013, available at <https://newlegalrealism.wordpress.com/2013/06/12/law-in-action-and-law-on-the-books-a-primer/>.

¹²⁶ This contextual analysis is explained below under Section 5.

the legal methodology. Indeed, understanding the law in the right way necessitates a clear contextual picture, which can be provided by complementary research means.¹²⁷

When I started my PhD research, the legal innovation in the MLS tickled my curiosity, but at that time it was (and still is) a young instrument, being complemented by implementation tools developed and adopted during the Governing Body meetings taking place every two years since 2006. Throughout my field experience, I could detect tensions between stakeholders, and issues that remained unresolved.¹²⁸ I was hoping that conducting research on the Plant Treaty and more specifically the MLS could help smoothen these tensions and promote the implementation of the Treaty. At that time, this was the main purpose for my study: contribute to an efficient implementation of the Treaty by identifying issues where tensions remained and propose solutions to alleviate them. After some time gaining scientific experience and theoretical knowledge, I was able to frame an innovative research approach¹²⁹ analysing the Treaty management system through the lens of the commons theory as explained above.

Section 5. Contextual analysis

Interpreting the law requires having a clear understanding of the context in which the law is designed and implemented. To acquire such comprehension, the present research is fed with information obtained through different methods inspired from other disciplines, i.e. sociology and anthropology. Indeed, the strict legal analysis of the Treaty only partly explains its slow implementation and the points of tensions between its stakeholders. Therefore, guidance and evidence were sought through open interviews with Treaty stakeholders and participatory observation at all but one Treaty Governing Body meetings between 2006 and 2015.¹³⁰ This contextual analysis is not used as a method per se and will not present

¹²⁷ Clune contends that “[t]he meaning of law is often ambiguous and open to interpretive judgment, leaving room for considerations of policy, politics, ideology, and value judgments based on the distinctive facts of particular cases.” Clune, B., “Law in action and law on the books: A primer”, *op. cit.*

¹²⁸ C. Frison, “International governance for conservation and sustainable use of PGRFA”, presentation made at the “World Conservation Congress”, October 9, 2008, Barcelona, Spain.

¹²⁹ C. Frison “The Multilateral System of access and benefit-sharing of the International Treaty: a Commons?”, PowerPoint presentation made at an internal seminar, UCLouvain, March 2010; see also C. Frison “Intellectual property Rights and the Plant Commons”, presentation made at the “Workshop Intellectual Property Law” of the “Ius Commune Conference 2010”, Leuven, Friday 26 November 2010.

¹³⁰ I did not attend the Fifth Session of the Governing Body, which took place from 24 to 28 September 2013, in Muscat, Oman.

specifically identifiable results and outputs. Rather it is used as a support tool (to choose research directions and take decisions accordingly) to clarify the research context and understand the law accordingly.

§ 1 Open interviews

Interviews are a classical method to collect information in socio-anthropological research. During my participation in Treaty meetings, I had the opportunity to meet with many PGRFA stakeholders. Based on the experience gained in conducting qualitative interviews¹³¹ during a Belgian survey on biodiversity conservation,¹³² interviews of Treaty stakeholders were carried out at every Governing Body meeting in order to (1) provide information on sensitive or hidden issues; (2) explain complex negotiation bargains; (3) highlight the stakes for each stakeholder group; (4) and identify other people to talk to in order to prepare for the stakeholder analysis book. Prior to every meeting, a list of stakeholder groups to be interviewed and a list of issues to be discussed were established. Most of the time, these issues were part of the agenda items addressed at the meeting. To maximize positive response to interview requests, interviews were kept very informal, were not recorded¹³³ and were anonymous. To avoid directing stakeholders' responses, I intervened the least possible in what the stakeholder wanted to say.¹³⁴

In this PhD, interviews are not used as an empirical method of research but rather as a personal guide and cross-check information source for the legal and stakeholder analysis, strengthening the overall legal research. This approach proved to be useful as support to anecdotal evidence coming directly from experts in the field. It also confirmed or verified the fact that some stakeholders view the Treaty MLS as a common management system for seeds, as an alternative path aimed at solving the private/public tension dichotomy. Ostrom has been referred to several times by interviewees, thereby supporting the theoretical framework exploring the "global seed commons".

¹³¹ J. OLIVIER DE SARDAN, 2008, "*La Rigueur Du Qualitatif: Les Contraintes Empiriques De L'interprétation Socio-Anthropologique [the Rigor of Qualitative: Empirical Constraints of Socio-Anthropological Interpretation]*", Louvain-la-Neuve, Belgium, Brylant.

¹³² C. FRISON AND T. DEDEURWAERDERE, "Access to, Conservation and Use of Biological Diversity in the General Interest", 2006 .

¹³³ Rigorous anthropological interviews require *inter alia* recording the interviews. It was decided not to do so because it was not well accepted by negotiators, as most issues discussed were very sensitive. I recognize this deviation from the classical method.

¹³⁴ L. V. CAMPENHOUDT AND R. QUIVY, 2006, "*Manuel De Recherche En Sciences Sociales*" at pp.58-68; see also J. OLIVIER DE SARDAN, *cit.* at pp. 54-65.

§ 2 Participatory observation: meetings of the Governing Body as “field” experience

Participatory observation¹³⁵ is used in socio-anthropological sciences as one method to collect data and material from a field trip. Since 2004, I participated in many international meetings, mainly but not only of the Plant Treaty, either as an observer or as a negotiator (depending on the funding and mandate I had). Inspired by this participatory observation justification,¹³⁶ my experience in these meetings¹³⁷ as “field trips” allowed me to step into the community of the Plant Treaty and to understand negotiating mechanisms that are not referred to in scientific publications, Treaty documents and website or elsewhere.

Experiencing this approach has been particularly helpful in understanding why and how some public actors (e.g. international research centres, national gene banks, big research institutes) and private actors (e.g. seed industry) had a major impact on the development and implementation of the Treaty while other actors (peasant communities or smaller seed collections, such as the farmers’ seed exchange networks in France, or consumers) have remained marginal in influencing the design of the Treaty mechanism.

The contextual analysis contributed to provide a deeper understanding of the social and political issues at stake during the negotiation and implementation of the Treaty, which clearly impact on the creation of the norm. It enriched the legal interpretation of the identified issues and has opened doors that would otherwise have remained closed in appreciating why the Treaty struggles in reaching its objectives. Nonetheless, the contextual analysis is not *per se* a research method scientifically and rigorously implemented in the present work. As mentioned earlier, it was rather used as a complementary method along each of the three inductive research steps, guiding the decisions and directions taken throughout the work.

Section 6. Scope of the research

The present research has a legal, a material and a temporal scope. All three aspects are delineated below.

¹³⁵ L. V. CAMPENHOUDT AND R. QUIVY, *cit.*; see also J. OLIVIER DE SARDAN, *cit.*, and P. LAURENT, 2011, “*Observation Participante Et Engagement En Anthropologie*”, Louvain-la-Neuve, Harmattan_Academia.

¹³⁶ L. V. CAMPENHOUDT AND R. QUIVY, *cit.*, at pp. 177-180; see also P. LAURENT, *cit.*, at pp. 58-60; and J. OLIVIER DE SARDAN, *cit.* at pp. 39-104.

¹³⁷ I participated to all Governing Body meetings, except its Fifth Session, which took place in 2013 in Oman.

§ 1 The legal scope

Regarding the legal scope, the research focuses on the analysis of the Treaty. Related international instruments such as the Convention on Biological Diversity (CBD),¹³⁸ the Trade related Aspects of Intellectual Property Rights (TRIPS Agreement), and the International Union for the Protection of New Varieties of Plant (UPOV) will be touched upon, but only to describe the context and serve the arguments made on the Treaty. A Human Rights approach¹³⁹ will similarly not be addressed, although it is contended that it is an important component, which requires further research.

A. The Convention on Biological Diversity and the Nagoya Protocol

Due to its “fall-back-regulatory-instrument” position, the CBD and its Nagoya Protocol will partly be addressed in Part I, but only to explain the access and benefit-sharing concept and mechanism.

B. TRIPS, UPOV and intellectual property rights issues

The TRIPS agreement and UPOV will be mentioned when talking about intellectual property rights (IPRs) issues related to plants.¹⁴⁰ Although the topic of this work is introduced with an example illustrating the issues at stake from the intellectual property field, it is clearly stated that this research is not an IPR piece of work, as this perspective has already been addressed.¹⁴¹ Future negotiation outcomes in the World Intellectual Property Organization

¹³⁸ For an assessment of the linkages between the Treaty and the CBD, see K. GARFORTH AND C. FRISON, "Key Issues for the Relationship between the Convention on Biological Diversity and the International Treaty on Plant Genetic Resources for Food and Agriculture", 2007 .

¹³⁹ O. DE SCHUTTER, "Building Resilience: A Human Rights Framework for World Food and Nutrition Security", 2008; in relating the Human Rights aspects with the question of IP see G. VAN OVERWALLE, 2010, "Human Rights' Limitations in Patent Law", *Intellectual Property and Human Rights: A Paradox*, Vol. ; see also P. CULLET, 2007, "Human Rights and Intellectual Property Protection in the Trips Era", *Human Rights Quarterly*, Vol. 29.

¹⁴⁰ P. CULLET, 1999, "Revision of the Trips Agreement Concerning the Protection of Plant Varieties", *op.cit.*; P. CULLET, 2001, "Plant Variety Protection in Africa: Towards Compliance with the Trips Agreement", *Journal of African Law*, Vol. 45, (01); P. CULLET AND R. KOLLURU, 2003, "Plant Variety Protection and Farmers' Rights-Towards a Broader Understanding", *Delhi Law Review*, Vol. 2; see also a national case study provided for India P. CULLET AND J. RAJA, 2004, "Intellectual Property Rights and Biodiversity Management: The Case of India", *Global Environmental Politics*, Vol. 4, (1).

¹⁴¹ Previous colleagues have already studied this topic from an IP perspective. See the PhD theses of Nicolas Brahy and Fulya Batur. N. BRAHY, 2006, "The Property Regime of Biodiversity and Traditional Knowledge : Institutions for Conservation and Innovation" (Université catholique de Louvain, 2006); and F. BATUR, 2014, "Agrobiodiversity Conservation and Plant Improvement : Adjustments in Intellectual Property Rights Reclaiming the Public Domain Towards Sustainability and Equity" (Université catholique de Louvain, 2014).

(WIPO) fora¹⁴² could be relevant to this research when dealing with the IP questions for genetic resources and traditional knowledge,¹⁴³ but as no legally binding instruments have been adopted yet and as the negotiations are on hold, these negotiations will not be addressed.¹⁴⁴ Consistently with this choice, the theoretical framework of this work is not the theory of property.¹⁴⁵ Analysing international seed management through this property lens would benefit the field. Further research in this direction is greatly encouraged.¹⁴⁶

C. Biosafety and GMOs

Biosafety international regulation¹⁴⁷ could also be relevant as the PGRFA covered by the Treaty are potentially genetically modified organisms (GMOs). However, The Cartagena Protocol on Biosafety regulates the safe transfers and the commercialization aspects of GMO products, and does not touch upon the common management for the conservation, sustainable use and access and benefit-sharing of PGRFA.¹⁴⁸ Therefore, this instrument is considered outside of the limits of this thesis.

¹⁴² Such as the Intergovernmental Committee (IGC) on Intellectual Property, Genetic Resources and Traditional Knowledge and Folklore, or within the context of the negotiations on Substantive Patent Law Treaty.

¹⁴³ G. VAN OVERWALLE, 2005, "Protecting and Sharing Biodiversity and Traditional Knowledge: Holder and User Tools", *Ecological Economics*, Vol. 53, (4); see also G. VAN OVERWALLE, "A Man of Flowers: A Reflection on Plant Patents, the Right to Food and Competition Law", in J. DREXL, *et al.* (eds), *Technology and Competition - Technologie Et Concurrence. Contributions in Honour of Hanns Ullrich - Mélanges En L'honneur De Hanns Ullrich*, Brussels, Larcier, 2009.

¹⁴⁴ The negotiations at the IGC are currently on hold, due to political holdbacks and blockages from certain countries. See "US Proposes Suspension of WIPO TK Committee; Switzerland and Others Counter" (11/09/2015) by Catherine Saez for "IP Watch"; available at <http://www.ip-watch.org/2015/09/11/us-proposes-suspension-of-wipo-tk-committee-switzerland-and-others-counter/> (accessed on September 10, 2015).

¹⁴⁵ Using law & economics, Nicolas Brahy has examined the management system for genetic resources and traditional knowledge from such property perspective. N. BRAHY, "The Property Regime of Biodiversity and Traditional Knowledge : Institutions for Conservation and Innovation,".

¹⁴⁶ In line with this suggestion, the Maison Française d'Oxford organizes a workshop on "CommonPlant - Reframing the legal system to face the challenges of an increasing world population and the preservation of agrobiodiversity", 30th September/1st October 2016 in Oxford, UK. The aim is to move beyond the reflection upon plant private property and access using the theory of property towards a third way between public and public property: the commons.

¹⁴⁷ The Biosafety Cartagena Protocol to the CBD. A detailed analysis of its implementation is provided in the following book M.-C. CORDONIER SEGGER, F. PERRON-WELCH, AND C. FRISON, 2012, *Legal Aspects of Implementing the Cartagena Protocol on Biosafety*, Cambridge ; New York, Cambridge University Press.

¹⁴⁸ For information on the implementation of the Cartagena Protocol M.-C. CORDONIER SEGGER, F. PERRON-WELCH, AND C. FRISON, *cit.*; and especially in Africa, see C. FRISON AND T. JOIE, 2006, "Elaboration D'une Reglementation De Biosecurite Par Certains Pays En Developpement: Experiences Dans La Mise En Oeuvre Du Protocole De Cartagena En Afrique De L'ouest", *Law Env't & Dev. J.*, Vol. 2; and C. FRISON AND T. JOIE, "Expériences Sur L'élaboration De Nouvelles Lois De Développement De La Biosécurité Et De La Biotechnologie: Perspectives De Réformes Légales En Afrique De L'ouest", in T.F. MCINERNEY (eds), *Searching for Success: Narrative Accounts of Legal and Institutional Reform in Developing Countries*, Rome, International Development Law Organization IDLO, 2006.

D. International law versus national legislations on biodiversity or seed management

This work remains exclusively at the international level and will not dig into national implementation of the Treaty, or only mention them in a very limited way as examples. Seed legislations are largely national and will therefore not be dealt with (even though they have a strong impact on seed exchange), except when mentioned as illustrations. Indeed, attention is centred on the international level as the aim is to understand governing mechanisms set by stakeholders in the Treaty at the global level, using global theories.

E. Human rights

Furthermore, due to time, resources and scope restrictions, the Human Rights' perspective on access to seeds and the right to food have not been deeply explored.¹⁴⁹ The right to food can be defined as “the right to have regular, permanent and unrestricted access, either directly or by means of financial purchases, to quantitatively and qualitatively adequate and sufficient food corresponding to the cultural traditions of the people to which the consumer belongs, and which ensure a physical and mental, individual and collective, fulfilling and dignified life free of fear.”¹⁵⁰ The former United Nations Commission on Human Rights (now United Nations Human Rights Council) has established a specific mandate on the right to food¹⁵¹ since the year 2000 by nominating a Special Rapporteur in the right to food¹⁵² to promote the full realization of the right to food inter alia through the adoption of measures at

¹⁴⁹ G. VAN OVERWALLE, "A Man of Flowers: A Reflection on Plant Patents, the Right to Food and Competition Law", *op. cit.*, at pp. 311-329.

¹⁵⁰ This definition is in line with the core elements of the right to food as defined by General Comment No. 12 of the United Nations Committee on Economic, Social and Cultural Rights (the body in charge of monitoring the implementation of the International Covenant on Economic, Social and Cultural Rights in those states which are party to it). The Committee declared that “the right to adequate food is realized when every man, woman and child, alone or in community with others, has physical and economic access at all times to adequate food or means for its procurement. The right to adequate food shall therefore not be interpreted in a narrow or restrictive sense which equates it with a minimum package of calories, proteins and other specific nutrients. The right to adequate food will have to be realized progressively. However, States have a core obligation to take the necessary action to mitigate and alleviate hunger even in times of natural or other disasters.” Available at <http://www.ohchr.org/EN/issues/food/Pages/FoodIndex.aspx>

¹⁵¹ The Office of the High Commissioner for Human Rights defines the Special Rapporteur “as an independent expert appointed by the Human Rights Council to examine and report back on a country situation or a specific human rights theme. This position is honorary and the expert is not a staff of the United Nations nor paid for his/her work. Since 1979, special mechanisms have been created by the United Nations to examine specific country situations or themes from a human rights perspective. The United Nations Commission on Human Rights, replaced by the Human Rights Council in June 2006, has mandated experts to study particular human rights issues. These experts constitute what are known as the United Nations human rights mechanisms or mandates, or the system of special procedures.” Available at <http://www.ohchr.org/EN/issues/food/Pages/FoodIndex.aspx>

¹⁵² The first Special Rapporteur on the Right to Food was Jean Ziegler. He performed two mandates from 2000 to 2004 and then to 2008. Olivier De Schutter succeeded with two mandates from 2008 to 2014. The current Rapporteur is Hilal Elver.

the national, regional and international levels.¹⁵³ An example of such measures occurred in 2009, where UN countries have adopted a “Declaration of the World Summit on Food Security”,¹⁵⁴ where “Five Rome Principles for Sustainable Global Food Security” have been defined to achieve four strategic objectives to “take urgent action to eradicate hunger from the world”.¹⁵⁵ The Special Rapporteur on the right to food pleads to improve the global governance of food security. He stresses that “[i]n times of crisis, more than ever, only by strengthening multilateralism can we hope to effectively realize the right to food.”¹⁵⁶ Although the right to food is enjoying a growing recognition for the last decade,¹⁵⁷ it suffers serious implementation and enforcement problems.¹⁵⁸ In 2015, several studies have been published on the inter-relation of human rights, seeds laws and Farmers’ Rights,¹⁵⁹ paving the way for further research on the intersection between access to seeds and the right to food.¹⁶⁰

F. International law and international relations

Finally, State cooperation within international negotiating fora holds a key place and impact in this research. Notwithstanding the fact that the analysis shows that cooperation

¹⁵³ C. FRISON AND P. CLAEYS, "Right to Food in International Law", in P. THOMPSON AND D. KAPLAN (eds), *Encyclopedia of Food and Agricultural Ethics*, Springer Netherlands, 2014.

¹⁵⁴ “World leaders convened at FAO Headquarters for the World Summit on Food Security unanimously adopted a declaration pledging renewed commitment to eradicate hunger from the face of the earth sustainably and at the earliest date. Countries also agreed to work to reverse the decline in domestic and international funding for agriculture and promote new investment in the sector, to improve governance of global food issues in partnership with relevant stakeholders from the public and private sector, and to proactively face the challenges of climate change to food security.” See <http://www.fao.org/wsfs/en/>

¹⁵⁵ *Declaration of the World Summit on Food Security* § 1, at http://www.fao.org/fileadmin/templates/wsfs/Summit/Docs/Final_Declaration/WSFS09_Declaration.pdf

¹⁵⁶ Report “Crisis into opportunity: reinforcing multilateralism” presented to the Human Rights Council, Follow-up session on the Global Food Crisis at the 12th session, 17 September 2009, at p. 1 and 22-25, available at http://www.srfood.org/images/stories/pdf/officialreports/20090917_a-hrc-12-31_en.pdf

¹⁵⁷ C. SAGE, 2014, “Food Security, Food Sovereignty and the Special Rapporteur Shaping Food Policy Discourse through Realising the Right to Food”, *Dialogues in Human Geography*, Vol. 4, (2); see also P. CULLET, 2005, “Seeds Regulation, Food Security and Sustainable Development”, *op.cit.*; and N. LAMBEK *et al.*, 2014, *Rethinking Food Systems: Structural Challenges, New Strategies and the Law*, Springer Science & Business Media; C. FRISON AND P. CLAEYS, *op. cit.*; O. DE SCHUTTER, “The Role of the Right to Food in Achieving Sustainable Global Food Security”, 2009.

¹⁵⁸ L. NIADA, 2006, “Hunger and International Law: The Far-Reaching Scope of the Human Right to Food”, *Conn. J. Int'l L.*, Vol. 22, at pp. 177-199. Niada details extensively the enforcement of the right to food and suggests that the right to food may benefit from enforcement mechanisms other than judicial and legally binding ones (at p. 195). See also P. CLAEYS, 2015, “The Right to Food: Many Developments, More Challenges”, *Canadian Food Studies - La Revue Canadienne des Etudes sur l'Alimentation*, Vol. 2, (2 - Special Issue).

¹⁵⁹ A. CHRISTINCK AND M. WALLOE TVEDT, 2015, “The Upov Convention, Farmers’ Rights and Human Rights”, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH; LA VIA CAMPESINA AND GRAIN, “Seed Laws That Criminalize Farmers”, 2015 and T. BRAUNSCHEWIG *et al.*, “Owning Seeds, Accessing Food - a Human Rights Impact Assessment of Upov 1991 Based on Case Studies in Kenya, Peru and the Philippines”, 2014 THE BERNE DECLARATION; see also L. R. HELFER, “Mapping the Interface between Human Rights and Intellectual Property”, in C. GEIGER (eds), *Research Handbook on Human Rights and Intellectual Property*, Cheltenham, Edward Elgar Publishing Limited, 2015.

¹⁶⁰ The right to food requires that everyone has adequate access to food or the means to procure it. See *Report of Special Rapporteur on the Right to Food*, UNITED NATIONS GENERAL ASSEMBLY (Aug. 22, 2010), available at <http://www.righttofood.org/new/PDF/A62289.pdf>.

between states constitutes a very important aspect in understanding the seed regime-complex, due to the legal focus of the present research and to a lack of training in international relations (IR), I do not claim to conduct research following IR methods.¹⁶¹ Again, further research in the field would benefit the resolution of the issues at stake.

§ 2 The plant genetic resources for food and agriculture material scope

As for the material scope, it is limited to plant genetic resources for food and agriculture covered by the Treaty (Article 3). The Treaty defines PGRFA as “any genetic material of plant origin of actual or potential value for food and agriculture”.¹⁶² The Treaty defines “*genetic material*” as “any material of plant origin, including reproductive and vegetative propagating material, containing functional units of heredity.” However, the MLS creates a more restrictive sub-category of seeds, listed in Annex I to the Treaty. Article 11.2 stipulates that the MLS covers only the “PGRFA listed in Annex I that are under the management and control of the Contracting Parties and in the public domain.” Article 12.3 (a) further specifies that “access shall be provided solely for the purpose of utilization and conservation for *research, breeding and training for food and agriculture*, provided that such purpose does not include chemical, pharmaceutical and/or other non-food/feed industrial uses.” (Emphasis added)¹⁶³ This means that PGRFA that are used for another purpose, such as the production of bio-fuels, cosmetics or pharmaceuticals are not considered as PGRFA under the MLS. This distinction is important as the exchange mechanism and applicable law will differ when the subject matter is PGRFA or other plant genetic resources (i.e. plant genetic resources used for bio-fuels, cosmetics, pharmaceuticals, etc.). Indeed, for the latter, it is most likely that the CBD and its access and benefit-sharing (ABS) obligations under the Nagoya Protocol are applicable.¹⁶⁴

¹⁶¹ Yet, IR publications are referred to when appropriate; e.g. S. JUNG CURT, “Institutional Interplay in International Environmental Governance: Policy Interdependence and Strategic Interaction in the Regime Complex on Plant Genetic Resources for Food and Agriculture,”.

¹⁶² Plant Treaty, Article 2.

¹⁶³ See Chapter 4, section 2 for an extensive explanation of the Treaty scope issues.

¹⁶⁴ See Chapter 2, section 5.

§ 3 The temporal scope

Lastly, regarding the temporal scope, the historical analysis of seed management is limited to a period of time covering the second half of the twentieth century (1960-2000), and the legal analysis of the implementation of the Treaty is concentrated on the last decade (2004-2016). This temporal scope covers the important historical facts that have influenced the design of the Treaty, i.e. the development of IPRs and plant breeders' rights; the rise of Farmers' Rights and the recognition of States' sovereign rights over their genetic resources; and the emergence of a common governing tool to manage PGRFA.

Section 7. Contribution to the state of the art

The added value of this research is three-fold: on the theoretical level; on the methodological level; and on the technical level.

§ 1 Contribution to the theoretical state of the art

On the theoretical level, it is the first time that a legal analysis of the Plant Treaty is carried out in such depth, screening all legal documents related to the Treaty negotiation and implementation (until October 2015). Furthermore, the legal analysis has been expanded to include policy dimension, in order to take into account the fact that the international regulation of PGRFA is a highly politicized topic.¹⁶⁵ Added to this, it is also the first time that the Treaty is examined using a governance lens, i.e. the theory of the commons, and with an all-embracing perspective. The identification of six important underlying principles relating the Treaty to the theory of the commons is a contribution to the understanding of the commons theory. Using these principles as well as the classic (Ostrom) and new vogue (*inter alia* Mattei, Dardot and Laval) commons scholars' work to make normative proposals towards redesigning an effective global seed commons constitutes a further contribution to the study of the theory of the commons.

¹⁶⁵ In 2010, a legal thesis on the Treaty was carried out in a restrictive approach; see T. T. V. DINH, 2010, "Le Traité International Sur Les Ressources Phytogénétiques Pour L'alimentation Et L'agriculture: Instrument Innovant Pour La Gestion De L'agro-Phytodiversité" (Université de Limoges, 2010).

§ 2 Contribution to the methodological state of the art

On the methodological level, widening the research methods to other concepts, theories and methods from other disciplines (political sciences, sociology, and anthropology) allows to embrace a 360° analysis of the subject. Doing so addresses well topics relating to sustainable development, such as the Treaty. Undertaking a legal and a stakeholder analyses through the lens of governance enables to cover many different aspects, which a sole legal analysis would miss. This method also answers the rising call to implement interdisciplinary methods in scientific research. Furthermore, doing so using an inductive research approach (starting from the context and moving up towards a case-study and finally towards a theory) is unusual and original, as generally, a theory is applied to a specific case study. While results found by using an inductive approach are more uncertain, it allows for greater creativity in the normative contribution to the state of the art.

§ 3 Contribution to the technical state of the art

Finally, at a technical level, this thesis aims at formulating recommendations addressed at Treaty stakeholders. Following the identification of 17 constraints in the implementation of the Treaty, eight specific conceptual constraints are highlighted as problematic in the current design of the common management of seeds. Using the theory of the commons and specifically identified underlying principles, eight recommendations are made to mitigate these conceptual constraints and feed the debate and negotiations during the review process of the Treaty, currently taking place in the Governing Body. Thereby, the author of the present work hopes to contribute to clarifying challenging issues at stake during the Treaty's review process and guiding the redesign of an effective global seed commons for reaching food security and sustainable agriculture.

PART I PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE MANAGEMENT: DIGGING THE SOIL TO REVEAL FERTILITY FOR COLLABORATION

Part I of this book aims at drawing a complete picture of the international seed regulatory system that developed during the twentieth century. The objective is to understand the past system in order to assess the present regulatory setting (in Part II) and suggest ways forward to amend a future more equitable and effective scheme (Part III). The hypothesis framed is that the historical evolution of PGRFA management has shifted from the consideration that seeds are public goods, freely available to all, to the consideration that seeds are overly privatized goods, accessible to only a few following strict (legal, economic and technical) access conditions. This evolution has crystallised an imbalance of rights pertaining to seeds and contributed to further limiting access to and exchanges of seeds between all stakeholders, thereby endangering seed conservation and sustainable use.

To verify this hypothesis, two research questions are raised (one per Chapter): What is the historical evolution of the international seed management system before the Plant Treaty came into force (Chapter 2)? What core tensions hamper the international seed management system (Chapter 3)?

To answer these questions, three steps are taken simultaneously. First, a legal analysis of the international instruments¹⁶⁶ relating to seed management has been carried out following the rules of public international law in Treaty interpretation.¹⁶⁷ Second, a wide literature review on the PGRFA management history has been undertaken at the international level – from the mid twentieth century to nowadays – both from scientific legal and non-legal literature. Third, a contextual analysis¹⁶⁸ inspired by socio-anthropological methodologies has been carried out in order to grasp the subtleties of the law in practice in the Plant Treaty forum. It is used as a support tool to clarify the context and understand the law accordingly. The literature review, legal study and supporting contextual analysis provide a thorough historical-legal description of the international instruments managing seeds between 1950 and

¹⁶⁶ These international instruments include the International Undertaking, the CBD, the UPOV and the TRIPS Agreement.

¹⁶⁷ Vienna Convention on the Law of Treaties, 23 May 1969, 8 I.L.M. 679; Articles 31-33 in particular. The same method is used to study the Plant Treaty in Part II below but in more depth. Indeed, as these conventions are not central to this dissertation, the analysis carried out for these international instruments is concise and limited to the articles that directly relate to or impact the PGRFA regulatory system, and does not cover the whole instruments mentioned.

¹⁶⁸ For details on the contextual analysis see Chapter 1, Section 5.

2004, which constitutes the basis for the evaluation of the current International Treaty regulatory setting, covered in Part II of this book.

Part I comprises two chapters. The first one (Chapter 2) describes the historical evolution of PGRFA management and the international instruments that have an impact on seed management. The chapter details the PGRFA international regulatory setting, from the birth of agriculture and its early developments through unfettered access to PGRFA, the rise of modern biotechnology and intellectual property rights crystallizing the appropriation movement to PGRFA. The Chapter covers the International Undertaking on Plant Genetic Resources (IU), the Convention on Biological Diversity (CBD), the International Union for the Protection of New Varieties of Plants (UPOV 1991 agreement) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). The second chapter (Chapter 3) analyses the tensions arising from this multifaceted international regime complex. Chapter three exposes four major challenges encountered by stakeholders in the exchanges of PGRFA. These challenges are: the tension between “public seeds” and intellectual property rights; the tension between advancements in biotechnology and small-scale farmers; the tension between “farmers’ seed systems” for the exchanges of PGRFA and national or international “over-regulation” of access to seeds; and the North/South divide.

Part I highlights the major developments arising from the historical evolution of PGRFA management: i.e. the international regime complex for PGRFA and the “hyperownership”¹⁶⁹ of seeds. From these developments, tensions have emerged, which express an imbalance of rights pertaining to seeds: private hyperownership of seeds (through legal and technological tools) overpower collective rights over seeds (e.g. through ineffective Farmer’s Rights). Part I concludes that, at the beginning of the nineties, the international community needed to design a new international convention to overcome these tensions: the International Treaty on Plant Genetic Resources for Food and Agriculture. The Treaty will then be assessed in Part II, in order to verify whether the current regime overcomes the above mentioned imbalance of rights.

¹⁶⁹ Safrin defines “hyper-ownership” as the “exclusive ownership and restrictions on the sharing of genetic material.” S. SAFRIN, 2004 *op.cit.* at p. 641.

Chapter 2 A History of the Seed International Regulatory Setting

“In this book, we shall be dealing with evolution. (...) We shall deal with the activities of man that have shaped the evolution of crops and with the influences of crops in shaping the evolution of human societies.”

Jack R. Harlan (1975), *“Crops and Man”*¹⁷⁰

Alongside the evolution of agricultural crops, regulatory developments through history around the exchange of seeds bring an important insight in the way stakeholders and institutions have managed these exchanges. Understanding the historical timeline of PGRFA exchanges, including the wider picture of all international instruments relevant to seed exchanges¹⁷¹ contributes to identifying challenges in the functioning of the Plant Treaty and its Multilateral System. The research objective of this Chapter is to describe the intertwined forces and rules that have grown fast during the second half of the twentieth century, and which form the basis on which the current legal setting of the Treaty is constructed.¹⁷²

In order to reach this objective, the following sub-research questions are answered: What is the evolution in plant genetic resources for food and agriculture management since the birth of agriculture? What regime have the relevant international instruments created in the international seed management?

To answer these questions, a descriptive research method is used to “systematically analyze a legal phenomenon in all its components to present it in an accurate, significant and neatly arranged way”.¹⁷³ This systematic analysis leads to divide this Chapter into six sections. Section 1 briefly describes the birth of agriculture. Section 2 focuses on the loss of biological diversity and traces back to early collection missions and ex situ conservation programs. Section 3 moves on to the modern biotechnology era and explains how these technologic advancements and their correlated opening up of IPRs regulations led to the increase of the economic value of genetic resources and to the further commodification of PGRFA. Section 4

¹⁷⁰ J. R. HARLAN, 1975, *“Crops & Man”*, Madison, Wis., American Society of Agronomy, at p. 3.

¹⁷¹ S. BRAGDON, 2004, “International Law of Relevance to Plant Genetic Resources: A Practical Review for Scientists and Other Professionals Working with Plant Genetic Resources”, *Issues in Genetic Resources*, Vol. 10, at p. 12.

¹⁷² Keith Aoki provides an in depth account of the history of seed management, although looking far more towards American evolution. See K. AOKI, 2010, “Seeds of Dispute: Intellectual-Property Rights and Agricultural Biodiversity”, *Golden Gate University Environmental Law Journal*, Vol. 3, (1).

¹⁷³ Lina Kestemont, “Methods for traditional legal research”, Reader ‘Methods of Legal research’, 2015, research Master in Law, KU Leuven – University of Tilburg, p. 5.

explains how the International Undertaking on Plant Genetic Resources has failed to keep PGRFA in the public domain, while Section 5 relates to the rise of States' sovereign rights over genetic resources and its concretization through the Convention on Biological Diversity and its Nagoya Protocol. Finally, Section 6 expands on the reinforcement of seed appropriation through the International Union for the Protection of New Varieties of Plants (UPOV) 1991 and the 1994 Trade-related aspects of Intellectual Property Rights Agreement (TRIPS Agreement) of the World Trade Organisation. Each Section of this Chapter ends with a concise “history box” highlighting the important events that took place over that period of time.

Section 1. The birth of agriculture and its developments

Ten thousand years ago, domestication of crops began and human movements initiated the wide geographical spread of crops. Humans started their transition from nomad hunters-gatherers to sedentary farmers,¹⁷⁴ which has allowed for the development of agriculture and of agricultural biodiversity over the last millennia. For example, Sumerians and Egyptians actively collected PGRFA.¹⁷⁵ Cultural contacts and interactions have resulted in extensive crop diffusion and global transfer of PGRFA.¹⁷⁶ The discovery of the Americas further boosted the intercontinental exchanges. “For millennia, common heritage has been implicitly used as the principle governing the diffusion of crop and animal genetic resources from centres of domestication, their exchange among farmers, and their introduction into new continents, in particular between the Old and the New Worlds after 1492.”¹⁷⁷ The birth and expansion of agriculture¹⁷⁸ was made possible thanks to free exchanges of seeds between farmers resulting in domestication and diversification of cultivated crops. This trend still constitutes the core

¹⁷⁴ G. COCHRAN AND H. HARPENDING, 2009, *"The 10,000 Year Explosion: How Civilization Accelerated Human Evolution"*, Basic Books, at pp.65-84.

¹⁷⁵ J. ESQUINAS-ALCAZAR, 2005 *op.cit.*.

¹⁷⁶ Gepts provides many examples of crop domestication in P. GEPTS, 2004, "Crop Domestication as a Long-Term Selection Experiment", *Plant Breeding Reviews*, Vol. Vol. 24, (2), at pp. 1-44.

¹⁷⁷ P. GEPTS, 2004, "Who Owns Biodiversity, and How Should the Owners Be Compensated?", *Plant Physiology*, Vol. 134, (4)

¹⁷⁸ The study of the origins of agriculture and the historical development of farming has led to the development of several theories. The analysis of these theories fall outside the scope of this research, but further information can be found inter alia in the following work C. O. SAUER, 1952, *"Agricultural Origins and Dispersals"*, New York,, American Geographical Society, D. RINDOS, 1984, *"The Origins of Agriculture : An Evolutionary Perspective"*, Orlando, Academic Press, or C. A. REED, 1977, *"Origins of Agriculture"*, The Hague, Mouton. Harlan provides an overview of these theories J. R. HARLAN, 1995, *"The Living Fields : Our Agricultural Heritage"*, Cambridge [England] ; New York, NY, USA, Cambridge University Press. A much briefer and very accessible history of seed cultivation can be found in K. AOKI, 2008, *"Seed Wars : Controversies and Cases on Plant Genetic Resources and Intellectual Property"*, Durham, N.C., Carolina Academic Pressat Chapter 2. For a more oriented story, see J. R. KLOPPENBURG, "First the Seed. The Political Economy of Plant Biotechnology, 1492-2000," (Madison, Wisconsin: University of Wisconsin Press, 2004).

pattern for the realization of the present PGRFA management system. However, the historical descriptions below will not focus so much on these early periods of time but rather on the nineteenth century onwards. One should recall however, that throughout agricultural history, many conflicts have occurred and revolved around the access to and use of genetic resources. As Fowler and Mooney remark: “[f]rom the earliest times, ownership and control of plants and their diversity have been much more than merely scientific or technical concerned. They have been and will continue to be profoundly political. The strength of nations has risen and fallen; great fortunes have been made and lost; and people have enjoyed plenty or suffered hunger at least in part because of who owned, controlled, used, and benefited from genetic diversity, and who did not.”¹⁷⁹

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| <ul style="list-style-type: none">• 10,000 years ago: Domestication and geographic spread of crops• c. 8000 BC: Men turns from nomad hunters-gatherers to sedentary farmers• c. 3000 BC: Sumerians and Egyptians actively collect PGRFA• Last millennia: Development of agriculture and agricultural biodiversity• 1492: The discovery of America boosts intercontinental exchange |
|--|

Table 2.1: The birth of agriculture

Section 2. The loss of biological diversity: wide collection and international ex situ conservation programmes as a response

§ 1 Setting up an international collection and conservation agenda

In the nineteenth century, discoveries by Charles Darwin¹⁸⁰ and Gregor Mendel¹⁸¹ proved the importance of genetic diversity for biological evolution and adaptation. Scientists

¹⁷⁹ C. FOWLER AND P. R. MOONEY, 1990, "*Shattering : Food, Politics, and the Loss of Genetic Diversity*", Tucson, University of Arizona Press at p. 200.

¹⁸⁰ Charles Darwin is recognized to be the first scientist addressing the origin of species, C. DARWIN, 1859, "*On the Origin of Species by Means of Natural Selection*", London, J. Murray; however, regarding plants evolution Alphonse de Candolle first discovered the geographic origin of cultivated plants. Alphonse de Candolle (1806-93) was a French-Swiss botanist who was an important figure in the study of the origins of plants and the reasons for their geographic distribution. He also created the first Code of Botanical Nomenclature. A. D. CANDOLLE, 1883, "*Origine Des Plantes Cultivées*", Paris,, G. Baillièere et cie This work is his most famous and influential book, tracing the geographic origins of plants known to have been cultivated by humans. It is one of the earliest studies of the history of crop domestication, and an important contribution to phytogeography.

¹⁸¹ Gregor Johann Mendel (1822– 1884) is known as the "father of modern genetics", because he demonstrated that the inheritance patterns of certain traits in pea plants. His contributions to the new science of genetics are now referred to as the laws of Mendelian inheritance.

started to pay attention to the importance and potential value of genetic diversity,¹⁸² and governments of developed countries began to subsidize major collecting campaigns.¹⁸³ European nations set up a global network of botanical gardens,¹⁸⁴ and the US (which is fairly poor in genetic diversity, see table 4.1 in Chapter 4) played a key role in the collection, transfer and exploitation of PGRFA.¹⁸⁵ Aoki provides several examples of American funded seed collection projects during the nineteenth century, explaining that only a State power could bear the weight and costs of such collecting and breeding activities that constituted the basis of a stable American agricultural foundation.¹⁸⁶ Later, in the twentieth century, Nikolai Vavilov,¹⁸⁷ a famous Russian botanist and geneticist, identified eight centres of origin of cultivated plants and showed that cultivated plants originated in primary and secondary centres of origin and diversity.¹⁸⁸ He spent his lifetime collecting, studying and improving wheat, corn, and other cereal staple crops¹⁸⁹ and created in St. Petersburg one of the biggest gene banks in the world: the N.I. Vavilov Institute of Plant Industry.

After World War II, conscious about the value of genetic diversity and worried by their continuing loss,¹⁹⁰ member states of the newly born United Nations' Food and Agriculture Organization (FAO) decided to put the issue on their agenda. In 1958, the US established the first national gene bank of long-term storage (the National Seed Storage Laboratory (NSSL) in

¹⁸² For more detail on the value of biodiversity, see Chapter 3, Section 3.2. See also S. BIBER-KLEMM AND T. COTTIER (eds.), *Rights to Plant Genetic Resources and Traditional Knowledge. Basic Issues and Perspectives*, Berne, CAB International, 2005 at pp. 7-10.

¹⁸³ K. AOKI, "Seed Wars : Controversies and Cases on Plant Genetic Resources and Intellectual Property", *op. cit.* at pp. 12-16

¹⁸⁴ Lucille H. Brockway (1979) *Science and Colonial Expansion: The role of the British Royal Botanical Gardens*; cited in K. AOKI, "Seed Wars : Controversies and Cases on Plant Genetic Resources and Intellectual Property", *op. cit.* at p. 11. For a more oriented view, see also J. R. KLOPPENBURG, "First the Seed. The Political Economy of Plant Biotechnology, 1492-2000," at pp. 156-157.

¹⁸⁵ For details on the US national plant germplasm system, see H. L. SHANDS, 1995, "The U.S. National Plant Germplasm System", *Canadian Journal of Plant Science*, Vol. 75, (1). According to Pistorius, the Rockefeller Foundation is the most advanced and best-organized collection and conservation project during the 1940'-50', R. PISTORIUS, 1997, "Scientists, Plants and Politics : A History of the Plant Genetic Resources Movement", Rome, Italy, IPGRI at pp. 5-7.

¹⁸⁶ K. AOKI, "Seed Wars : Controversies and Cases on Plant Genetic Resources and Intellectual Property", *op. cit.* at pp. 13-14.

¹⁸⁷ Nikolai Ivanovich Vavilov (1887 – 1943). While developing his theory on the centres of origin of cultivated plants, Vavilov organized a series of botanical-agronomic expeditions and collected seeds all over the world. For more information, see S. B. BRUSH, 2004, "Farmers' Bounty Locating Crop Diversity in the Contemporary World", *Yale agrarian studies series*, Vol. at pp. 25-28; R. ANDERSEN, 2008, "Governing Agrobiodiversity : Plant Genetics and Developing Countries", Aldershot, Hampshire, England Burlington, VT, Ashgate at pp. 17-19.

¹⁸⁸ A "centre of origin" can be defined as the geographic region in which a crop first arose. The notion of centre of origin has been subject to debates, and is commonly replaced by the expression "centre of diversity", which can be defined as the geographic region in which the greatest variability of a crop occurs. A "primary centre of diversity" is the region of true origin of a species; while "secondary centres" are regions of subsequent spread of a crop.

¹⁸⁹ N. I. VAVILOV AND V. F. DOROFFEV, 1992, "Origin and Geography of Cultivated Plants", Cambridge [England] ; New York, NY, USA, Cambridge University Press.

¹⁹⁰ Dirzo and Raven warn that "[f]or the past 300 years, recorded extinctions for a few groups of organisms reveal rates of extinction at least several hundred times the rate expected on the basis of the geological record. The loss of biodiversity is the only truly irreversible global environmental change the Earth faces today." R. DIRZO AND P. H. RAVEN, 2003, "Global State of Biodiversity and Loss", *Annual Review of Environment and Resources*, Vol. 28, (1) at pp. 158-160.

Fort Collins, Colorado).¹⁹¹ In 1948 already, FAO created a clearinghouse for plant exploration, recording living collections and removing artificial barriers in the exchange of plants.¹⁹² Following this initiative, three international technical conferences on plant genetic resources were held by FAO in 1967, 1973, and 1981.¹⁹³ These conferences contributed to raise awareness on the importance of PGRFA conservation. Between 1964 and 1974, the objective of FAO and the International Biological Programme (IBP)¹⁹⁴ was to make a wide survey on genetic resources in the fields to identify where priority exploration and conservation programmes were needed; to develop long-term conservation of seeds (which mainly took the form of *ex situ* gene banks); to develop a cooperative network of seed storage laboratories and to document in a more systematic manner all genetic information¹⁹⁵ through the creation of a Global Ex Situ Conservation Network.¹⁹⁶ The overall objectives were to “assemble, and in many instances to salvage what is left of the crop genetic resources, to see that it is preserved against loss and deterioration, to make it generally available to those who can evaluate and use it, and to process and publish all available evaluation records for the benefit of all users.”¹⁹⁷

In the early 1970s, Prof. Harlan, a famous botanist and geneticist teaching at the University of Illinois Urbana-Champaign, warned that the increase of world population would lead to major hunger crises and that although there would be industrial solutions to food problems, in reality “there seems to be no way out.”¹⁹⁸ Furthermore, Frankel and Hawkes argued that the amplification of pollution and of seed loss¹⁹⁹ made it urgent for stakeholders to organize themselves through a global exchange network to “save what can be saved.”²⁰⁰ In 1972, the UN Conference on the Human Environment held in Stockholm strengthened the

¹⁹¹ See S. B. BRUSH, 2004, "Farmers' Bounty Locating Crop Diversity in the Contemporary World", *op.cit.at pp. 195-196*.

¹⁹² R. PISTORIUS, *cit.at pp. 10-14*.

¹⁹³ J. T. ESQUINAS-ALCAZAR, 1993, "The Global System on Plant Genetic Resources", *Review of European Community & International Environmental Law*, Vol. 2, (2) at p. 151.

¹⁹⁴ The International Biological Programme was an effort between 1964 and 1974 to coordinate large-scale ecological and environmental studies. For details, see R. PISTORIUS, *cit.at Chapter 2*, and O. H. FRANKEL AND J. G. HAWKES, 1975, "*Crop Genetic Resources for Today and Tomorrow*", Cambridge Eng. ; New York, Cambridge University Press at Chapter 1.

¹⁹⁵ O. H. FRANKEL AND J. G. HAWKES, *cit.at Chapters 1 and 37*.

¹⁹⁶ Details on the initial global network project are available in O. H. FRANKEL AND J. G. HAWKES, *cit.at Chapter 37*, and in R. PISTORIUS, *cit.at Chapter 4*.

¹⁹⁷ O. H. FRANKEL AND J. G. HAWKES, *cit.at p. 473*.

¹⁹⁸ J. R. HARLAN, "*Crops & Man*", *op. cit.at p. 267*.

¹⁹⁹ In the same sense, see E. CHRISTENSEN, 1987, "A Proposal to Preserve Genetic Diversity for Future Generations", *Stanford Law Review*, Vol. 40, (1) at p. 281.

²⁰⁰ O. H. FRANKEL AND J. G. HAWKES, *cit.at Chapter 37*.

international agenda for collecting PGRFA and building long-term storage banks.²⁰¹ “Strongly worded recommendations were carried urging governments and UN agencies to save and preserve irreplaceable genetic resources for the good of present and future generations.”²⁰² The Governing Council of the United Nations Environment Programme (UNEP) allocated substantial funds to this aim. Besides, the Consultative Group on International Agricultural Research (CGIAR)²⁰³ created the International Board for Plant genetic Resources (IBPGR) in 1974 which, together with other CGIAR-supported International Agricultural Research Centres (IARC),²⁰⁴ set up wide collection missions²⁰⁵ in response to the rapid erosion of PGRFA resulting *inter alia* from the “Green Revolution”.²⁰⁶ Andersen notes that “the erosion of PGRFA had been increasing at an unprecedented rate due to the ‘green revolution’, and the efforts of the IBPGR were vital to saving plant varieties in danger of extinction.”²⁰⁷ The financial administration of these collection and conservation activities was assigned to the newly created IBPGR^{208, 209} while the FAO Expert Panel constituted in 1972 at a conference in

²⁰¹ S. B. BRUSH, 2004, "Farmers' Bounty Locating Crop Diversity in the Contemporary World", *op.cit.* at p. 196.

²⁰² O. H. FRANKEL AND J. G. HAWKES, *cit.at pp.* 4-5.

²⁰³ The CGIAR grew out of the international response to widespread concern in the 1950s, '60s and early '70s that many developing countries would succumb to hunger. Experts predicted widespread and devastating famine between 1970 and 1985, with hundreds of millions starving to death. The roots of the CGIAR go back almost 3 decades before its formal inauguration, beginning with a collaborative program between Mexico and the Rockefeller Foundation. High-yielding semidwarf varieties of wheat developed in Mexico in the 1950s and of rice developed in the Philippines in the 1960s demonstrated the potential of publicly funded international agricultural research to unlock the productivity of smallholder farms in the developing world. A series of senior consultations — known as Bellagio conferences- invited the World Bank to set up a consultative group for international agricultural research, similar to other groups that it had created to coordinate and support development in individual countries. The World Bank accepted the challenge and led the effort to create the CGIAR in 1971. FAO and UNEP worked with the World Bank as cosponsors, subsequently joined by the International Fund for Agricultural Development. For more information see <http://www.cgiar.org/who/history/index.html>

²⁰⁴ For details, see below Chapter 5, Section 2; see also G. MOORE AND E. FRISON, "International Research Centres - the Consultative Group on International Agricultural Research and the International Treaty on Plant Genetic Resources for Food and Agriculture", in C. FRISON, F. LÓPEZ, AND J.T. ESQUINAS-ALCAZAR (eds), *Plant Genetic Resources and Food Security: Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*, Washington, DC, Earthscan, Bioversity International and FAO, 2011.

²⁰⁵ D. L. PLUCKNETT *et al.*, 1983, "Crop Germplasm Conservation and Developing Countries", *Science*, Vol. 220, (4593).

²⁰⁶ The Green Revolution refers to R&D and technology transfer initiatives particularly in the developing world that increased agricultural production worldwide, beginning most markedly in the late 1960s. This movement was led by Norman Borlaug, the "Father of the Green Revolution," who won the Nobel Peace Prize in 1970. It was credited with saving over a billion people from starvation, involved the development of high-yielding varieties of cereal grains, expansion of irrigation infrastructure, modernization of management techniques, distribution of hybridized seeds, synthetic fertilizers, and pesticides to farmers. However, today the Green Revolution is widely criticized by some authors for several reasons, including the erosion of a wide diversity of local and traditional varieties of crops. In the book F. M. LAPPÉ, J. COLLINS, AND C. FOWLER, 1979, *Food First : Beyond the Myth of Scarcity*, New York, Ballantine Books, the authors condemn the social and economic consequences of the Green Revolution because the boost of food production in some developing countries replaced valuable traditional varieties with high-yielding new varieties of rice and wheat; For an assessment of the movement, see also L. TANGLEY, 1987 *op.cit.*

²⁰⁷ R. ANDERSEN, *cit.at p.* 89. See also S. BRAGDON, 2004 *op.cit.at pp.* 13-14.

²⁰⁸ Activities undertaken by the IBPGR are clearly explained in E. CHRISTENSEN, 1987 *op.cit.* at pp. 292-295.

²⁰⁹ After 20 years of existence within FAO, the IBPGR became an independent intergovernmental organization, named IPGRI (International Plant Genetic Research Institute), which scope of research was widened from the initial emergency collection of plant genetic resources to the larger promotion of conservation of plant genetic resources through use. Reflecting the fact that the mandate of the organization now covers all forms of biodiversity (i.e. plants, animals, microbials, etc.), it integrated one of

Beltsville, US, acted as its technical committee.²¹⁰ The die was cast for 20 years of conservation efforts²¹¹ mainly focused on *ex situ* collections,²¹² at the expense of *in situ* conservation and of crop diversity on farms.²¹³

§ 2 Importance of crop diversity and the continuing loss of PGRFA

In spite of its vital importance for human survival, PGRFA are still being lost at an alarming rate, both *in situ* and *ex situ*.²¹⁴ Hundreds of thousands of farmers' heterogeneous plant varieties and landraces, which have been developed for generations in farmers' fields until the beginning of the twentieth century, have been substituted by a very small number of modern and highly uniform commercial varieties.²¹⁵ In the US alone, more than ninety percent of the fruit trees and vegetables that were grown in farmers' fields at the beginning of the twentieth century can no longer be found. Today only a few of them are maintained in gene banks. In Mexico, only twenty percent of the maize varieties described in 1930 are still known. In China, in 1949 nearly 10,000 wheat varieties were known and used. By the 1970s, only about 1000 remained in use. A similar picture is reported for melon varieties in Spain. In 1970, over 350 local varieties of melons were collected and documented; today no more than five percent of them can still be found in the field. The picture is much the same throughout the world.²¹⁶ The FAO's first report on the State of the World's PGRFA²¹⁷ estimated that some 7000 species had been used by mankind to satisfy human basic needs, while today no more than thirty cultivated species provide ninety percent of human calorific food supplied by plants. Furthermore twelve plant species alone provide more than seventy percent of all

the other IARC – the International Network for the Improvement of Banana and Plantain, INIBAP- and changed its name to Bioversity International since 2006, although the legal name remains unchanged.

²¹⁰ O. H. FRANKEL AND J. G. HAWKES, *cit.* For a clear historical account of these events, see R. PISTORIUS, *cit. at Chapters 1 to 4*.

²¹¹ S. JOHNSTON, 1993, "Conservation Role of Botanic Gardens and Gene Banks", *Review of European Community & International Environmental Law*, Vol. 2, (2).

²¹² A slightly more detailed account of this historical period can be found in C. FOWLER, 1994, Gordon and Breach Science Publishers, Yverdon at pp. 152-159.

²¹³ C. FOWLER, *cit.* at pp. 184-188. For details on this controversy, see inter alia S. B. BRUSH, 2004, "Farmers' Bounty Locating Crop Diversity in the Contemporary World", *op.cit. at Chapter 9*.

²¹⁴ J. STARR AND K. C. HARDY, 1993, "Not by Seeds Alone: The Biodiversity Treaty and the Role for Native Agriculture", *Stanford Environmental Law Journal*, Vol. 12, (1) at pp. 86-87.

²¹⁵ FAO, "The State of the World's Plant Genetic Resources for Food and Agriculture", 1996 at p. 165. However, a very recent study on the genetic diversity of commercial varieties of vegetables and apples states that the number of apple and vegetable commercial varieties between 1903 and 2004 has been sustained, see P. J. HEALD AND S. CHAPMAN, 2012, "Veggie Tales: Pernicious Myths About Patents, Innovation, and Crop Diversity in the Twentieth Century", *U. Ill. L. Rev.*, Vol. 11, (03).

²¹⁶ FAO, "Report of the Commission on Genetic Resources for Food and Agriculture. Third Extraordinary Session", 1996 at Chapter 1.

²¹⁷ FAO's first report on the State of the World's PGRFA - SoW1-PGRFA, 1996.

human calorific food and a mere four plant species (potatoes, rice, maize and wheat) provide more than half of all human calorific food.²¹⁸

The genetic vulnerability,²¹⁹ which is caused by the loss of agricultural biological diversity,²²⁰ has not only affected small farmers' livelihoods, but has also drastically reduced the capability of present and future generations to adapt to changing conditions. In addition, many neglected crops and many wild relatives of crops are expected to play a critical role in food, medicine and energy production in the near future. Efforts for the conservation of crop diversity and their sustainable use therefore need to be continued and increased.²²¹ In this spirit, already in 1990, Fowler and Mooney had identified five "laws" of genetic diversity conservation, which are still accurate even twenty-five years later:

"(1) Agricultural diversity can only be safeguarded through the use of diverse strategies; (2) What agriculture diversity is saved depends on who is consulted. How much is saved depends on how many people are involved; (3) Agricultural diversity will not be saved unless it is used; (4) Agricultural diversity cannot be saved without saving the farm community. Conversely, the farm community cannot be saved without saving diversity; (5) The need for diversity is never-ending. Therefore, our efforts to preserve this diversity can never cease."²²²

- 1859 and 1866: Discoveries by Charles Darwin and Gregor Mendel
- End nineteenth century: Plant expeditions and first national gene banks
- Beginning twentieth century: Colonialism opens new markets for PGRFA
- 1930s: Nikolai Vavilov identifies 8 centres of origin of crop diversity
- Post World War II: Creation of international institutions dealing with plant genetic resources (FAO, CGIAR)
- 1948: FAO starts technical work on PGRFA collection and conservation
- 1960s: Green Revolution R&D and technology transfer initiatives
- 1974: Creation of the International Board for Plant Genetic resources (now Bioversity International) to support collection and conservation

Table 2.2: The loss of biological diversity

²¹⁸ FAO, "Report of the Commission on Genetic Resources for Food and Agriculture. Third Extraordinary Session", 1996.

²¹⁹ Genetic vulnerability may be described as the poor deployment of genetic diversity in agricultural production systems. More details are provided below in Chapter 3.

²²⁰ E. CHRISTENSEN, 1987 *op.cit.*.

²²¹ C. FOWLER AND T. HODGKIN, 2004 *op.cit.*

²²² C. FOWLER AND P. R. MOONEY, *cit.at p. 218.*

Section 3. The rise of the breeding industry, modern biotechnology and IPRs: genetic resources gain economic value

In the beginning of the twentieth century, hundreds of small companies producing seeds, mostly adapted to local conditions, constituted the seed industry in developed countries. Universities and government agencies were the main creators of new varieties through publicly funded plant breeding programmes,²²³ which were then provided to seed companies for further improvements at little cost or for free.²²⁴ At that time, farmers could reproduce seeds of new varieties easily and “[t]he incentive for private companies to invest in developing new plant varieties was limited because open-pollinated seeds are like a public good – once they exist it is difficult to prevent any farmer from using them (non-excludable), and because they self-reproduce, their use by one farmer does not compete with their use by another (non-rival).”²²⁵

However, the agricultural field and the seed industry landscapes changed dramatically switching drivers from a general public interest to more private ones.²²⁶ Agricultural science had previously been largely supported and financed by public institutions, such as the United States Department of Agriculture (USDA), or the Institut National de Recherche Agronomique (INRA) in France. This trend had reversed by the end of the twentieth century.²²⁷ The progressive commodification²²⁸ of PGRFA and the increase of their economic value²²⁹ were made possible inter alia thanks to two trends: the development of modern biotechnologies

²²³ R. W. HERDT, "Enclosing the Global Plant Genetic Commons," ed. T.R. FOUNDATION (Institute for International Studies, Stanford University, 1999, January 14) at p. 6.

²²⁴ R. W. HERDT, "Enclosing the Global Plant Genetic Commons," at p.4

²²⁵ R. W. HERDT, "Enclosing the Global Plant Genetic Commons," at p. 5.

²²⁶ For a more detailed account of the rise of the breeding sector and the correlated IPR policy see C. FOWLER, *cit.* at pp. 137-151; see also S. JAFFEE AND J. SRIVASTAVA, 1994, "The Roles of the Private and Public Sectors in Enhancing the Performance of Seed Systems", *The World Bank Research Observer*, Vol. .

²²⁷ R. E. EVENSON, "Agricultural Research and Intellectual Property Rights", in K.E. MASKUS AND J.H. REICHMAN (eds), *International Public Goods and Transfer of Technology under a Globalized Intellectual Property Regime*, Cambridge, UK ; New York, Cambridge University Press, 2005 at p. 194. D. SCHIMMELPFENNING, 2010, "Us Public Agricultural Research: Changes in Funding Sources and Shifts in Emphasis, 1980-2005", DIANE Publishing.

²²⁸ The Concise Oxford English Dictionary defines "to commodify" as "to turn into or treat as a mere commodity". The Collins English Dictionary goes further saying that "commodification" is "the inappropriate treatment of something as if it can be acquired or marketed like other commodities". Radin defines commodification as "the social process by which something comes to be apprehended as a commodity, as well as to the state of affairs once the process has taken place." M. J. RADIN, 1996, "Contested Commodities", Cambridge, Mass., Harvard University Press, at p. xi.

²²⁹ See E. CHRISTENSEN, 1987 *op.cit.* at p. 289. Smolders and Bordwin both recognize that it is hard to value PGRFA. See W. SMOLDERS, *Commercial Practice in the Use of Plant Genetic Resources for Food and Agriculture - Background Study Paper N°27*, *commission on genetic resources for food and agriculture*, Vol. at p. 6; H. J. BORDWIN, 1985, "The Legal and Political Implications of the International Undertaking on Plant Genetic-Resources", *Ecology Law Quarterly*, Vol. 12, (4) at p. 1057. However, Ten Kate and Laird have attempted to put numbers on the financial value of the commercialization of agricultural products. See K. TEN KATE AND S. A. LAIRD, 2000, "Biodiversity and Business: Coming to Terms with the 'Grand Bargain'", *International Affairs*, Vol. 76, (2).

with high agricultural research and development (R&D) costs and the political decision to widen IPRs over plants.²³⁰

On the scientific side, the development of hybrid seed, and later of DNA-based techniques (i.e. modern biotechnology) and their application to plants allowed for the production of seeds of special varieties (i.e. genetic modification), for which companies sought IP protection.²³¹ Agricultural economist Robert Herdt states indeed that, contrary to open-pollinated seeds, “[h]ybrid seeds are not public goods because it is possible for companies to exclude farmers from [re]producing their seed.”²³² DNA techniques allow for the development and improvement of a wide range of new plant traits that increase the economic value of plants,²³³ which opened new possibilities for financial benefits.²³⁴ This ability to commodify what was once easily taken and used without any control has opened the door to major landscape changes.²³⁵ What was once a myriad of family-size seed companies producing seeds of hundreds of locally adapted crops, merged to create major agrochemical and seed multinational companies.²³⁶ These mega agro-companies promote uniform high yielding varieties,²³⁷ and control important market shares.²³⁸ Bragdon specifies that by 1996, the world’s top ten agrochemical corporations accounted for 82 percent of global agrochemical sales and that the top ten seed corporations accounted for 40 percent of the commercial seed

²³⁰ S. SAFRIN, 2004 *op.cit.*, at p. 641; see also C. FOWLER, 1994, "Unnatural Selection : Technology, Politics, and Plant Evolution", Switzerland ; Langhorne, Pa. , U.S.A. /, Gordon and Breach. For a clear description of the evolution of IPRs over plants in the US specifically, see K. AOKI, 2010, "Seeds of Dispute: Intellectual-Property Rights and Agricultural Biodiversity", *op.cit.*, at pp. 83-105.

²³¹ Indeed, Evenson says that the « gene revolution » had depended on the development of IPRs. R. E. EVENSON, *op. cit.* at p. 194.

²³² Herdt, Adjunct International Professor of Applied Economics and Management at Cornell University, goes on saying that “[t]hese techniques permit one to routinely distinguish any individual living organism from any other, regardless of how similar they may look. This makes it possible to identify the ancestors of any plant variety and hence the developers of a variety with near certainty, just as in the animal world a sample of DNA can be matched to any individual with near certainty. That certainty provides a way to exercise property rights over seed varieties because now one can prove who created the original variety.” R. W. HERDT, "Enclosing the Global Plant Genetic Commons," at p. 5.

²³³ R. A. SEDJO, 1992, "Property Rights, Genetic Resources, and Biotechnological Change", *Journal of Law and Economics*, Vol. 35, (1) at p. 210.

²³⁴ S. BRAGDON, 2004 *op.cit.* at p. 16.

²³⁵ For a negative assessment of this commodification process, see J. R. KLOPPENBURG, "First the Seed. The Political Economy of Plant Biotechnology, 1492-2000,"

²³⁶ Hope says that the mergier-mania was driven primarily by the need to avoid high transaction costs associated with clearing multiple IPR; cited in Aoki 2008, at p.113.

²³⁷ FAO, "The State of the World’s Plant Genetic Resources for Food and Agriculture", 1996, at p. 165.

²³⁸ A World Bank Report stressed that the way IPRs are implemented affects the structure and concentration of the seed industry and raised concerns for policymakers in the developing world, Niels P. Louwaars et al. (2005), *Impacts of Strengthened Intellectual Property Rights Regimes on the Plant Breeding Industry in Developing Countries. A Synthesis of Five Case Studies*, Report commissioned by the World Bank.

market.²³⁹ These companies have little incentive to produce crops that are important to the poor and disadvantaged farmers who primarily save their own seeds.²⁴⁰ To protect the interests of these companies, developed countries promoted the expansion of the scope of application of IPRs.²⁴¹

On the regulatory side, the development of IP legislations was justified by the argument that R&D in the field of agriculture was very long and costly.²⁴² Breeders and developers therefore needed to be able to get returns on their investment through the exclusive right to exploit their invention for a limited period of time.²⁴³ In the US since 1930 already, varieties of vegetatively propagated plants were patentable under the 1930 Plant Patent Act,²⁴⁴ while sexually propagated plants²⁴⁵ were protected under the Plant Variety Protection Act (PVP Act) since 1970.²⁴⁶ However, Chiarolla notes that the Plant Patent Act voluntarily limits the scope of patent application for food security reasons. According to him, “the 1930 Plant Patent Act was specifically designed for the protection of vegetatively propagated (mainly ornamental) plants only, with the stated intention to exclude staple foods, such as grain, from its scope of application.”²⁴⁷ On the international level, the Union for the Protection of New Plant Varieties (UPOV)²⁴⁸ adopted in 1961 recognized *sui generis* property rights to breeders over improved plant varieties, although still allowing an access policy for research and further breeding.²⁴⁹

²³⁹ S. BRAGDON, 2004 *op.cit.* at p. 16. See also FAO, "The State of the World's Plant Genetic Resources for Food and Agriculture", 1996 at p. 165.

²⁴⁰ R. W. HERDT, "Enclosing the Global Plant Genetic Commons," at pp. 8-9.

²⁴¹ According to Herdt, "The business plans of the mega-seed companies seem straightforward: control everything from genetic engineering of seeds to the selling of seeds to farmers, to marketing plant-grown drugs, modified foods, and industrial products. They aggressively employ patents to claim intellectual property and defend those claims equally aggressively." In R. W. HERDT, "Enclosing the Global Plant Genetic Commons," at pp. 8-9.

²⁴² R. E. EVENSON, *op. cit.* at p. 203.

²⁴³ IPR are said to enable the owner to capture the full value of his individual investments. This aims at encouraging everyone to put time and labour into the development of such resources. The same evaluation is made for other fields than agriculture where IPRs have developed significantly. An example with the biomedical sector can be found in E. VAN ZIMMEREN, "Towards a New Patent Paradigm in the Biomedical Sector? Facilitating Access, Open Innovation and Social Responsibility in Patent Law in the Us, Europe and Japan," see in particular Part II. However, Chiarolla doubts that the positive correlation between stronger IPR protection and higher level of private capital investment in agricultural R&D leads *per se* to the creation of innovation incentives for private behaviour and therefore enables the increase of welfare for society as a whole: C. CHIAROLLA, 2006 *op.cit.* at p. 43. Indeed in 2004, a study by Eaton and van Tongeren demonstrate that increasing IP protection of plant varieties with either PBRs or patents had potential negative effects. See Eaton, D. and van Tongeren, F. (2004) Patents versus Plant Varietal Protection, 8th ICABR International Conference on Agricultural Biotechnology: International Trade and Domestic Production, Ravello, Italy (cited by Chiarolla 'Commodifying Agriculture...' at p. 43).

²⁴⁴ Plant Patent Act of 1930, Pub. L. No. 71-245, 46 Stat. 376 (1930). See R. E. EVENSON, *op. cit.* at p. 192.

²⁴⁵ Sexually propagated plants are those reproduced through ordinary seeds.

²⁴⁶ US Plant Variety Protection Act, 1970 (PVPA), 7 U.S.C. §§ 2321-2582.

²⁴⁷ C. CHIAROLLA, 2006 *op.cit.* at p. 42.

²⁴⁸ UPOV was modified several times, resulting in different Acts, with member states contracting either to the 1961, 1961 amended in 1972, 1978 or 1991 Act.

²⁴⁹ UPOV 1991 Act is explained below in Section 6.

Chapter 2 – History of PGRFA

With the rapid progress achieved by science in the 1980s and 1990s in particular DNA-based techniques, new regulatory structures were needed. In 1980, the US Supreme Court decided in the *Diamond vs. Chakrabarty* case to allow patenting of biological organisms, traits and genes. The Court held that under Title 35 U.S.C. 101, a live, human-made micro-organism is a patentable subject matter. The “respondent’s micro-organism constitutes a ‘manufacture’ or ‘composition of matter’ within that statute.”²⁵⁰ Along with the 1991 modification of the UPOV Convention,²⁵¹ the adoption of the Trade-related Aspects of Intellectual Property (TRIPS) Agreement of 1994²⁵² led to the culmination of a drive for internationally recognized protection of IPRs²⁵³ affecting genetic resources generally.^{254, 255}

What is important to recall from this brief historical background is the shift of perception of control and ownership over PGRFA. Before the World War II, seeds were exchanged easily, for commercial, social and cultural purposes. However, this trend was hampered by several facts including: 1) the realization of the loss of genetic diversity and its subsequent massive collection campaigns by developed countries; 2) the development of new technologies leading to the various revolutions (industrial revolution in the eighteenth century, green revolution in the 1960s, and biotech revolution in the 1990s); 3) the consecutive increase of financial value of specific PGRFA, and the strengthening of IPRs over these PGRFA. These facts have created an atmosphere where poor people, small farmers, and developing countries felt robbed by the multinational companies and developed countries who expanded control over PGRFA (and exclusion of use) through technological and legal means.²⁵⁶ Scholars have named this conflict

²⁵⁰ *Diamond v Chakrabarty*, 447 US 303, 206 USPQ 193 (1980); see also the subsequent case *Ex parte Hibbard*, 227 U.S.P.Q. 443 (1985).

²⁵¹ The 1991 Act however adds restrictions on research and breeding activities. For more details, see below in this Chapter, Section 6.

²⁵² The TRIPS Agreement constitutes Annex 1C of the Marrakesh Agreement Establishing the World Trade Organization (WTO) and was adopted in 1994. It strengthens the recognition of property rights over genetic resources. See {Cullet, 1999 #1842}.

²⁵³ C. CHIAROLLA, 2011, "*Intellectual Property, Agriculture and Global Food Security : The Privatization of Crop Diversity*", Cheltenham, UK ; Northampton, MA, Edward Elgar at p. 76.

²⁵⁴ According to Bosselmann, “the expansion of an international [property right] regime has not only encouraged the technology responsible for potential problems with introduced species, but arguably has created a monopoly situation where the bulk of agricultural seeds are owned by a few, large multinational firms with the resources and technology available to be competitive in this area. Such a monopoly rights system encourages and seeks to solidify an agricultural system that is environmentally damaging and incompatible with the concepts of sustainable development.” K. BOSSELMANN, 1996, "Plants and Politics: The International Legal Regime Concerning Biotechnology and Biodiversity", *Colorado Journal of International Environmental Law and Policy*, Vol. 7, (1), at p. 128.

²⁵⁵ Other regulations such as those controlling plant health inspection, pest control in plants and environmental protection also impact the management of PGRFA; however, they fall outside the scope of the present study. See R. E. EVENSON, *op. cit.* at p 204.

²⁵⁶ See Sections 5 and 6 below.

the “Seed Wars”.²⁵⁷ In the 1980s, Christensen argued that if “the rift between the poor and the rich countries continues to widen, access to germplasm may be lost.”²⁵⁸ This tension²⁵⁹ pushed for the development of international regulation recognizing the common heritage of mankind²⁶⁰ nature of PGRFA in order to secure a free access to these resources for the benefit of present and future generations.

- | |
|---|
| <ul style="list-style-type: none">• 1920s: Development of the first (Filial 1) F1 hybrid crop varieties• 1953: The double-helix structure of DNA is discovered• 1960s: Green Revolution• 1961: Creation of the International Union for the Protection of New Varieties of Plants (UPOV) then revised in 1972, 1978 and 1991.• National legislations restrict access to PGRFA (including through IPRs)• 1980s: <i>Diamond v Chakrabarty</i> U.S. Supreme Court case• 1995: First genetically engineered crop commercialized (GMOs) |
|---|

Table 2.3: Modern biotechnology and intellectual property rights

Section 4. The International Undertaking on Plant Genetic Resources: a failed attempt to keep resources in the public domain

In the 1980s and 1990s, concern arose that genetic diversity from developing countries was being used for profit in the North with no return to the countries of origin.²⁶¹ Initial worry focused on plant breeding and the development of new plant varieties in the North through the use and appropriation of the genetic diversity from the South.²⁶² Developing countries

²⁵⁷ K. AOKI, "Seed Wars : Controversies and Cases on Plant Genetic Resources and Intellectual Property", *op. cit.*; E. CHRISTENSEN, 1987 *op.cit.* at p. 299-301; P. MOONEY, "International Non-Governmental Organizations. The Hundred Year (or So) Seed War – Seeds, Sovereignty and Civil Society – a Historical Perspective on the Evolution of ‘the Law of the Seed’", in C. FRISON, F. LÓPEZ, AND J.T. ESQUINAS-ALCAZAR (eds), *Plant Genetic Resources and Food Security: Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*, Washington, DC, FAO, Bioversity International and Earthscan, 2011.

²⁵⁸ E. CHRISTENSEN, 1987 *op.cit.* at p. 280.

²⁵⁹ More details about this tension is provided below in Chapter 3.

²⁶⁰ See I. MGBEOJI, 2003, "Beyond Rhetoric: State Sovereignty, Common Concern, and the Inapplicability of the Common Heritage Concept to Plant Genetic Resources", *Leiden Journal of International Law*, Vol. 16, (04); and also K. BASLAR, 1998, "The Concept of the Common Heritage of Mankind in International Law", The Hague ; Boston Cambridge, MA, M. Nijhoff Publishers; Kluwer Law International.

²⁶¹ G. DUTFIELD (eds.), "Intellectual Property, Biogenetic Resources and Traditional Knowledge", London, Earthscan, 2004, at pp. 52-59 in particular.

²⁶² For an opposite view, see Harlan, saying that “For one thing, nothing is stolen. No germplasm is removed from a country or farmer’s field that does not also remain. The small samples sent back to the collector’s homeland may not even be very representative of the germplasm available and are no loss to either the grower or the nation. Furthermore, little germplasm moves from ‘south’ to ‘north’. (...) The ‘north’ invests the money for conservation, not the ‘south’. (...) The major movement of

wanted unrestricted access to these new varieties in the same way that developed countries had access to resources in the South. They also wanted to clarify the access and property regime for PGRFA.²⁶³ To this end, the FAO members designed the IU.²⁶⁴

The political discussion and negotiating process began in the FAO Conference²⁶⁵ in November 1979,²⁶⁶ when the Spanish delegation, later supported by numerous countries, proposed the development of an international agreement on PGRFA and the establishment of a germplasm bank under the jurisdiction of the United Nations. During the 1981 FAO Conference,²⁶⁷ this proposal became a draft resolution²⁶⁸ written by Mexico and presented by the Latin American and Caribbean Group (GRULAC)²⁶⁹ region on behalf of the G-77²⁷⁰. As a result, the next FAO Conference (November 1983)²⁷¹ approved the first inter-governmental agreement on this subject – with the reservation of eight countries.²⁷² The same conference established an inter-governmental body – the FAO Commission on Plant Genetic Resources (CPGR)²⁷³ (today the Commission on Genetic Resources for Food and Agriculture (CGRFA),

germplasm is east to west and west to east.” in J. R. HARLAN, *"The Living Fields : Our Agricultural Heritage"*, *op. cit.* at p. 248. While this statement might have been true at that time, in 2015, I believe it is not so anymore. Indeed, the development of modern biotechnologies and of IPRs now allows companies to hinder access to a variety providing from a farmer's field. Even though the seed remains in the field, the fact that the farmer may not use it anymore without paying royalties to the company detaining a patent on a gene of that variety equates to a "removal".

²⁶³ C. FOWLER, *cit.* at p. 159.

²⁶⁴ *International Undertaking on Plant Genetic Resources*, FAO Conference Resolution 8/83, adopted 23 November 1983.

²⁶⁵ The FAO Conference is the sovereign governing body of the organization. It determines the policy, approve the budget of the Organization and exercises the other powers conferred upon it by the Constitution, inter alia to make recommendations to Member Nations and Associate Members concerning questions relating to food and agriculture, in order for them to be reviewed and implemented through national action; to make recommendations to any international organization regarding any matter pertaining to the purposes of the Organization. It comprises all Members and Associate Members.

²⁶⁶ C 79/REP - Report of the Conference of FAO, Twentieth Session, Rome, 10-28 November 1979.

²⁶⁷ C 81/REP - Report of the Conference of FAO, Twenty-first Session, Rome, 7-25 November 1981.

²⁶⁸ FAO Conference Resolution 6/8.

²⁶⁹ The GRULAC is one of the five unofficial geopolitical regional groupings of the UN, with 33 member states.

²⁷⁰ The G-77 is a loose coalition of developing nations within the UN fora, which nowadays include a total of 132 countries.

²⁷¹ C 83/REP, at § 275-285 - Report of the Conference of FAO, Twenty-second Session, Rome, 5-23 November 1983.

²⁷² The delegations from Canada, France, Germany (The Federal Republic of Germany) Japan, Switzerland, the United Kingdom and the United States of America made reservations with respect to Resolution 8/83 (the International Undertaking on Plant Genetic Resources) adopted in the 22nd Conference of FAO in Rome, November 1983. New Zealand expressed reservations regarding the IU text since it did not take into consideration breeders' rights. The same seven countries and The Netherlands also expressed reservations concerning Resolution 9/83 on the establishment of a Plant Genetic Resources Commission, also adopted in the 22nd Conference of FAO. A note should be made on the fact that the Undertaking was not a legally binding international agreement, and that therefore, the various reservations, interpretations and understandings, expressed either verbally or in writing by Member Nations, are not to be considered "reservations" within the meaning given to that term under international law and are not binding on the other Member Nations.

²⁷³ FAO Conference Resolution 9/83, adopted 23 November 1983.

which includes 167 member countries and the European Community)²⁷⁴ to monitor its implementation.²⁷⁵

The Undertaking is a non-binding agreement based on the principle that plant genetic resources are a heritage of mankind²⁷⁶ that should be available without restriction. FAO Conference Resolution 8/83 states indeed that:

“Recognizing that: (a) plant genetic resources are a heritage of mankind to be preserved and to be freely available for use, for the benefit of present and future generations”

Article 1 (Objective) of the Undertaking specifies that:

“1. The objective of this Undertaking is to ensure that plant genetic resources of economic and/or social interest, particularly for agriculture, will be explored, preserved, evaluated and made available for plant breeding and scientific purposes. This Undertaking is based on the universally accepted principle that plant genetic resources are a heritage of mankind and consequently should be available without restriction.”

It has been argued that in this way, unrestricted access to PGRFA was continued to be ensured.²⁷⁷ However, developed countries had precisely used that principle to promote their free access to resources in gene-rich countries.²⁷⁸ For their parts, developing countries believed that recognizing the heritage of mankind principle in an international agreement would safeguard their interests.²⁷⁹ Developing countries thought that this principle would allow them to access the improved varieties developed using PGRFA originating from the South but improved in laboratories situated in developed countries where financial and technical means were available.²⁸⁰ The IU recognized plant genetic resources to be the heritage of mankind,²⁸¹ but this principle was subject to the scope of application of the IU,

²⁷⁴ The scope of application of the CGRFA was first limited to plants, but it was broadened to all components of agrobiodiversity in 1995 during the 28th session of the FAO Conference. See Conference Resolution 3/95, in C 95/REP, § 65-69 and 10th session of FAO Council CL 110/REP, § 13-14.

²⁷⁵ A. MEKOUAR, 2002, "A Global Instrument on Agrobiodiversity: The International Treaty on Plant Genetic Resources for Food and Agriculture", *FAO Legal Papers Online*, Vol. 24 at p. 2.

²⁷⁶ A clear explanation of this concept and its application to the IU can be found in C. FOWLER, *cit.* at pp. 159-167.

²⁷⁷ E. TSIOUMANI, 2006 *op.cit.* at p. 121.

²⁷⁸ K. AOKI, "Seed Wars : Controversies and Cases on Plant Genetic Resources and Intellectual Property", *op. cit.* at p. 71.

²⁷⁹ For a interesting philosophical analysis of the concept see V. TILMAN, 2016, "Proptiété Intellectuelle, Soutenabilité Et (Biens) Communs: Approche Philosophique Et Étude De Cas Sur L'appropriation De La Biodivrsité Agricole" (UNamur, 2016) at pp. 273-297.

²⁸⁰ H. J. BORDWIN, 1985, "The Legal and Political Implications of the International Undertaking on Plant Genetic Resources", *Ecology Law Quarterly*, Vol. 12 at p. 1069.

²⁸¹ According to Stoll, "[t]he common heritage principle, developed through UN negotiations concerning the uses of the deep seabed and its resources, contains little more than an idea of free access and an air of distributional justice. The same holds true for the Undertaking: it had little to say in view of the fact that such plant [genetic resources] are not a wealth to be distributed, but require investments into the conservation of centres of origin and landraces as well as into improvement of

which had a very broad definition of PGRFA.²⁸² This meant that PGRFA including land races, wild and weedy species but also breeders' lines, commercial varieties and other products of biotechnologies should be available to everybody.²⁸³ Unsurprisingly, a number of developed countries did not support the IU as they felt that this clause ran counter to their economic interests.²⁸⁴ This particular issue explains why the IU was approved with eight reservations. Commenting upon these reservations by developed countries, Brush recognizes that "this position soon leads to the argument that common heritage and intellectual property are incompatible [and that] the intellectual and political divide between these views overshadows discussions of the future of crop resources. Despite the recognition of the importance of international public goods, the subtleties that characterize public goods and the public domain were lost in the political rhetoric of the international debate over plant resources. The contest between these two views takes on political significance because of the increased value of genetic resources, the need to secure a firm financial base to support conservation, and the need to provide for continued access and movement of genetic resources between countries."²⁸⁵ Stoll further argues that it "cannot be overlooked that the different claims made in this case clearly represent the conflicting interests involved. The recognition of plant breeders' rights and the proprietary character of breeding lines were of comfort to the breeding industry – which in those days was mainly situated in the North. The so-called 'farmers' rights' and the concept of a sovereign right on [genetic resources] can be roughly considered a counterclaim of the South. In sum, the example amply shows that plant [genetic resources], which can be considered a public good, have become the subject of claims of

breeds, which is mainly done by private breeders. Today, it looks quite strange that the Undertaking proclaimed such a principle to be applicable to virtually any germplasm with relevance for food and agriculture, including wild species, landraces and highly developed commercial varieties. Indeed, the undertaking was soon modified. See P.-T. STOLL, "Access to Grs and Benefit Sharing – Underlying Concepts and the Idea of Justice", in E.C. KAMAU AND G. WINTER (eds), *Genetic Resources, Traditional Knowledge and the Law. Solution for Access and Benefit Sharing*, London, Earthscan, 2009 at p. 6.

²⁸² K. AOKI, "Seed Wars : Controversies and Cases on Plant Genetic Resources and Intellectual Property", *op. cit.* at p. 71.

²⁸³ IU, Article 2.1. This principle was reiterated several times in later FAO Conferences: see C1985, § 294: on the importance of "unrestricted exchange of PGR"; C1989 § 105: "The draft resolutions, preserving the *principle of unrestricted availability of germplasm*, recognized the rights of both donors of technologies and donors of germplasm to be compensated for their contributions through *the simultaneous recognition of plant breeders' and farmers' rights*. The Conference recognized that both resolutions were intended to lay the basis for an equitable and lasting global system for sharing the costs and benefits of the world's plant genetic resources for present and future generations." (Emphasis added).

²⁸⁴ Lawrence Helfer notes that "[a]lthough the Undertaking was merely a nonbinding statement of principles, it was opposed by the United States and some European governments who argued that the document conflicted with a multilateral treaty - the [UPOV] - but also with their national patent laws, which grant intellectual property rights in isolated and purified genes." See L. R. HELFER, "Using Intellectual Property Rights to Preserve the Global Genetic Commons: The Itpgrfa", *op. cit.* at pp. 218-219.

²⁸⁵ S. B. BRUSH, 2004, "Farmers' Bounty Locating Crop Diversity in the Contemporary World", *op.cit.* at p. 232.

different stakeholders. This is likely to cause conflicts in demand, intensive negotiation and result in inefficiencies.”²⁸⁶

In an effort to bring the reluctant developed countries on board and resolve this conflict, three Agreed Interpretations of the IU were negotiated in the FAO Commission between 1983 and 1991.²⁸⁷ International non-governmental organizations (INGOs) played an essential role in this part of the process.²⁸⁸ One particularly important initiative was the Keystone International Dialogue Series on Plant Genetic Resources.²⁸⁹ These neutral and non-governmental dialogue series were informal in nature and convened between 1988 and 1991. The process was chaired by Dr. M. S. Swaminathan, who brought together key individuals from government, the private sector, research community, civil society, international organizations, and others in their individual capacity, to systematically discuss and seek consensual solutions to a range of critical issues. This initiative was very useful in paving the road for the formal inter-governmental negotiations in the Commission.²⁹⁰ Several points of consensus were identified in these series of informal meetings.²⁹¹ These included language that IPRs, in particular plant breeders’ rights under the UPOV Convention, were not in conflict with the IU.²⁹² It was also stated that free access does not mean “free of charge”.²⁹³ The concepts of plant breeders’ rights and farmers’ rights²⁹⁴ were simultaneously recognized, while the expression “heritage of mankind” was recognized as subject to “the sovereignty of the states over their plant genetic

²⁸⁶ P.-T. STOLL, *op. cit.* at p. 7.

²⁸⁷ Agreed Interpretation of the International Undertaking, Res. 4/89, UN FAO, 25th Sess., UN Doc. C/89/24 (1989) being Annex I to the International Undertaking; Farmers’ Rights, FAO Res. 5/89, being Annex II to the International Undertaking; FAO Res. 3/91 being Annex III to the International Undertaking. The texts can be found in Appendix 3 of the online PDF file of this thesis, available on my ResearchGate profile.

²⁸⁸ P. MOONEY, *op. cit.*.

²⁸⁹ C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., “*Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*”, at p. 8.

²⁹⁰ For more details on the role and influence of NGOs in the negotiation process, see Chapter 5, Section 7 below.

²⁹¹ See C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., “*Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*”, at p. 8. In the access and benefit-sharing process, Garforth and Cabrera Medaglia also note that NGO actors were much involved. K. GARFORTH AND J. CABRERA MEDAGLIA, “Legal Reform for the Development and Implementation of Measures on Access to Genetic Resources and Benefit-Sharing”, (eds), *Searching for Success - Narrative Accounts of Legal Reform in Developing and Transition Countries*, Rome, International Development Law Organization, 2006 at pp. 144-146.

²⁹² FAO Conference Resolution 4/89.

²⁹³ FAO Conference Resolution 4/89, last §.

²⁹⁴ FAO Conference Resolution 5/89. The concept of Farmers’ Rights is explained further in Chapter 4, Section 3.

resources”²⁹⁵ and new concepts such as “global concern” and “fair and equitable sharing of benefits” were introduced.²⁹⁶

The agreed interpretations thus largely led to the abandonment of the common heritage approach,²⁹⁷ and set the rationale for compensating traditional farmers as conservationists and PGRFA providers.²⁹⁸ Brush regrets that “conceptualizing crop genetic resources as common heritage leaned towards rules derived for rivalry goods rather than towards the rule regulating public goods in the public domain.”²⁹⁹ He argues that common heritage intrinsically includes the concept of “property over any and all biological material”. He concludes that “the motifs of tangible property and theft dominated this discourse and thwarted consensus about protection of the public domain while promoting social utility.”³⁰⁰ Furthermore, in my opinion, the recognition of state’ sovereign rights over their PGRFA as a reaction to “biopiracy” slogans³⁰¹ and to the “Seed Wars”, led to a further appropriation of these resources, by those very actors (States from the South) condemning the appropriation of their resources through IPRs by seed companies. By affirming sovereign rights over their genetic resources, states reinforced the “hyperownership” logic. Furthering this trend, in parallel to these developments countries were negotiating the Convention on Biological Diversity. In response, in 1993 FAO Conference adopted Resolution 7/93 at its 27th Session, requesting the FAO Director-General to provide a forum for negotiations among governments, for (a) the Revision of the IU, in harmony with the CBD; (b) consideration of the issue of access on mutually agreed terms to plant genetic resources, including ex situ collections not addressed by the Convention; and (c) the issue of the realization of Farmers’ Rights.

²⁹⁵ FAO Conference Resolution 3/91. Although Bordwin points that PGRFA were already subject to the sovereignty of the state in which they are located. H. J. BORDWIN, 1985 *op.cit.* at p. 1063. See also Section 5 below.

²⁹⁶ A clear commentary of the IU can be found in K. TEN KATE AND C. LASÉN DIAZ, 1997, “The Undertaking Revisited: A Commentary on the Revision of the International Undertaking on Plant Genetic Resources for Food and Agriculture”, *Review of European Community & International Environmental Law*, Vol. 6, (3).

²⁹⁷ J. ESQUINAS-ALCAZAR AND A. HILMI, *Las Negociaciones Del Tratado Internacional Sobre Los Recursos Fitogeneticos Para La Alimentation Y La Agricultura*, *Recursos Naturales y Ambiente*, Vol. 53. See also Stoll, who argues that “Two years later, the FAO conference again modified the system of the Undertaking. At the FAO conference it was decided that “breeders’ lines and farmers’ breeding material should only be available at the discretion of their developers during the period of development”, and thereby acknowledged the proprietary character of such lines. However, in turn, the Conference decided that “nations have sovereign rights over their plant genetic resources”. Thus, within just a few years, the former “common heritage” has been divided up into various proprietary claims.” P.-T. STOLL, *op. cit.* at p. 7. See also I. MGBEOJI, 2003 *op.cit.*

²⁹⁸ C. FOWLER, *cit.* at pp. 190-192.

²⁹⁹ S. B. BRUSH, 2004, “Farmers’ Bounty Locating Crop Diversity in the Contemporary World”, *op.cit.* at p. 233.

³⁰⁰ S. B. BRUSH, 2004, “Farmers’ Bounty Locating Crop Diversity in the Contemporary World”, *op.cit.* at p. 233.

³⁰¹ See Chapter 3 Section 2 for some information on biopiracy.

Chapter 2 – History of PGRFA

Besides, within FAO related fora, FAO member States were building a global system of exchange and management of PGRFA, through the adoption of an International Code of Conduct for Plant Germplasm Collecting and Transfer, Gene Bank Standards, a Global Plan of Action on Plant Genetic Resources for Food and Agriculture (GPA),³⁰² and the first report on the State of the World's Plant Genetic Resources for Food and Agriculture.³⁰³ By implementing these tools, the Global System aimed to “ensure the safe conservation and promote the availability and sustainable utilization of plant genetic resources, for present and future generations, by providing a flexible framework for sharing the benefits and burdens. The System covers both the conservation of plant genetic resources (*ex situ* and *in situ*, including on-farm) and their sustainable utilization.”³⁰⁴

For their part, the CGIAR (also called the CG Centers) noted a serious decrease in the access to varieties for their gene banks, thereby justifying the need for a clearer legal access system at the international level. Moore and Frison explain that “[t]he need to find a more appropriate system of access to PGRFA (...) coupled with a lack of clarity over the legal status of the *ex situ* collections acquired before the entry into force of the CBD, led directly to the conclusion of the In Trust agreements between the CG Centres and FAO.”³⁰⁵ Twelve centres of the CGIAR, and subsequently other institutions, signed in 1994 agreements with FAO to place most of their collections (some 500,000 accessions) in the realm of the IU under the auspices of FAO. Through these agreements, the Centres agreed to hold the designated germplasm “in trust for the benefit of the international community” and could neither claim legal ownership over the material nor seek IPRs.³⁰⁶ According to Brahy, “[t]he heart of the Agreement is the safeguarding of shared access and reciprocity social norms. The Agreement insists on the continuity with past policies and social norms.”³⁰⁷ Indeed, The Centres also had to make

³⁰² The objective of the GPA was to identify the technical and financial needs for ensuring conservation and promoting sustainable use of plant genetic resources. For more information see C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., “*Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*”, at Annex 1, pp. 281-291.

³⁰³ For more information see C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., “*Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*”, at Annex 1, pp. 281-291.

³⁰⁴ Commission On Genetic Resources For Food And Agriculture, Seventh Session, Rome, 15-23 May 1997, “Progress Report On The Global System For The Conservation And Sustainable Utilization Of Plant Genetic Resources For Food And Agriculture,” document CGRFA-7/97/3, §3.

³⁰⁵ G. MOORE AND E. FRISON, *op. cit.* at p. 154.

³⁰⁶ E. GOTOR AND F. CARACCILO, 2009, “*An Empirical Assessment of the Effects of the 1994 in Trust Agreements on Irri Germplasm Acquisition and Distribution*”, Igitur.

³⁰⁷ N. BRAHY, “The Property Regime of Biodiversity and Traditional Knowledge : Institutions for Conservation and Innovation”, at p. 225.

samples of these resources available to users for the purpose of scientific research, plant breeding and genetic resources conservation without restriction.³⁰⁸ This was carried out through the use of a Standard Material Transfer Agreement (SMTA), identical for all the CGIAR material. Brahy notes that “[b]eyond its content, this agreement is an interesting attempt to “formalize social norms”, i.e. insert their provision into contracts.”³⁰⁹ It should be noted that the text of this SMTA was later considered and amended by the Governing Body of the Treaty as the basis for the current SMTA.³¹⁰ The agreements provided an interim solution, until completion of the revision of the IU.

- 1979: Beginning of FAO policy discussions on PGRFA
- 1983: Creation of the Commission on Plant Genetic Resources and adoption of the IU on plant genetic resources
- 1989 and 1991: International Keystone Dialogue Series on PGRFA
- 1993: 27th session FAO Conference adoption of Resolution 7/93 to open negotiation for the Plant Treaty
- 1994 : 12 CG Centres sign the “In Trust Agreements” with FAO
- 1995: Broadening of the Commission on Plant Genetic Resources with a mandate to cover all components of biodiversity for food and agriculture
- 1996: Publication of the 1st report on the State of the World’s PGRFA

Table 2.4: A failed attempt to keep resources in the public domain with the IU on Plant Genetic Resources

Section 5. The CBDs contractual approach to access genetic resources: the rise of States’ sovereign rights

Genetic resources as common heritage was further weakened by the CBD,³¹¹ which granted states sovereignty over the genetic resources found within their borders.³¹² The CBD,

³⁰⁸ The debate around the ownership of the material conserved in genebanks is a very interesting issue and would require deeper analysis; however, this question falls outside the scope of this study and will therefore not be dealt with in depth.

³⁰⁹ N. BRAHY, "The Property Regime of Biodiversity and Traditional Knowledge : Institutions for Conservation and Innovation," at p. 227.

³¹⁰ G. MOORE AND E. FRISON, *op. cit.* at p. 157.

³¹¹ *Convention on Biological Diversity*, 5 June 1992, 31 I.L.M. 818 (entered into force 29 December 1993). For a clear overview of the CBD, see S. JOHNSTON, 1997, "The Convention on Biological Diversity: The Next Phase", *Review of European Community & International Environmental Law*, Vol. 6, (3).

³¹² *Convention on Biological Diversity* Articles 3 and 15(1). Stoll reminds that “the long-standing sovereign right of states over their natural resources, (...) is based on the international law principle of territorial sovereignty and has been further developed

which aimed at becoming the first legally binding international agreement covering all biological diversity, was negotiated from 1988 to 1992 by the UNEP. It was presented for signature at the Río De Janeiro Earth Summit in June 1992. Unlike the IU, the CBD entered into force as a binding international instrument, thus officially marking the end of PGRFA as common resources following the IU provisions.³¹³

In 1993, the American National Research Council had forecasted that with the CBD, “the era of free and open exchange of agricultural germplasm will soon be over”.³¹⁴ Indeed, the CBD, which also covers agricultural biodiversity,³¹⁵ did not sufficiently take into account the uniqueness of agricultural biodiversity and the specific needs of the agricultural sector, partly because the CBD was negotiated primarily by ministries of environment and agricultural experts were barely present during the negotiation process.³¹⁶ Negotiators adopted the CBD to take effective steps to stem the loss and degradation of biodiversity.³¹⁷ The major breakthrough of this agreement was the legally binding recognition of State’s sovereign rights over their biological resources,³¹⁸ which allowed developing countries to nationally control and regulate the access to the resources situated in their territories.

The rationale behind placing genetic resources within national jurisdiction can be further explained by reading the third objective of the Convention (Article 1). This objective is “(...) the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.” The CBD was thus based on both a premise that developing countries

by UN bodies, and [is] reiterated once more in Article 3 CBD and – in view of biological resources – in the preamble of paragraph 4.” P.-T. STOLL, *op. cit.* at p 4.

³¹³ K. GARFORTH AND C. FRISON, 2007 at p. 17.

³¹⁴ N. R. COUNCIL, 1993, *Managing Global Genetic Resources: Agricultural Crop Issues and Policies*, Washington, DC, The National Academies Press. 14.

³¹⁵ Resolution 3 from the Nairobi Final Act (the relationship between the Convention on Biological Diversity and the promotion of sustainable agriculture) was adopted 22 May 1992 in Nairobi. Available at www.cbd.int/doc/handbook/cbd-hb-09-en.pdf

³¹⁶ See C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., *Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*, at p. 8. See also Garforth and Cabrera Medaglia, arguing that the lack of intra-governmental cooperation hinders legal reform for ABS. K. GARFORTH AND J. CABRERA MEDAGLIA, *op. cit.* at pp. 143-144.

³¹⁷ L. HELFER, 2002, Food and Agriculture Organization, Rome.

³¹⁸ Principle 21 of the Stockholm declaration provides that “States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.” Declaration of the United Nations Conference on the Human Environment, Stockholm 16 June 1972, 11 ILM 1416 (1972).

have an equitable right over their own genetic resources and a promise that these can be used to engender funding for development and conservation objectives.³¹⁹

However, regarding PGRFA, Wilkes poses an interesting question when he notes that “[n]ational sovereignty over resources is a recognized right, but can germplasm that left a region long ago still be claimed by the current government? Very few landraces of our modern crops evolved under current governments.”³²⁰ Rosell³²¹ or Glowka³²² point out that states’ sovereign right over their genetic resources does not grant states property rights over these resources preserved *ex situ* (i.e. under this interpretation, property rights regimes are left to national legislation). Stoll asserts that it “is the very essence of state sovereignty over genetic resources that states can freely dispose upon such resources for their own uses and to provide them to third parties upon terms and conditions they may deem appropriate.”³²³ Brahy goes further by saying that “[n]ational sovereignty is a way for those countries to negotiate access to their genetic resources, and in so doing, appropriate some of the benefits of their conservation efforts. It is, therefore, an attempt to solve a public goods problem through the creation of property rights.”³²⁴

Indeed, with Articles 3 and 15 of the CBD, countries may now set the terms for access to their resources, thus allowing them to profit from their biodiversity, further encouraging conservation. Article 15 of the Convention is entitled “Access to Genetic Resources”. It reiterates the sovereign right of states over their natural resources and declares national governments to have the authority for determining access to genetic resources. Access to these resources is premised on the negotiation of access contracts. Although there was no obligation within the CBD to limit these relationships to a bilateral approach, most countries

³¹⁹ K. GARFORTH AND C. FRISON, 2007 at pp. 17-18.

³²⁰ H. G. WILKES, 1987, "Plant Genetic Resources: Why Privatize a Public Good?", *BioScience*, Vol. 37, (3); H. G. WILKES, 1987 *op.cit.* at p. 216.

³²¹ M. ROSELL, 1997, "Access to Genetic Resources: A Critical Approach to Decision 391 'Common Regime on Access to Genetic Resources' of the Cartagena Agreement", *Review of European Community & International Environmental Law*, Vol. 6, (3) at p. 280.

³²² L. GLOWKA, *ibid.* Emerging Legislative Approaches to Implement Article 15 of the Convention on Biological Diversity", Vol. .

³²³ P.-T. STOLL, *op. cit.* at p. 5. However, one may question how realistic this assertion is if the resources have left the country for example. Furthermore, how is such an approach to be enforced?

³²⁴ N. BRAHY, "The Property Regime of Biodiversity and Traditional Knowledge : Institutions for Conservation and Innovation", at p. 192.

which implemented the CBD have developed an administrative procedure where access contracts are negotiated on a bilateral basis.³²⁵

Article 15 states the general principles on which access is to be granted, namely “mutually agreed terms” and “prior informed consent”, but the specific bargain between access to the resources and the sharing of benefits was left open for negotiation by the parties concerned, thereby leading to a market-based bargaining approach. The article also requires the Parties to the Convention to take measures for sharing the benefits from use of genetic resources with the Party providing such resources.

However, twelve years after the entry into force, not much progress had been made in implementing the CBD by its 193 contracting parties.³²⁶ Some developing countries created national systems³²⁷ for controlling access to genetic resources and requiring benefit-sharing. These regulatory mechanisms have clearly opted for a simple bargain of their resources, i.e. access to national genetic resources is exchanged for benefit-sharing (whether financial or non-monetary, or both) on a bilateral basis. This approach follows a “coasian-type”³²⁸ of reasoning, where it is believed that the free market is the best mechanism for valuing and exchanging resources, which are treated as pure commodities.³²⁹ The international regulation of contractual access to genetic resources was aimed at promoting such market-based exchanges especially in the pharmaceutical and cosmetic industries by generating legal certainty, which in turn is supposed to lower transaction costs. Transaction costs include the cost of communication among parties, search costs, negotiation costs, enforcement costs, and the cost of excluding others from sharing the benefits exchanged by parties to the contract.³³⁰

³²⁵ K. GARFORTH *et al.*, "Overview of the National and Regional Implementation of Access to Genetic Resources and Benefit-Sharing Measures", 2005 ; see also IUCN, 2004, "Accessing Biodiversity and Sharing the Benefits : Lessons from Implementing the Convention on Biological Diversity", Cambridge, UK, IUCN-The World Conservation Union.

³²⁶ Stoll notes that “[i]n the case of ABS, the environmental objective would clearly be the conservation of biological diversity. If the ABS system were to be judged upon this criterion, the result would be disappointing. There is no indication that, in the 15 years since the adoption of the Convention, the ABS system has had any significant impact on conservation, be that benefits being used to undertake certain conservation measures or halting of the human degradation of biodiversity.” P.-T. STOLL, *op. cit.* at p. 4.

³²⁷ Two of the best known examples are Executive Order 247, Prescribing Guidelines and Establishing a Regulatory Framework for the Prospecting of Biological and Genetic Resources, Their By-Products and Derivatives, for Scientific and Commercial Purposes, and for Other Purposes, 18 May 1995, from the Philippines; and Biodiversity Law, No. 7788, 27 May 1998 from Costa Rica.

³²⁸ R. H. COASE, 1960, "The Problem of Social Cost", *Journal of Law and Economics*, Vol. 3; R. P. MERGES, 1994, "Of Property Rules, Coase, and Intellectual Property", *Columbia Law Review*, Vol. 94, (8).

³²⁹ E. BERTACCHINI, 2008, "Coase, Pigou and the Potato: Whither Farmers' Rights?", *Ecological Economics - Elsevier*, Vol. 68, (1-2).

³³⁰ S. NARASIMHAN AND D. ROBINSON, 2008, UNDP, United Nations Development Program, New York, at p. 16; S. B. BRUSH, 2005, "Protecting Traditional Agricultural Knowledge", *Washington University Journal of Law & Policy*, Vol. 17, at p. 73.

However, these national systems and the contractual negotiations they require appeared to be expensive to operate and called for highly skilled human resources from a number of disciplines.³³¹ Moreover, the link between conservation of genetic resources and the financial arrangement made for their access was not necessarily obvious, and the valuation of the resource was highly controversial (e.g. how can one be sure that a resource with little economic value today would not have a very high economic, social or environmental value in 50 years?).³³²

Furthermore, developing countries felt that the national implementation of access and benefit-sharing (ABS) was being hindered by a lack of cooperation from developed countries where most of the users of genetic resources are located.³³³ After more than ten years, there was no sign that access to genetic resources had been facilitated through the CBD,³³⁴ or that the conservation of these resources had made any progress.³³⁵ On the contrary, some experts warned that exchanges through bilateral contracts might limit the access to (and therefore the conservation of) genetic resources,³³⁶ and in particular within the field of food and agriculture by rendering the whole system extremely complex, costly and with heavy administrative burdens.³³⁷ Furthermore, a high level international Panel of Experts on ABS recognized that “there is a risk that access legislation under consideration in a number of countries might foreclose or restrict the option of multilateral approaches that those same countries may be pursuing in international forums.”³³⁸

In 2001, an international study³³⁹ prepared at the request of the Global Forum on Agricultural Research (GFAR)³⁴⁰ showed that access through bilateral agreements resulted in a

³³¹ G. DUTFIELD, 2008, "Turning Plant Varieties into Intellectual Property: The Upov Convention", *The Future Control of Food: A guide to international negotiations and rules on intellectual property, biodiversity and food security*, Vol. .

³³² K. AOKI, "Seed Wars : Controversies and Cases on Plant Genetic Resources and Intellectual Property", *op. cit.* at p. 92.

³³³ G. DUTFIELD, 2008 *op.cit.*.

³³⁴ On the contrary, in the field of biological control, van Lenteren et al argue that “recent applications of access and benefit sharing principles have made it difficult or impossible to collect and export natural enemies for biological control research in several countries. If such an approach is widely applied it would impede this very successful and environmentally safe pest management method based on the use of biological diversity.” J. C. VAN LENTEREN *et al.*, 2011, "Will the Convention on Biological Diversity Put an End to Biological Control?", *Revista Brasileira De Entomologia*, Vol. 55, (1).

³³⁵ IUCN, *cit.*, inter alia at p. 275.

³³⁶ P.-T. STOLL, *op. cit.* at p. 4. See also C. FOWLER, *cit.* at pp. 119-122.

³³⁷ In a very detailed study, Bioversity International showed that there is a wide spectrum of options for genetic resources exchange systems, ranging from a strictly bilateral approach at one extreme, to an unstructured informal multilateral approach at the other. Between these two extremes lie a host of additional options which draw on elements from both ends of the spectrum. IPGRI, 1996, "Access to Plant Genetic Resources and the Equitable Sharing of Benefits: A Contribution to the Debate on Systems for the Exchange of Germplasm", *Issues in Genetic Resources*, Vol. 4.

³³⁸ CBD Panel of Experts on Access and Benefit-sharing, Costa Rica, 4-8 October 1999, document UNEP/CBD/COP/5/8 at \$104.

³³⁹ The study was included as Background Study paper to the 2001 meeting of the FAO Commission on Genetic Resources for Food and Agriculture. See FAO, "Transaction Costs of Germplasm Exchange under Bilateral Agreements", 2001 n°14.

significant increase in global transaction costs (i.e. negotiation costs, pre-distribution tracking costs and post-distribution tracking costs for both users and providers), which could possibly result in an impasse. This study estimates that a fully bilateral system would cost US\$22 to US\$78 million annually, while a limited multilateral system would cost US\$8 to US\$19 million annually, and a fully open system only US\$1.2 to US\$1.9 million annually.³⁴¹

In an attempt to elaborate the ABS requirements of the CBD and help countries develop measures to implement these requirements, the Parties agreed to the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization at their sixth Conference of the Parties (COP) meeting to the CBD in 2002. The Bonn Guidelines are voluntary, however, and so do not place obligations on users or user countries. This led developing countries, and a group of mega-diverse countries in particular, to call for the negotiation of an “international regime” on ABS. Language to this effect was included in the Johannesburg Plan of Implementation from the 2002 World Summit on Sustainable Development and translated into an agreement to launch such negotiations at the seventh COP in 2004. At COP-8, in 2006, two permanent co-chairs of the Ad Hoc Open-Ended Working Group on ABS were named to lead the negotiations. The Working Group completed its work in 2010 when the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (hereafter the Nagoya Protocol) was adopted.³⁴² Under these conventions, access to genetic resources is subject to prior informed consent from the Contracting Party providing the resources (CBD, Article 15§5) and, when appropriate, to the consent of indigenous and local communities (Nagoya Protocol, Article 6§2). Furthermore, fair and equitable sharing of benefits that arise from the

³⁴⁰ The Global Forum on Agricultural Research (GFAR) is an inclusive global mechanism enabling all those concerned with the future of agriculture and its role in development around the world to come together and address key global needs. GFAR provides an open forum for stakeholders across the agricultural spectrum—from researchers and organizations to farmers—to participate in collaborative discussion and action around the current and future state of agriculture. Established in 1996, GFAR was formed as a project for resource sharing—a commitment that remains the essential purpose of the Forum today. GFAR facilitates collaboration, partnerships and sharing of objectives along the complex pathways from research through to development outcomes. Its headquarters is in Rome, Italy, where it is hosted by FAO. Available at <http://www.gfar.net/>

³⁴¹ FAO, "Transaction Costs of Germplasm Exchange under Bilateral Agreements", 2001 n°14 at p. 16. This study was well received by Plant Treaty negotiators. It appeared useful in convincing parties for the necessity of operating a multilateral ABS system.

³⁴² For an early implementation analysis of the Nagoya Protocol see B. COOLSAET *et al.*, 2015, *Implementing the Nagoya Protocol: Comparing Access and Benefit-Sharing Regimes in Europe*, Hotei Publishing; see also E. MORGERA, M. BUCK, AND E. TSIJUMANI, 2012, *The 2010 Nagoya Protocol on Access and Benefit-Sharing in Perspective: Implications for International Law and Implementation Challenges*, Martinus Nijhoff Publishers; and E. MORGERA, E. TSIJUMANI, AND M. BUCK, 2014, *Unraveling the Nagoya Protocol: A Commentary on the Nagoya Protocol on Access and Benefit-Sharing to the Convention on Biological Diversity*, Martinus Nijhoff Publishers.

use of genetic resources as well as subsequent applications and commercialization are guaranteed (CBD, Article 15§3 and §7; Nagoya Protocol, Article 5§1).³⁴³

- 1992: Adoption of the Convention on Biological Diversity
- 1993: The CGRFA agrees to renegotiate the IU
- 2002: The CBD COP adopts the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization
- 2004: The CBD COP opens new negotiations for an international regime on access and benefit-sharing
- 2010: The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the CBD is adopted (entered into force in 2014)

Table 2.5: The rise of states' sovereign rights through the Convention on Biological Diversity

Section 6. UPOV 1991 and the TRIPS Agreement: reinforcing PGRFA appropriation

Commodification of crop diversity is defined by Chiarolla as being “the adoption, harmonization and implementation of laws and international law instruments, which determine the allocation of legal entitlements to manage and control plant genetic resources, their derivatives and the benefits thereof.”³⁴⁴ The two major international legal instruments that have contributed to the commodification of crop diversity are the UPOV Convention and the TRIPS Agreement; they are briefly described below.³⁴⁵

The UPOV Convention³⁴⁶ provides a *sui generis* form of IP protection for plant varieties specifically, by setting forth standards for the granting of “breeders’ rights”.³⁴⁷ They are known

³⁴³ The CBD and in particular the Nagoya Protocol constitute the applicable law for PGRFA that are not used for food/feed purposes.

³⁴⁴ C. CHIAROLLA, *cit.* at p. 1.

³⁴⁵ In his thesis, Chiarolla has conducted an in-depth analysis of these instruments and their impact on the PGRFA field. For more details, see his comprehensive work C. CHIAROLLA, *cit.*

³⁴⁶ The International Convention for the Protection of New Varieties of Plants (UPOV) was first adopted on December 2, 1961. This Act was amended several times, first by the Additional Act of November 10, 1972. UPOV 1978 is the Act of October 23, 1978. UPOV 1991 was signed on March 19, 1991 and entered into force on April 24, 1998. As of July 8, 2011, there were 70 contracting parties to this instrument. The evolution of these modifications reflects the general trend strengthening the rights granted. Bragdon states that the “growth of biotechnology and the possibility of formal patent coverage created pressure leading to the 1991 revision of UPOV.” S. BRAGDON, 2004 *op.cit.* at p. 64.

³⁴⁷ For a clear explanation of the UPOV Convention see L. R. HELFER, “International Property Rights in Plant Varieties: International Legal Regimes and Policy Options for National Governments”, 2004 at pp. 20-32.

under the term Plant Breeders' Rights (PBRs). A plant variety must meet several requirements to be eligible for protection. The variety must be (commercially) novel,³⁴⁸ distinct,³⁴⁹ uniform,³⁵⁰ and stable³⁵¹ (the so-called DUS criteria); and the variety must have a denomination.³⁵² Under UPOV 1978, it was admitted that a farmer could save seeds from his harvested material and use it for sowing on his own land (the so called "farmer's privilege").³⁵³ Similarly, there was a mandatory exception for breeders, who could use protected material for their breeding and research activities. With the 1991 Act, (1) the rights of holders are extended to the harvested material;³⁵⁴ (2) a breeder may seek simultaneously PBRs and patent protection; (3) the protection is extended to all plant genera and species;³⁵⁵ and the exceptions are permitted rather than mandatory. The protection is granted for 20 or 25 years, depending on the plant. During that period, the owner of the PBR may exclusively exploit and commercialize the product.³⁵⁶

Under UPOV 1991, exceptions for the use of protected varieties for specific purposes, i.e. seed saving by farmers³⁵⁷ and the breeder's use for further breeding³⁵⁸ are permitted, thereby recognizing the importance of free access to research material in the breeding process.³⁵⁹ According to Blakeney however, both these exceptions, and in particular the

³⁴⁸ 1991 UPOV Convention, Article 6.1.

³⁴⁹ 1991 UPOV Convention, Article 7.

³⁵⁰ 1991 UPOV Convention, Article 8.

³⁵¹ 1991 UPOV Convention, Article 9.

³⁵² 1991 UPOV Convention, Article 5(2). These requirements are covered by the 1991 Act. The novelty requirement is new from the 1991 Act.

³⁵³ Article 5(1) of the UPOV 1978 Act was interpreted as allowing implicitly farmers to re-sow or exchange protected seeds.

Article 5 (1) states that: "The effect of the right granted to the breeder is that his prior authorisation shall be required for

- the production for purposes of commercial marketing

- the offering for sale

- the marketing of the reproductive or vegetative propagating material, as such, of the variety.

Vegetative propagating material shall be deemed to include whole plants. The right of the breeder shall extend to ornamental plants or parts thereof normally marketed for purposes other than propagation when they are used commercially as propagating material in the production of ornamental plants or cut flowers."

³⁵⁴ 1991 UPOV Convention, Article 14(2). In comparison, patents cover also the technical processes for the production of protected varieties.

³⁵⁵ 1991 UPOV Convention, Article 3.

³⁵⁶ 1991 UPOV Convention, Article 19.

³⁵⁷ 1991 UPOV Convention, Article 15 (2) provides as an optional exception that "each Contracting Party may, within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder, restrict the breeder's right in relation to any variety in order to permit farmers to use for propagating purposes, on their own holdings, the product of the harvest which they have obtained by planting, on their own holdings, the protected variety...."

³⁵⁸ 1991 UPOV Convention, Article 15.1(i) and (ii); and Article 17.1, which provides a sort of compulsory licensing obligation when it states that "no Contracting Party may restrict the free exercise of a breeder's right for reasons other than of public interest."

³⁵⁹ C. FOWLER, *cit.* at p. 166.

farmer's privilege,³⁶⁰ are fairly limited since the 1991 Act, raising concerns that these restrictions hamper the informal exchanges practices of farmers and breeders.³⁶¹ Indeed, examining the UPOV Guidance documents made available to help member countries establish their national legislation according to UPOV obligations, it is noted that UPOV is promoting a limited interpretation of the farmers' exception.³⁶² This is further confirmed by the examination of national legislations showing that countries adopt and implement a narrow interpretation of these exceptions in their legislations.³⁶³ Academics have also examined the impact of seed laws with regards to other international obligations³⁶⁴ (such as conservation, sustainable use and ABS) and promote a more coherent and complementary implementation of the various instruments at stake.³⁶⁵

³⁶⁰ In the 1991 Act, the optional exception is restricted to the following permission: "farmers to use for propagating purposes, on their own holdings, the product of the harvest which they have obtained by planting, on their own holdings, the protected variety or a variety covered by Article 14(5)(a)(i) or (ii)". The wording of the Convention clarifies that the optional exception relates to the use of the product of the harvest by the farmer on his own holding. Thus, for example, the optional exception does not extend to propagating material which was produced on the holding of another farmer. See "Explanatory Notes on Exceptions to the Breeder's Right under the 1991 Act of the UPOV Convention", adopted by the UPOV Council at its forty-third ordinary session on October 22, 2009, document UPOV/EXN/EXC/1, at p.11. For an activists' view on the question, see GRAIN, 2007, "The End of Farm-Saved Seed?", *GRAIN Briefing*, Vol.

³⁶¹ Michale Blakeney is a Winthrop Professor of Law at the Faculty of Law, University of Western Australia. See M. BLAKENEY, "Trends in Intellectual Property Rights Relating to Genetic Resources for Food and Agriculture", 2011 at pp. 73-75. See also S. SHASHIKANT AND F. MEIENBERG, "International Contradictions on Farmers' Rights. The Interrelations between the International Treaty, Its Article 9 on Farmers' Rights, and Relevant Instruments of UPOV and Wipo", 2015 at pp. 7-9; see also P. CULLET AND R. KOLLURU, 2003 *op.cit.*; P. CULLET, 2005, "Seeds Regulation, Food Security and Sustainable Development", *op.cit.*

³⁶² UPOV, "Guidance for the Preparation of Laws Based on the 1991 Act of the UPOV Convention", adopted by the Council at its forty-seventh ordinary session on October 24, 2013, available at http://upov.int/edocs/infdocs/en/upov_inf_6_3.pdf. This document states that: "The wording of Article 15(1)(i) suggests that it could allow, for example, the propagation of a variety by an amateur gardener for exclusive use in his own garden (i.e. no material of the variety being provided to others), since this may constitute an act which was both private and for non-commercial purposes. Equally, for example, the propagation of a variety by a farmer exclusively for the production of a food crop to be consumed entirely by that farmer and the dependents of the farmer living on that holding, may be considered to fall within the meaning of acts done privately and for non-commercial purposes. Therefore, activities, including for example "subsistence farming", where these constitute acts done privately and for non-commercial purposes, may be considered to be excluded from the scope of the breeder's right, and farmers who conduct these kinds of activities freely benefit from the availability of protected new varieties." at p. 65.

³⁶³ A more detailed analysis of this topic goes beyond the scope of the present research. However, further information can be found in the following studies from governments A. CHRISTINCK AND M. WALLOE TVEDT, 2015, ; and from NGOs LA VIA CAMPESINA AND GRAIN, 2015; S. SHASHIKANT AND F. MEIENBERG, 2015. Seed legislations implementing UPOV can be found on the UPOV website at <http://www.upov.int/upovlex/en/>

³⁶⁴ H. M. HAUGEN, 2015, "Inappropriate Processes and Unbalanced Outcomes: Plant Variety Protection in Africa Goes Beyond UPOV 1991 Requirements", *The Journal of World Intellectual Property*, Vol. 18, (5); C. OGUAMANAM, *ibid.* Breeding Apples for Oranges: Africa's Misplaced Priority over Plant Breeders' Rights", Vol.

³⁶⁵ A more detailed analysis of this topic goes beyond the scope of the present research. However, further information can be found in the following studies from academics N. LOUWAARS, "Seeds of Confusion. The Impact of Policies on Seed Systems,"; L. S. ANVAR, 2008, "Semences Et Droit. L'emprise D'un Modèle Économique Dominant Sur Une Règlementation Sectorielle" (Paris I Panthéon-Sorbonne, 2008); and J. SANTILLI, *cit.*; H. M. HAUGEN, "The Right to Food, Farmers' Rights and Intellectual Property Rights: Can Competing Law Be Reconciled?", (eds), *Rethinking Food Systems*, Springer, 2014.

The Trade-related Aspects of Intellectual Property (TRIPS) Agreement³⁶⁶ was signed at the Marrakesh ministerial meeting in April 1994 within the context of the WTO.³⁶⁷ The TRIPS agreement is the first comprehensive international agreement on IP law at the interface with international trade law and establishes minimum standards for different forms of IP legislation.³⁶⁸ Its wide scope of application has led to a multilateral protection of IPRs³⁶⁹ affecting genetic resources generally.³⁷⁰ Article 27 of TRIPS specifies that patents are granted³⁷¹ in all fields of technology, although exceptions are provided to protect “ordre public and morality, including to protect human, animal or plant life or health or to avoid serious prejudice to the environment.”³⁷² Protecting plant varieties is compulsory, either through a patent system or a *sui generis* protection, or a combination of both. According to Blakeney, most countries implement the UPOV protection³⁷³ although the TRIPS Agreement does not name the UPOV Convention in its text as the *sui generis* protection of rights system to be adopted. Although the *sui generis* option³⁷⁴ could be used as a more flexible option to provide protection for plant varieties,³⁷⁵ the narrow implementation of the TRIPS agreement (and

³⁶⁶ The Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) constitutes Annex 1C of the Marrakesh Agreement Establishing the World Trade Organization (WTO) and was adopted as a result of the 1986–94 Uruguay Round negotiations. It strengthens the recognition of intellectual property rights over genetic resources.

³⁶⁷ Ratification of TRIPS is a compulsory requirement of World Trade Organization membership, which counts 153 members to date. It entered into force on 1 January 1995.

³⁶⁸ TRIPS Agreement, Part II, Articles 1 to 8 cover copyright and related rights, trademarks, geographical Indications, industrial designs, patents, layout-designs (topographies) of integrated circuits, protection of undisclosed information, and control of anti-competitive practices in contractual licences.

³⁶⁹ C. CHIAROLLA, *cit.* at p. 76.

³⁷⁰ L. R. HELFER, "International Property Rights in Plant Varieties: International Legal Regimes and Policy Options for National Governments", 2004 at p. 33.

³⁷¹ Article 33 provides that “The term of protection available shall not end before the expiration of a period of twenty years counted from the filing date.”

³⁷² TRIPS Agreement, Part II, Article 27 2. Full text states that “Members may exclude from patentability inventions, the prevention within their territory of the commercial exploitation of which is necessary to protect ordre public or morality, including to protect human, animal or plant life or health or to avoid serious prejudice to the environment, provided that such exclusion is not made merely because the exploitation is prohibited by their law.

3. Members may also exclude from patentability:

(a) diagnostic, therapeutic and surgical methods for the treatment of humans or animals;

(b) plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof. The provisions of this subparagraph shall be reviewed four years after the date of entry into force of the WTO Agreement.”

³⁷³ M. BLAKENEY, "Patents and Plant Breeding: Implications for Food Security", 2011

³⁷⁴ B. DHAR, "Sui Generis Systems for Plant Variety Protection", 2002 at pp7-16.

³⁷⁵ B. DE JONGE, N. P. LOUWAARS, AND J. KINDERLERER, 2015, "A Solution to the Controversy on Plant Variety Protection in Africa", *Nature biotechnology*, Vol. 33, (5); see also S. KOONAN, "India's Sui Generis System of Plant Variety Protection", 2014 at pp. 1-5; and C. M. CORREA, "Plant Variety Protection in Developing Countries: A Tool for Designing a Sui Generis Plant Variety Protection System: An Alternative to UPOV 1991," (by: Association for Plant Breeding for the Benefit of Society (APBREBES) and its member organizations: Berne Declaration, The Development Fund, SEARICE and Third World Network, 2015).

UPOV) contributes to the idea that international regulations concretize the “enclosure of the intangible commons of the mind.”³⁷⁶

According to Helfer, granting IPRs to plant varieties – whether patents or PBR– results from developed countries’ policy objectives to enrich society’s welfare in the field of agricultural innovation.³⁷⁷ But this can only work for developed countries. Studies have shown that this system is designed for developed economies, and that it is not adapted to agricultural development in developing economies where most seeds are accessed through informal seed systems.³⁷⁸ Adding to this controversy, experts fear that the promotion of wide IPRs over plants leads to some impediments in research activities.³⁷⁹ Difficulties in identifying proprietary rights (for many different owners, on different technologies and products situated in different jurisdictions) have contributed to tracking issues. Bragdon gives the anecdotal example of the Golden Rice, where several years of searches and compromise with the rights owners were necessary for the researchers to conduct their work lawfully, and in the end not even be able to commercialize their product.³⁸⁰ Furthermore, fears also arise as to blocking-position patents or defensive patents,³⁸¹ where right owners claim patents in order to impede their competitors from accessing the necessary material and technology.³⁸²

- 1991: Revision of the UPOV Convention
- 1992: Adoption of the Convention on Biological Diversity
- 1993: The CGRFA agrees to renegotiate the IU
- 1994: Adoption of the Marrakech Agreement on Trade-related Aspects of Intellectual Property Rights (TRIPS)

Table 2.6: Reinforcing PGRFA appropriation through UPOV 1991 and the TRIPS Agreement

³⁷⁶ J. BOYLE, 2003, "The Second Enclosure Movement and the Construction of the Public Domain", *Law & Contemporary Problems*, Vol. 66, (1/2), at p. 37. Notwithstanding this argument, one can question whether it is the property rights regime or the way they are implemented in national seed legislations, that most impede access to seeds and technology.

³⁷⁷ L. R. HELFER, "International Property Rights in Plant Varieties: International Legal Regimes and Policy Options for National Governments", 2004 at p. 2.

³⁷⁸ R. TRIPP, N. LOUWAARS, AND D. EATON, 2007, "Plant Variety Protection in Developing Countries. A Report from the Field.", *Food Policy*, Vol. 32; see also C. CHIAROLLA, 2006 *op.cit.*; L. S. ANVAR, "Semences Et Droit. L'emprise D'un Modèle Économique Dominant Sur Une Règlementation Sectorielle," and E. BERTACCHINI, "Biotechnologies, Seeds and Semicommons," (2007)

³⁷⁹ For example, Van der Kooij promotes the establishment of a breeders’ exemption for patent law, in order to mitigate the reduced access to breeding material due to wide patents in the field and promote breeding innovation. See P. VAN DER KOOIJ, 2010, "Towards a Breeder's Exemption in Patent Law?", *European Intellectual Property Review*, Vol. 32, (11).

³⁸⁰ S. BRAGDON, 2004 *op.cit.* at p. 75.

³⁸¹ S. BRAGDON, 2004 *op.cit.* at pp. 76 and 78.

³⁸² For a contradictory position, see B. KOO, C. NOTTENBURG, AND P. G. PARDEY, 2004, "Plants and Intellectual Property: An International Appraisal", *Science*, Vol. 306, (5700).

Conclusion

Scholars have carried out research on the regime constellation for PGRFA (what Oberthür, Gerstetter *et al.* or Jungcurt call “regime complex”),³⁸³ which mainly include five legally binding international agreements: the UPOV Convention, the CBD, the TRIPS Agreement, the Treaty and the newly adopted Nagoya Protocol. Gerstetter *et al.* confirm that “wherever there are several legally binding international agreements dealing with at least partially overlapping issues, a conflict between them may arise. Such conflicts narrow the leeway that parties to more than one of the treaties have for implementation and may thus also reduce the treaties’ potential for reaching their objectives.”³⁸⁴

These international legally binding agreements³⁸⁵ aggregated in a regime-complex influence the design and implementation of other regulatory instruments, whether national, regional or international. Indeed, regarding PGRFA, the design and implementation of the CBD, UPOV and TRIPS have influenced the negotiations on the Plant Treaty and have contributed to creating a multilateral system where IPRs are explicitly recognized and integrated in the ABS mechanism put in place. Andersen has looked in depth into the regime overlap, interaction and the resulting regime constellations for the management of PGRFA. The effects of this constellation were quite negative regarding access to PGRFA, and regarding the development and recognition of the concept of FRs, and the regime developed has not resolved the “tragedy of the commons” issue for PGRFA.³⁸⁶ While it is outside the scope of this thesis to study this regime constellation in detail, it is interesting to note that Andersen finds that “[f]rom the history of regime formation and interaction regarding PGRFA management, it appears that developments have been dominated by two main fronts, with some bridge-builders and issue-specific factions in-between. On the one side, there were a

³⁸³ See S. JUNG CURT, “Institutional Interplay in International Environmental Governance: Policy Interdependence and Strategic Interaction in the Regime Complex on Plant Genetic Resources for Food and Agriculture,”; S. OBERTHÜR AND O. S. STOKKE, 2011, “*Managing Institutional Complexity - Regime Interplay and Global Environmental Change*”, Cambridge, MA, MIT Press; C. GERSTETTER *et al.*, 2007 *op.cit.*; R. ANDERSEN, *cit.*

³⁸⁴ C. GERSTETTER *et al.*, 2007 *op.cit.* at p. 259.

³⁸⁵ For a more detailed account of the impact of these two conventions on the IP protection of genetic resources see C. FOWLER, *cit.* at pp. 170-184.

³⁸⁶ R. ANDERSEN, *cit.* at p. 352. See also S. B. BRUSH, 2005, “Protecting Traditional Agricultural Knowledge”, *op.cit.* at p. 108-109.

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few powerful industrialized countries, [which pushed for intellectual property protection regimes through UPOV and TRIPS] (...); on the other, a large majority of developing countries [which imposed sovereign rights over national genetic resources to control their access].”³⁸⁷

It is clear therefore, that the question of access to genetic resources has strong political and economic forces, superseding the environmental and social objectives of the CBD, the IU or the Treaty.³⁸⁸ The tensions resulting from this situation are examined in Chapter 3 below.

³⁸⁷ R. ANDERSEN, *cit.* at p. 173.

³⁸⁸ S. JUNG CURT, "Institutional Interplay in International Environmental Governance: Policy Interdependence and Strategic Interaction in the Regime Complex on Plant Genetic Resources for Food and Agriculture," at p. 2.

Chapter 3 Challenges in the Exchange of PGRFA to Reward the Custodians of Agro-biodiversity and Promote Innovation

Demba is a small farmer in Mali who grows different varieties of millet, sorghum, cowpea and peanuts (i.e. plant genetic resources for food and agriculture) on his 0.35ha field. The varieties he grows originate from exchanging seeds with his family, his neighbours and seeds bought on markets nearby. Demba does not manage to feed his 9 persons family with his production. Droughts, diseases and pests often ruin his work so he would like to increase and diversify his production. Accessing more diverse varieties better adapted to climate hazards as well as improved varieties with higher yields would help Demba. But few are available on the market. Improved seeds sold by multinationals such as Monsanto are too expensive, require “modern” techniques for growing them (i.e. use of purchased inputs and inaccessible technical machinery), and do not necessarily answer Demba’s needs and modes of production. Moreover, patents and sterilized genetically modified varieties hinder Demba from accessing similar varieties by other means.³⁸⁹ The remaining option for Demba is to access improved varieties at national or international research centres, which develop and conserve such improved varieties. Hence, research centres also need to have access to the necessary genetic resources to develop these new varieties. However, the present international regime complex³⁹⁰ renders access to seeds far more difficult than at the beginning of the twentieth century. What tensions have emerged from this regime complex?

Chapter 3 analyses the tensions arising from the multifaceted international seed regime complex, as a necessary preliminary analysis to allow for the evaluation of the present international seed regime conducted in Part II of this thesis. Since the dawn of settled agriculture, farmers have developed, conserved and exchanged crop and forage varieties to respond to their needs.³⁹¹ The generally open patterns of exchange and use, established by

³⁸⁹ M. P. TEMUDO, 2011, "Planting Knowledge, Harvesting Agro-Biodiversity: A Case Study of Southern Guinea-Bissau Rice Farming", *Human Ecology*, Vol. 39, (3).

³⁹⁰ See above Chapter 2.

³⁹¹ R. PISTORIUS, *cit.* At p. xxvii; B. D. SMITH, 1998, "The Emergence of Agriculture", New York Scientific American Library; C. A. REED, *cit.*; Fowler and Hodgkin explain indeed that "When it comes to food security, all countries share something important

early farmers were continued by public researchers and plant breeders until the middle of the twentieth century.³⁹² This trend perpetuated and amplified a situation that originated in the fifteenth century, where countries all over the world are reliant on PGRFA located within each other's borders.³⁹³ There is not a single country that does not need crops originating from other countries or continents to feed their population.³⁹⁴ From the second half of last century however, access to PGRFA diversity has become far more difficult. This explains why, for the last three decades, besides the promotion of conservation and sustainable use of seeds, facilitating access to plant genetic resources for food and agriculture has been a priority for FAO³⁹⁵ and other international organizations.

The research question to be answered in this Chapter is the following: What are the underlying tensions rendering the international seed management system so complex? Indeed, these tensions need to be resolved in order to effectively facilitate access to PGRFA and reach the Treaty's overall goals of food security and sustainable agriculture. In this Chapter, four types of tensions will be briefly described, depicting a global picture around the access problem. These tensions all arise at a horizontal level in terms of land space (between developed and developing countries mainly) and at a vertical level in time (from the 1900s up to today), which further complicates their analysis.

The method used to answer this question follows the same explanatory analysis as in Chapter 2. To grasp a thorough understanding of the regime complex, a wide literature review on the PGRFA management was undertaken at the international level – from the mid-twentieth century to nowadays – both from scientific legal and non-legal literature. This reading enabled to grasp a broad understanding of the international PGRFA management system. Additionally, as mentioned earlier, law in books and law in practice being two different things, my concomitant experience as negotiator and observer in Treaty meetings provided

and fundamental. All depend on crops domesticated in distant lands during the Neolithic era. As crops, the maize grown in Africa, the wheat that blankets the Canadian prairies, and the potatoes cultivated on more than 10 million acres in China are botanical immigrants, and old ones at that. None are native to those lands. Directly or indirectly, therefore, the world's six billion people depend on crops and, thus, on genetic resources that would not normally be found in and are not part of the indigenous flora of their country. The questions of farmer and breeder access to and of availability of genetic resources—seeds, plants, and plant parts useful in crop breeding, research, or conservation for their genetic attributes—are of tremendous importance.” in C. FOWLER AND T. HODGKIN, 2004 *op.cit.* at p. 144.

³⁹² N. KLOSE, 1950, "*America's Crop Heritage: The History of Foreign Plant Introduction by the Federal Government*", Iowa State College Press

³⁹³ See table 4.2 in Chapter 4 below on the interdependence of States.

³⁹⁴ X. F. PALACIOS, "Contribution to the Estimation of Countries' Interdependence in the Area of Plant Genetic Resources", 1997

³⁹⁵ For more information on FAO's work on access to PGRFA, see Chapter 2.

other useful knowledge,³⁹⁶ used as a support tool to clarify the context and understand the law accordingly. The description of the tensions arising from the international seed regime complex between 1950 and 2004 constitute the basis for the evaluation of the current International Treaty regulatory setting, covered in Part II of this thesis.

Chapter three exposes four major challenges encountered by stakeholders in the exchanges of and access to PGRFA. These are: the existing tension between public seeds and intellectual property rights (Section 1); the tension between advancements in biotechnology by mega agro-chemical companies and small-scale farmers (Section 2); the tension between farmers' seed systems³⁹⁷ for the exchanges of PGRFA and national or international over-regulation on access to seeds (Section 3);³⁹⁸ and the North/South divide (Section 4).

Section 1. The tension between “public seeds” and IPRs: ownership as a factor of rights imbalance

The purpose of this section is to highlight the tension that arose between stakeholders in the agro-biodiversity field following the shift in considering seeds as public goods to considering seeds almost exclusively as private goods. This shift has directly affected and limited the rights of access to the seeds by many stakeholders.

The historical timeline for PGRFA exchange and management shows that there is a conceptual debate on the ownership and control of PGRFA,³⁹⁹ or what Footer calls a “gradual paradigm shift in the attitude towards PGRFA.”⁴⁰⁰ Some stakeholders would rather treat PGRFA strictly as a private resource, i.e. a commodity subject to market and private property rules. Others would rather see PGRFA as purely public goods to be supplied, financed and conserved by public authorities. Yet others understand PGRFA as containing both a private and a public dimension, calling for a *sui generis* management mechanism. The “privateness” or “publicness” of a good is not an intrinsic characteristic of the good. Legal constructs have

³⁹⁶ This knowledge is examined following a *modus operandi* described under section 5 “Contextual Analysis” in Chapter 1.

³⁹⁷ N. LOUWAARS, "Seeds of Confusion. The Impact of Policies on Seed Systems," at pp. 29-50.

³⁹⁸ I. SERAGELDIN, 1999, "Biotechnology and Food Security in the 21st Century", *Science*, Vol. 285.

³⁹⁹ Stoll refers to the development of different entitlements relevant to the use of genetic resources. P.-T. STOLL, *op. cit.* at p. 8.

⁴⁰⁰ M. E. FOOTER, 2000, "Intellectual Property and Agrobiodiversity: Towards Private Ownership of the Genetic Commons", *Yearbook of International Environmental Law*, Vol. 10, (1) at p. 49-50.

created these concepts.⁴⁰¹ Most of the time, a good can easily be moved from a private to a public nature.⁴⁰² Regardless of how literature names what is called public seeds,⁴⁰³ the fact highlighted here is the impact on access to seeds of various types of “ownership” over genetic resources,⁴⁰⁴ which result from the dual nature of the resource, i.e. seeds as containing genetic information or data⁴⁰⁵ potentially protected by IPRs and as physical material owned by a farmer. Common property,⁴⁰⁶ as a third category complementing the public and private ones, is sought as an alternative option to overcome the enclosure of seeds. Digging into the property regimes over PGRFA would certainly be very helpful to understand this shift. However, theories of property are very complex and wide. They can be looked at through legal,⁴⁰⁷ economic,⁴⁰⁸ or philosophical⁴⁰⁹ lenses. From the legal perspective, an important literature led by Douglas Melamed and Guido Calabresi has developed around the notion of

⁴⁰¹ J. BOYLE, 2003, "Foreword: The Opposite of Property?", *Law and Contemporary Problems*, Vol. 66, (Winter/Spring 2003, 1&2); J. BOYLE, 2003, "The Second Enclosure Movement and the Construction of the Public Domain", *op.cit.*; M. A. HELLER AND H. DAGANT, 2001, "The Liberal Commons", *Yale Law Journal*, Vol. 110. Moreover, the dichotomy between the public and private qualification of a good is not so straightforward and comes from a neoliberal ideological claim. Aoki shows that both categories regularly mix and that intellectual property may be fairly characterized as a jointly social product. See K. AOKI, 1999, "Neocolonialism, Anticommons Property, and Biopiracy in the (Not-So-Brave) New World Order of International Intellectual Property Protection Symposium: Sovereignty and the Globalization of Intellectual Property", *Indiana Journal of Global Legal Studies*, Vol. 6, (1), at pp. 13-15.

⁴⁰² M. A. HELLER, 1998, "The Tragedy of the Anticommons: Property in the Transition from Marx to Markets", *Harvard Law Review*, Vol. 111. A note is made however regarding the physical possibility of “privatizing” an open-pollinated seed (protecting it with an IPR), before specific innovation occurred in agricultural development allowing for the control in the use of the seed. See Chapter 2, Section 3.

⁴⁰³ Authors have associated various terminologies to seeds such as “public domain”, “global commons”, “common heritage of mankind”, “global public goods”, “pure global commons”, and many other - sometimes strange - associations of words. What is important to bear in mind at this stage is the “public” dimension of seeds, as opposed to privately owned rights over seeds. An analysis of the public or private dimension of seeds will take place in Chapters 5 and 6 below.

⁴⁰⁴ When talking about the institutional forms of successfully delivering critical needs of the agricultural sector, Chang argues that “the standard dichotomy between the public sector and the private sector is crippling our policy imagination.” H.-J. CHANG, 2009, "Rethinking Public Policy in Agriculture: Lessons from History, Distant and Recent", *The Journal of Peasant Studies*, Vol. 36, (3) at p. 512

⁴⁰⁵ Peter Drahos extensively covers the problem of access to information and technology in his book: P. DRAHOS AND J. BRAITHWAITE, 2002, *Information Feudalism: Who Owns the Knowledge Economy?*, Earthscan.

⁴⁰⁶ M. A. HELLER, 1998 *op.cit.*

⁴⁰⁷ Honore, A.M. (1961), “Ownership” in A.G. Guest (ed.) *Oxford Essays in Jurisprudence*, Oxford: Oxford University Press; J. SANTILLI, 2012, Earthscan, London.; H. DEMSETZ, 1967, "Toward a Theory of Property Rights", *The American Economic Review*, Vol. 57, (2); A. A. ALCHION AND H. DEMSETZ, 1973, "The Property Right Paradigm", *Journal of Economic History*, Vol. 33, (1); and H. DEMSETZ, 2002, "Toward a Theory of Property Rights II: The Competition between Private and Collective Ownership", *Journal of Legal Studies*, Vol. 31, (2); see also R. MERGES, 2001, "Institutions for Intellectual Property Transactions: The Case of Patent Pools", *Expanding the Boundaries of Intellectual Property: Innovation Policy for the Knowledge Society*, Vol. ; J. BOYLE, 2003, "Foreword: The Opposite of Property?", *op.cit.*; J. BOYLE (eds.), *The Public Domain. Enclosing the Commons of the Mind*, 2008.

⁴⁰⁸ R. MERGES, 1994, "Intellectual Property Rights and Bargaining Breakdown: The Case of Blocking Patents", *Tennessee Law Review*, Vol. 62; Yoram Barzel (1997), *Economic Analysis of Property Rights (Political Economy of Institutions and Decisions)*, Cambridge University Press, 2nd ed; see also R. H. COASE, 1960 *op.cit.*

⁴⁰⁹ J. WALDRON, 1988, *The Right to Private Property*, New York and Oxford, Oxfordshire, Clarendon Press, and J. WALDRON, 1994, "The Advantages and Difficulties of the Humean Theory of Property", *Social Philosophy and Policy*, Vol. 11, (02); not to cite earlier foundational philosophers such as Locke, Hume or Kant. For recent philosophical approach to IPR see P. DRAHOS AND J. BRAITHWAITE, *cit.*; P. DRAHOS, 1996, *A Philosophy of Intellectual Property*, Aldershot ; Brookfield, USA, Dartmouth.

entitlement to property rules, or liability rules.⁴¹⁰ More recently, James Boyle provides an interesting view when he states that the axis of variation is not the “owned” versus the “free” but rather the “individual” versus “collective” control.⁴¹¹ Applying an economic lens over property rights theory, Harold Demsetz⁴¹² and the transaction costs theory of Ronald Coase⁴¹³ serve as a background to understand the PGRFA appropriation process that occurred since the 1960s and the rise of an economic value attached to genetic resources (the “green gold”).

The aim of this section is not to repeat the work of said eminent academics,⁴¹⁴ nor to apply these theories to biodiversity and traditional knowledge in general⁴¹⁵ or to the agricultural innovation chain in particular,⁴¹⁶ as it has already been done exhaustively by colleagues. Rather, the purpose of this section is to highlight that the evolution of the property regimes applied to PGRFA – leading to the hyperownership of seeds⁴¹⁷ – has excessively enclosed seeds and contributed dangerously to creating an “anticommons”⁴¹⁸ dilemma, where seeds are under-utilized. This under-utilization is dangerous at various levels (erosion of agro-biodiversity, lack of subsistence of small holder farmers, impediments in public research, etc.) and must be countered by facilitating access to seeds.

Until fairly recently, seeds were considered as “free goods”⁴¹⁹ – goods in “the public domain” – that is to say seeds “available to all” for further breeding and research⁴²⁰ (in lay terms). At the time of the green revolution,⁴²¹ improved seeds used in developing countries had the characteristic of public goods: they were easily reproduced so many farmers could

⁴¹⁰ G. CALABRESI AND D. MELAMED, 1972, “Property Rules, Liability Rules, and Inalienability: One View of the Cathedral”, *Harvard Law Review*, Vol. 85, (6).

⁴¹¹ J. BOYLE, 2003, “Foreword: The Opposite of Property?”, *op.cit.* Boyle 2003 at p. 30-31; K. AOKI, “Seed Wars : Controversies and Cases on Plant Genetic Resources and Intellectual Property”, *op. cit.* At p. 103

⁴¹² H. DEMSETZ, 1967 *op.cit.*

⁴¹³ R. H. COASE, 1960 *op.cit.*; and R. P. MERGES, 1994 *op.cit.*. See also the thesis of Enrico Bertacchini who analyses the influence of “Coasian” economic theories in the management of seeds: E. E. BERTACCHINI, 2008, “Property Rights and Plant Genetic Resources for Food and Agriculture” (2008), and E. BERTACCHINI, 2008 *op.cit.*.

⁴¹⁴ P. DRAHOS, 2006, “A Defence of the Intellectual Commons”, *Consumer Policy Review*, Vol. 16; P. DRAHOS, “A Philosophy of Intellectual Property”, *op. cit.*.

⁴¹⁵ N. BRAHY, “The Property Regime of Biodiversity and Traditional Knowledge : Institutions for Conservation and Innovation,”. See in particular Brahy’s thesis Part II “The Property Regime of Genetic Resources”.

⁴¹⁶ F. BATUR, “Agrobiodiversity Conservation and Plant Improvement : Adjustments in Intellectual Property Rights Reclaiming the Public Domain Towards Sustainability and Equity,”. See in particular Batur’s thesis Part I and Part IV, where she covers the matter extensively.

⁴¹⁷ S. SAFRIN, 2004 *op.cit.*.

⁴¹⁸ M. A. HELLER, 1998 *op.cit.* The “tragedy of the anticommons” is examined further in Chapter 6 of the present thesis.

⁴¹⁹ J. R. KLOPPENBURG, “First the Seed. The Political Economy of Plant Biotechnology, 1492-2000,” At p. 15.

⁴²⁰ R. PISTORIUS, *cit.*

⁴²¹ L. TANGLEY, 1987 *op.cit.*.

sow them (non-rivalry),⁴²² and there was no technical means for seed industry to exclude farmers in developing countries from sowing protected improved varieties (non-excludability). Indeed, before modern biotechnology, open-pollinated seeds (whether improved or not) were widely used by farmers because they self-reproduce easily.⁴²³ It was not possible to exclude farmers from planting these seeds. Today, there are two main means of appropriating seeds: i.e. the legal mean (e.g. through IPRs) and the technological mean (e.g. Genetic Use Restriction Technology (GURT) seeds).

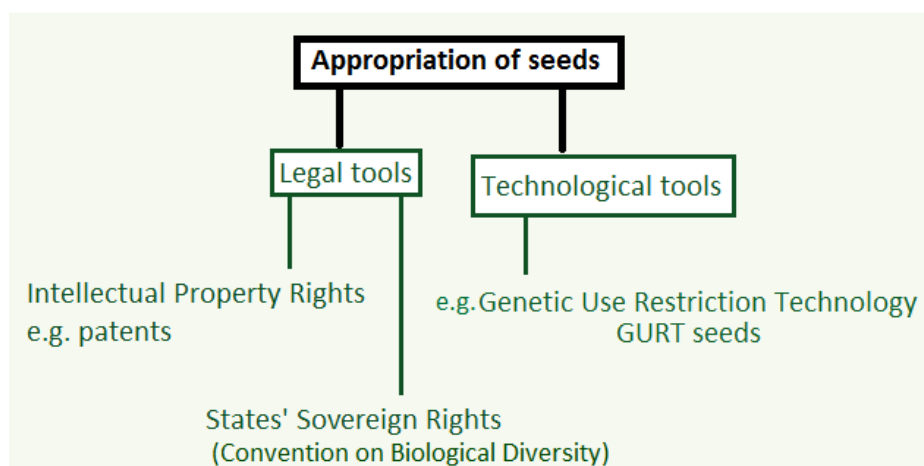


Figure 3.1: Appropriation of seeds

The relatively recent entry of private companies into the plant breeding business, from the late nineteenth century onwards, has been facilitated by the development of IPRs for plants and plant varieties.⁴²⁴ The development of intellectual property rights over PGRFA reinforced by biotechnology advancements has shifted this “public” feature to a private one. Previously “uncontrollable” seeds can now be identified, traced and effectively protected through the enforcement of breeders’ rights or IPRs.⁴²⁵ The knowledge embedded in the seed

⁴²² See figure 6.1 for the quadrant of goods showing the non-rivalry and non-excludability characteristics of a public good, below in Chapter 6.

⁴²³ R. W. HERDT, "Enclosing the Global Plant Genetic Commons," at p. 4-5.

⁴²⁴ See for example K. AOKI, "Seed Wars : Controversies and Cases on Plant Genetic Resources and Intellectual Property", *op. cit.*; or N. LOUWAARS, "Seeds of Confusion. The Impact of Policies on Seed Systems," at pp. 51-112.

⁴²⁵ "Companies naturally want to stop others from copying—or buyers reproducing — new products if they can. This can be done in two ways. One is by legal means, through IPRs where such rights can be enforced. The other is through attempting to develop technologies that will stop seeds germinating or specific traits being activated without a purchased input—these are projected genetic use restriction technologies (GURTs) also dubbed “terminator” and “traitor” technologies. » G. TANSEY, 2002, "Patenting Our Food Future: Intellectual Property Rights and the Global Food System", *Social Policy & Administration*, Vol. 36, (6) at p. 579.

can now “legitimately” be managed as a private good.⁴²⁶ While these IPRs were intended to create incentives for investment in the private plant breeding sector,⁴²⁷ they also represented a break in the earlier tradition of unfettered access for a majority of stakeholders (i.e. farmers and small breeders around the world). In particular, it has been argued that IPRs’ power to interrupt the open flow and use of plant genetic resources threatens food security and poverty alleviation in developing countries in particular, by reducing their access to essential PGRFA.⁴²⁸ As portrayed by the former UN Special Rapporteur on the right to food, the current PGRFA management system seems to experience: “a marked paradigm shift from a system seeking to foster food security on the basis of the free exchange of knowledge to a system seeking to achieve the same goal on the basis of private appropriation of knowledge.”⁴²⁹ Furthermore, as Boyle puts it “[d]o we know that property rights in this sphere will yield the same surge of productive energy that is claimed for the enclosure of arable land?”⁴³⁰ There, I think the answer is a resounding “No.” We rush to enclose ever-larger stretches of the commons of the mind without convincing economic evidence that it will help our processes of innovation and with very good reason to believe it will actually hurt them.”⁴³¹ This position is confirmed by Heller who contends that private ownership usually creates wealth, but that too much ownership has the opposite effect in that it creates gridlocks.⁴³²

To grasp the existing legal framework, as well as its strengths and weaknesses, it is important to consider the effect of two trends.⁴³³ One may envision the TRIPS Agreement as the culmination of a drive for multilateral protection of intellectual property rights affecting genetic resources generally (i.e. strong recognition of property rights over genetic resources). On the other hand, one may also view the CBD as the outcome of a pushback by states—

⁴²⁶ C. ROA-RODRÍGUEZ AND T. VAN DOOREN, 2008, "Shifting Common Spaces of Plant Genetic Resources in the International Regulation of Property", *The Journal of World Intellectual Property*, Vol. 11, (3), at p. 187, citing P. DRAHOS AND J. BRAITHWAITE, *cit.*

⁴²⁷ Batur explains exhaustively the different innovation contexts according to three different types of actors, and the impact of the enclosure of agrobiodiversity on the activities of these stakeholders. See F. BATUR, "Agrobiodiversity Conservation and Plant Improvement : Adjustments in Intellectual Property Rights Reclaiming the Public Domain Towards Sustainability and Equity," at Part II.

⁴²⁸ See for example E. BONADIO, 2007, "Crop Breeding and Intellectual Property in the Global Village", *European Intellectual Property Review*, Vol. 29, (5) at p. 1722; C. F. RUNGE AND E. DEFRANCESCO, 2006, "Exclusion, Inclusion, and Enclosure: Historical Commons and Modern Intellectual Property", *World Development*, Vol. 34, (10) at p. 1722.

⁴²⁹ UN (2004), "Report by the Special Rapporteur on the Right to Food, submitted in accordance with Commission on Human Rights Resolution 2003/25", E/CN.4/2004/10.

⁴³⁰ This fact is also contested by Boyle and others. See footnote 70 in Boyles’ paper J. BOYLE, 2003, "The Second Enclosure Movement and the Construction of the Public Domain", *op.cit.*

⁴³¹ J. BOYLE, 2003, "The Second Enclosure Movement and the Construction of the Public Domain", *op.cit.* at pp. 49-50.

⁴³² M. HELLER, 2010, "The Gridlock Economy: How Too Much Ownership Wrecks Markets, Stops Innovation, and Costs Lives", Basic Books.

⁴³³ S. SAFRIN, 2004 *op.cit.*

especially developing countries—to re-establish control over the basic resources.⁴³⁴ Indeed, these resources would serve as inputs into the burgeoning new sectors where genetic resources are now being commercially exploited, but states would participate to the benefits of these uses by imposing a benefit-sharing obligation on the user of the resources. However, the implementation of the CBD at the national level has led to the opposite result, i.e. the limitation of exchanges of genetic resources instead of its expanded access.⁴³⁵ What's more, it has acted as a complementary tool to the appropriation and commodification of biological diversity reinforcing the TRIPS / UPOV trend.⁴³⁶

Consequently, access and availability are subject to (costly) property rights. Tansey explains clearly how the current IPR regime was fitted into the GATT negotiations,⁴³⁷ and how it was created by a small number of actors representing powerful corporate interests and professionals to fit their specific commercial objectives into global public policies.⁴³⁸ Based on these facts, Tansey raises two issues: first, the way global rules are made reflects the clearly imbalanced nature of this process; and second, whether the content of these rules is appropriate (illustrating the “one-size-fits-all” rule problem).⁴³⁹ What was once plenty, available and free is now few, hardly accessible and costly. What was once “commonly” held “in trust” (mainly *in situ* in gene-rich developing countries) by “Humanity”⁴⁴⁰ is now privately

⁴³⁴ A. ÇOBAN, 2004, "Caught between State-Sovereign Rights and Property Rights: Regulating Biodiversity", *Review of International Political Economy*, Vol. 11, (4).

⁴³⁵ IUCN, *cit.*; K. GARFORTH *et al.*, 2005.

⁴³⁶ Analysing the interrelationships between the two international regimes of sovereignty and property rights over biodiversity, namely the CBD and the TRIPS agreement, Çoban confirms indeed that “[w]e have also seen that both property and sovereignty regimes are manifestations of exclusivity and power relations; that both work together in the commodification of life forms; that the creation and realisation of IPRs entails the exercise of state-sovereignty rights; and that the structural relationship between the economic/private actors/property rights and the political/state authorities/sovereignty rights manifests a “separation-in-unity”. In contrast to views that see these two regimes of property and sovereignty rights as contradictory, the paper has thus shown that they are complementary in the process of capitalist accumulation.” In A. ÇOBAN, 2004 *op.cit.* at p. 755.

⁴³⁷ See also Dutfield and Suthersanen stating that the reason why commercial importance of intellectual property rights has grown considerably since the nineteenth century, and has accelerated since the 1970s, is because of the incessant and increasing pressure on businesses and national economies to be competitive. G. DUTFIELD AND U. SUTHERSANEN, 2008, *Global Intellectual Property Law*, Cheltenham, Edward Elgar at pp. 22-23.

⁴³⁸ Drahos confirms that it is important to grasp the ins and outs of the establishment of such regime as “[u]nderstanding how power is distributed and wielded is a precondition for promoting just and efficient governance.” See S. BURRIS, P. DRAHOS, AND C. SHEARING, 2005, "Nodal Governance", *Australian Journal of Legal Philosophy*, Vol. 30, at p. 31. And again, see Dutfield and Suthersanen confirming that these developments in intellectual property law began in Europe or North America and are spreading to the rest of the world through agreements such as the TRIPS or bilateral and regional free trade agreements. Consequently, national intellectual property, especially patent, regimes throughout the world are being increasingly held to standards of protection based on those of the most economically and politically influential countries. G. DUTFIELD AND U. SUTHERSANEN, *cit.* at pp. 22-23.

⁴³⁹ G. TANSEY, 2002 *op.cit.* p. 580.

⁴⁴⁰ D. COOPER, 1993, "The International Undertaking on Plant Genetic Resources", *Review of European Community & International Environmental Law*, Vol. 2, (2).

owned by monopolistic agro-chemical companies (from developed countries).⁴⁴¹ As Runge and Defrancesco have written “there is no question that exclusive rights to private property, real or intellectual, confer tangible benefits to those who hold them”; but they continue on saying that this “may require altering the balance in the bundle of these rights, and a reassertion of the private and public efficiencies gained from real and intellectual assets treated as common property.”⁴⁴²

Revealing this tension and to force a re-balancing in the access to PGRFA, initiatives have bloomed worldwide within different stakeholder groups (farmers, academics, breeders, citizens, states and international research centres). These initiatives aim at an alternative path promoting a sustainable agriculture for the collective interest, (i.e. to produce local, diverse, sustainable and healthy food)⁴⁴³ inter alia by sharing, exchanging, and conserving seeds “freely”. Examples of such initiatives are provided below.

*La Via Campesina*⁴⁴⁴ is the most active and widespread farmers’ organization worldwide.⁴⁴⁵ It was born in 1993 and defends small-scale sustainable agriculture as a way to promote social justice and dignity. It strongly opposes corporate driven agriculture and transnational companies that are “destroying people and nature”. It comprises about 164 local and national organizations in 73 countries from Africa, Asia, Europe and the Americas. Altogether, it represents about 200 million farmers. Since its birth, one of its objectives is the fight against “biopiracy” of seeds and genetic information.⁴⁴⁶

⁴⁴¹ J. R. KLOPPENBURG, "First the Seed. The Political Economy of Plant Biotechnology, 1492-2000," at p.11.

⁴⁴² C. F. RUNGE AND E. DEFRANCESCO, 2006 *op.cit.* at p. 1722.

⁴⁴³ M. A. ALTIERI AND C. I. NICHOLLS, 2012 Examples of such associations are Arche Noah, Kokopelli, Pro Specie Rara, Red de Semillas, Réseau Semences Paysannes, Rete Semi Rurali, etc.

⁴⁴⁴ *La Via Campesina* claims to be an autonomous, pluralist and multicultural movement, independent from any political, economic or other type of affiliation. The main goal of the movement is to realize food sovereignty and stop the destructive neoliberal process. It is based on the conviction that small farmers, including peasant fisher-folk, pastoralists and indigenous people, who make up almost half the world's people, are capable of producing food for their communities and feeding the world in a sustainable and healthy way. See <http://viacampesina.org/fr/>

⁴⁴⁵ Priscilla Claeys investigates in depth social movements active in the food and agriculture field, and in particular *La Via Campesina*. See her thesis P. CLAEYS, 2014, "Human Rights and the Food Sovereignty Movement. Reclaiming Control" (PhD Thesis, Université catholique de Louvain, 2014); and other publications P. CLAEYS, 2014, "Food Sovereignty and the Recognition of New Rights for Peasants at the Un: A Critical Overview of La Via Campesina's Rights Claims over the Last 20 Years", *Globalizations*, Vol. ; and N. LAMBEK *et al.*, *cit.*

⁴⁴⁶ For a recent press release on the matter see “The Seed Treaty Undermined by the Gangrene of Biopiracy”, posted on 15 October 2015, available at <http://viacampesina.org/en/index.php/main-issues-mainmenu-27/biodiversity-and-genetic-resources-mainmenu-37/1886-the-seed-treaty-undermined-by-the-gangrene-of-biopiracy>

Chapter 3 – Challenges in PGRFA

Academics at Wisconsin-Madison University⁴⁴⁷, along with breeders and farmers, have recently created the *Open Source Seed Initiative* (OSSI) to “keep the new seeds free for all people to grow, breed and share for perpetuity, with the goal of protecting the plants from patents and other restrictions down the line.”⁴⁴⁸ The OSSI is inspired “by the free and open source software movement that has provided alternatives to proprietary software, OSSI was created to free the seed - to make sure that the genes in at least some seed can never be locked away from use by intellectual property rights. Through [their] Pledge, OSSI asks breeders and stewards of crop varieties to pledge to make their seeds available without restrictions on use, and to ask recipients of those seeds to make the same commitment. OSSI is working to create a pool of open source varieties, to connect farmers and gardeners to suppliers of open source seed, and to inform and educate citizens about seed issues.”⁴⁴⁹

Citizens are also grouping themselves worldwide in associations to promote the free conservation, use, and exchange pattern⁴⁵⁰ for so called “non-industrial varieties”.⁴⁵¹ New movements on old seed varieties development⁴⁵² and exchange seek to provide different, more diverse seeds to people to produce differently, more sustainably and to face climate change. *Association Kokopelli*⁴⁵³ created in France or the *Garden Organic*⁴⁵⁴ UK based association and its *Heritage Seed Library* are examples of such initiatives emanating from the ground. Networks of local and national associations of farmers, citizens, NGOs and other actors also group themselves to develop a collective action, inter alia in organic agriculture production and conservation with *Réseau Semences Paysannes*⁴⁵⁵ for example.

⁴⁴⁷ This initiative is led by Jack Kloppenburg, professor at the Department of Community and Environmental Sociology, Irwin Goldman center, chair of the Department of Horticulture. A similar open source initiative exists in India: the “Centre for Sustainable Agriculture” (CSA), see CSA, “Open Source Seed Systems”, online document available at http://csa-india.org/wp-content/uploads/2014/11/Open_Source_Seed_Systems_1.0.pdf

⁴⁴⁸ News article by Nicole Miller, published on April 15, 2014, available at <http://news.wisc.edu/22748>

⁴⁴⁹ Available at <http://osseeds.org/>

⁴⁵⁰ An example in France: *Réseau Semences Paysannes* functions as a network of local and national associations of farmers, citizens, NGOs and other actors involved in organic agriculture production and conservation (see <http://www.semencespaysannes.org/>).

⁴⁵¹ I call “non-industrial seeds” seeds that are not registered in official plant variety catalogues, thereby seeds that do not fulfil one or several of the criteria for certification of seed i.e. Distinctness; Uniformity; Stability; and Value for cultivation and use - for agricultural crops. This notion covers “non-conventional seeds”, “old / ancient / forgotten varieties”, etc.

⁴⁵² E.g. varieties that don’t need irrigation to grow. It should be noted that the objective are the same as transgenic seeds resisting to draught but the means to reach that objective are different as well as the related societal objective.

⁴⁵³ Available at <https://kokopelli-semences.fr/>

⁴⁵⁴ *Garden Organic* aims to conserve and make available to its members, through an annual catalogue, vegetable varieties, mainly of European varieties, that are not widely available (see <http://www.gardenorganic.org.uk/>).

⁴⁵⁵ See <http://www.semencespaysannes.org/> For an account of the history and evolution of *Réseau Semences Paysannes*, see E. DEMEULENAERE, 2014, “A Political Ontology of Seeds: The Transformative Frictions of a Farmers’ Movement in Europe”, *Focaal*, Vol. 2014, (69).

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Even states and international research centres collaborate to render more efficient the collective management of *ex situ* conservation and use of PGRFA. For instance, *A European Genebank Integrated System* (AEGIS) comprises 34 members and 58 associate members' agreements, manage a total of 25 291 accessions. AEGIS' objective is to "conserve in a *collaborative way* and at agreed quality standards, the genetically unique and important accessions for Europe of all crops and *making them available for breeding and research* through [Standard Material Transfer Agreements] (SMTAs)" (emphasis added).⁴⁵⁶

These examples clearly show that at all levels (local, regional, national, and international), and within different stakeholder groups (farmers, academics, breeders, citizens, states and international research centres), there is a need for "dis-enclosing" and facilitating access to seeds, although it might not be for the same purposes overall. The consequences of enclosure resulting from the current property regime associated to PGRFA need to be overcome.

Section 2. The tension between advancements in biotechnology led by mega-agri-businesses and small-scale farmers: raising an economic imbalance

A famous case-law provides a good example of this tension: *Monsanto Canada Inc. v. Schmeiser*.⁴⁵⁷ Quoting Keith Aoki, "*Monsanto Canada Inc. v. Schmeiser* established a troubling precedent, one that continues the North American legal trends commodifying seeds, plants, and the genetic structures they contain, thereby favoring the interests of large agribusiness at farmers' expense."⁴⁵⁸ Although Schmeiser cannot be associated with the representation one may have of a small-scale farmer in a developing country, this case-law shows the imbalance of rights (occurring both in developed and developing countries) between multinational companies such as Monsanto (holding strongly recognized IPRs) and farmers (claiming the recognition and application of poorly recognized rights to save, sow and sell their own seeds),

⁴⁵⁶ See "Plant genetic resources conservation in Europe: the AEGIS Experience", Conference paper presented on 16 September 2015 at the 110° Congresso Della Società Botanica Italiana, available at file:///C:/Users/christine/Downloads/Pavia_Sept_2015-AEGIS_14092015reduced.pdf

⁴⁵⁷ *Monsanto Can., Inc. v. Schmeiser*, [2004] 1 S.C.R. 902, 2004 SCC 34 (Canada), available at <http://scc-csc.lexum.com/scc-csc/scc-csc/en/item/2147/index.do>

⁴⁵⁸ K. Aoki, 2010, "Seeds of Dispute: Intellectual-Property Rights and Agricultural Biodiversity", *op.cit.* at p. 146. For a complete explanation of the case, see pp. 146-159.

and the resulting growing economic divide⁴⁵⁹ between these different stakeholders. This section aims at explaining the economic disparity resulting from the imbalance in the recognition of these rights.

IPRs are closely related to advancements in biotechnology and have clearly contributed to the development of the current agricultural biotechnology business setting.⁴⁶⁰ While some authors argue that the progress made in biotechnology has been and remains the solution to hunger and poverty⁴⁶¹ by producing more food (generally through mono-varietal large-scale cultivation), others remain sceptical as to the social, economic and environmental benefits of such technologies for the majority of the World's population.⁴⁶² Kloppenburg argues that the privatization of seeds through the development of biotechnologies and the increase of IPRs led to the commodification of seeds, which in turn allowed for a massive industrialisation of agriculture ruled by few monopolistic companies.⁴⁶³ Farmers and breeders were once the same person. Today, breeding is a big business with high economic objectives. This massive industrialisation changed the face of agriculture in developed and developing countries, propelling seeds to a purely economic value.⁴⁶⁴ Thousands of family-farms were turned into few immense monoculture farms (particularly in developed countries and specific countries in transition such as Brazil). The local hundreds of breeding businesses were swallowed by mega-agro-chemical companies.⁴⁶⁵ According to Herdt, "[t]he business plans of the mega-seed

⁴⁵⁹ Besides the cost related to the law suit directly, Aoki denounces the economic pressure imposed on farmers and mentions that "[f]armers may also face additional economic hardships such as the loss of the custom designed seed that they have cultivated over time, the loss of organic certifications (if contamination via genetic modification appears in the plant or seed), and replacement costs for purchasing new seed and new soil. Under this patent-maximalist view, farmers who do not want to use a patented genetically engineered agricultural technology system should either switch to another line of business or sell their farms to those who will use those systems." K. AOKI, 2010, "Seeds of Dispute: Intellectual-Property Rights and Agricultural Biodiversity", *op.cit.* at p. 159.

⁴⁶⁰ J. H. BARTON, 1999, "Intellectual Property Management", *Biotechnology for Developing-Country Agriculture: Problems and Opportunities - A 2020 Vision for Food, Agriculture, and the Environment*, Vol. Focus 2.

⁴⁶¹ J. M. LENNÉ AND D. WOOD, 2011, "Agrobiodiversity Management for Food Security : A Critical Review", Wallingford, CABI Publishing : [distributor] CAB INTERNATIONAL.

⁴⁶² L. TANGLEY, 1987 *op.cit.*

⁴⁶³ J. R. KLOPPENBURG, "First the Seed. The Political Economy of Plant Biotechnology, 1492-2000," p. 11-15. He argues that initially, when the seed was "unstable", "the natural characteristic of the seed constitute[d] a biological barrier to its commodification." He continues saying that the seed was "rendered a commodity by legislative fiat as well as by biological manipulation." at p. 11. As regards to the seed industry specifically, Shabnam Anvar conducted a legal thesis on the subject at Panthéon-Sorbonne University, Paris, under the supervision of Marie-Angèle Hermitte. Anvar argues further that it is the unicity of the offer, rather than the limited number of enterprises selling seeds, which constitutes the monopolistic scheme. She concludes that "[l]a filière propose ses produits à une clientèle que les contraintes techniques et juridiques ont progressivement rendue captives." See L. S. ANVAR, "Semences Et Droit. L'emprise D'un Modèle Économique Dominant Sur Une Règlementation Sectorielle," at p. 433.

⁴⁶⁴ J. M. M. ENGELS, H. DEMPFWOLF, AND V. HENSON-APOLLONIO, 2011, "Ethical Considerations in Agro-Biodiversity Research, Collecting, and Use", *Journal of Agricultural & Environmental Ethics*, Vol. 24, (2) at . 108; D. CHARLES, 2001, "Lords of the Harvest : Biotech, Big Money, and the Future of Food", Cambridge, Mass., Perseus Publ. at pp. 92-125.

⁴⁶⁵ R. W. HERDT, "Enclosing the Global Plant Genetic Commons," At p. 8.

companies⁴⁶⁶ seem straightforward: control everything from genetic engineering of seeds to the selling of seeds to farmers, to marketing plant-grown drugs, modified foods, and industrial products. They aggressively employ patents to claim intellectual property and defend those claims equally aggressively.⁴⁶⁷ This trend takes away the autonomy of farmers, who become fully dependent from these companies in every aspects of their work. An example is given with hybrid seeds, which farmers need to repurchase for every planting, as the lower quality of second-generation seeds diminish productivity and quality of the cropping.⁴⁶⁸ Within this narrative, the social and environmental values of the seed and of farmers' seed systems are overlooked,⁴⁶⁹ while the social, economic and environmental impacts for people are high, in particular in developing countries.⁴⁷⁰

In developed countries, strong reactions (largely based on the fears about GMOs) occurred with the development of powerful civil society organisations.⁴⁷¹ Charles confirms that “[o]pposition to biotechnology became a way of opposing agribusiness and promoting an

⁴⁶⁶ Aoki cites Janet Hope saying that “the merger-mania was driven primarily by the need to avoid high transaction costs associated with clearing multiple IPR, (...) and that most key enabling technologies are now in the hands of only a handful of firms,” in K. AOIKI, “Seed Wars : Controversies and Cases on Plant Genetic Resources and Intellectual Property”, *op. cit.* at p.113.

⁴⁶⁷ R. W. HERDT, “Enclosing the Global Plant Genetic Commons,” at p. 9. This is confirmed by FAO data showing that “270 patents related to genes of the soil bacterium *Bacillus thuringiensis* (Bt) granted from 1986 to 1997 in countries of the Organisation for Economic Co-operation and Development (OECD), about 60% were owned by only six MNC [Multinational Companies].” See FAO (2001), “The impact of intellectual property rights (IPRs) on food and agriculture in developing countries” Background Document, (Conference 6) of the FAO Electronic Forum on Biotechnology in Food and Agriculture ran 20 March 2001-13 May 2001, available at <http://www.fao.org/biotech/c6doc.htm> See also the above mentioned case-law *Monsanto Canada Inc. v. Schmeiser*, where “Monsanto's utility-patent rights and licensing agreements put those who are accidental users due to natural forces in the position of being vulnerable to lawsuits for patent infringement.” In K. AOIKI, 2010, “Seeds of Dispute: Intellectual-Property Rights and Agricultural Biodiversity”, *op.cit.* at p. 151.

⁴⁶⁸ Another illustration of this dependence imposed on farmers is provided by the Genetic Use Restriction Technology (GURT). Also called “terminator seeds”, this method regulates gene expression and restricts the use of genetically modified plants by causing second generation seeds to be sterile. Eventually however, GURT seeds were never commercialized. At the CBD-SBSTTA 4 meeting, which took place Montreal, 21 - 25 June 1999, Recommendation IV/5 recommended a moratorium on field testing and commercial use of such technology “until appropriate, authorized and strictly controlled scientific assessments with regard to, inter alia, their ecological and socio-economic impacts and any adverse effects for biological diversity, food security and human health have been carried out in a transparent manner and the conditions for their safe and beneficial use validated.” Available at <https://www.cbd.int/recommendations/sbstta/?m=sbstta-04> At the Eighth Meeting of the Conference of the Parties to the CBD, which took place in Curitiba, Brazil in 2006, peasant and indigenous rights activists strongly opposed the technology and demonstrated outside the doors of the meeting venue in support of a complete ban on the sale and use of Terminator seeds.

⁴⁶⁹ Kloppenburg points to the fact that it is generally “asserted that only the application of scientists’ labor [in breeding activities] adds value to the natural gift of germplasm” thereby ignoring any other sort of value the seed might have, i.e. cultural, social, or ecosystemic values. J. R. KLOPPENBURG, “First the Seed. The Political Economy of Plant Biotechnology, 1492-2000,” at p. 185; Kloppenburg further critic the limits in the understanding of the “economic value” of the seed at pp. 184-189. See also O. T. COOMES *et al.*, 2015, “Farmer Seed Networks Make a Limited Contribution to Agriculture? Four Common Misconceptions”, *Food Policy*, Vol. 56.

⁴⁷⁰ Although some authors argue that developing more GMO agricultural research may have a positive social impact in developing countries. See S. B. BRUSH, 2001, “Genetically Modified Organisms in Peasant Farming: Social Impact and Equity”, *op.cit.* at p. 162.

⁴⁷¹ P. MOONEY, *op. cit.* at pp. 135-148.

alternative vision to agriculture. The vision went by the name sustainable agriculture.⁴⁷² In his thesis, Brahy clearly explains the public good problems related to the development chain in biotechnology (whether in the agricultural or pharmaceutical fields); i.e. that conservation and R&D activities create profits that are not totally appropriable by the conserver or the developer. This generates externalities (part of the profits are captured by others), which diminish the incentives for conservation and R&D activities.⁴⁷³ Besides this public good dilemma, research and development activities based on genetic resources collected from developing countries during “bioprospecting”⁴⁷⁴ campaigns allowed for big companies to generate huge profits, without compensating the country (and in particular their local and indigenous communities) where the resources originated from.⁴⁷⁵ Socio-environmental activists⁴⁷⁶ quickly made a link between IPRs as a tool promoting innovation mainly in developed countries and the new concept of “biopiracy”.⁴⁷⁷ Although these developments were not directly linked to the food and agriculture sector, the “biopiracy” claim⁴⁷⁸ spread by

⁴⁷² D. CHARLES, *cit.* p. 97; see also D. CHARLES, 2001, "Seeds of Discontent", *Science*, Vol. 294, (5543), and D. CHARLES, 2001, "Seed Treaty Signed; U.S., Japan Abstain", *Science*, Vol. 294, (5545).

⁴⁷³ C. FOWLER, *cit.* At pp. 134-136.

⁴⁷⁴ Initially, bioprospecting was seen as a way to access, collect and exploit plant and animal resources. The *Compact Oxford English Dictionary* defines bioprospecting as “the search for plant and animal species from which medicinal drugs and other commercially valuable compounds can be obtained.” Bioprospecting activities were also justified by conservation purposes, through the claim of collecting genetic resources to conserve them in ex situ gene banks.

⁴⁷⁵ For more details on this topic see inter alia C. HAMILTON, 2006, "Biodiversity, Biopiracy and Benefits: What Allegations of Biopiracy Tell Us About Intellectual Property", *Developing world bioethics*, Vol. 6, (3) and J. R. ADAIR, 1997, "The Bioprospecting Question: Should the United States Charge Biotechnology Companies for the Commercial Use of Public Wild Genetic Resources?", *Ecology Law Quarterly*, Vol. 24, (1).

⁴⁷⁶ Perhaps the most vocal criticisms of biopiracy have come from the Action Group on Erosion, Technology and Concentration (ETC Group) who define biopiracy as: the appropriation of the knowledge and genetic resources of farming and indigenous communities by individuals or institutions who seek exclusive monopoly control (patents or intellectual property) over these resources and knowledge. Action Group on Erosion, Technology and Concentration (ETC Group), (2005) *ETC Group Web Site*.

⁴⁷⁷ Vandana Shiva, a famous Indian scientist and activist, states that biopiracy refers to the use of intellectual property systems to legitimize the exclusive ownership and control over biological resources and biological products that have been used over centuries in non-industrialized cultures. VANDANA SHIVA "Protect or Plunder? Understanding Intellectual Property Rights" (2001) London: Zed Books. Other authors define biopiracy as the neglect of the contributions and intellectual input by the original holders of resources and associated knowledge; see C. HAMILTON, 2006 *op.cit.* at p. 160. "Biopiracy" is examined by legal scholars through the concept of misappropriation. See inter alia D. S. KARJALA, 1994, "Misappropriation as a Third Intellectual Property Paradigm", *Columbia Law Review*, Vol. 94, (8); Rojahn uses the term misappropriation in a strictly descriptive way: "an act of misappropriation has occurred if it is considered illegitimate by the original holders of the resource or knowledge, independent of whether it was legal according to applicable law and of whether the original holders' ownership is legally recognized." see J. ROJAHN, 2010, "Fair Shares or Biopiracy? Developing Ethical Criteria for the Fair and Equitable Sharing of Benefits from Crop Genetic Resources" (Universität Tübingen, 2010), at p. 29.

⁴⁷⁸ J. McGown. 2006. *Out of Africa: Mysteries of Access and Benefit Sharing*. (Edited and introduced by B. Burrows.) Washington, DC/ Richmond: Edmonds Institute in Cooperation with African Centre for Biosafety. However, there are also strong opponents to the biopiracy claim; see for example J. CHEN, 2006, "There's No Such Thing as Biopiracy...And It's a Good!", *McGeorge Law Review*, Vol. 37, (1) at pp 1–32.

civil society organisations had an indirect impact on the international instruments developed to regulate these issues.⁴⁷⁹

In response, global public policies attempt to reconcile the tension between advancements in biotechnology of multinational companies and small-scale farmers. For example, by enlarging the definition of “food security”, the World Food Summit included a more social dimension to global public food policies.⁴⁸⁰ By using the benefits of biotechnology for the poor,⁴⁸¹ the CGIAR also attempts to mitigate this gap, in particular with the recent focus on the nutritional value of PGRFA⁴⁸² and the impact of climate change on local production.⁴⁸³ In 1999 already, Serageldin was calling for “a double shift in the agricultural research paradigm”:

“The first involves integration of crop specific research into a broader vision that includes sound management of natural resources, as well as the productivity and profitability of smallholder farming; promoting synergies among livestock, agroforestry, food and cash crop, (...) and recognition of the socioeconomic realities of farmers. The second shift is to

⁴⁷⁹ Brush argues that the “charge of biopiracy (...) epitomized the demise of the open collection of plants and the impoverishment of discourse by sloganeering. Few people bothered to ponder the nature of the ex ante system of common heritage. Rather, discourse on biological resources shifted rapidly to control and ownership by different actors: nation-states, indigenous people, seed companies, international organizations, or research institutions.” See S. B. BRUSH, 2004, “Farmers’ Bounty Locating Crop Diversity in the Contemporary World”, *op.cit.* at p. 232.

⁴⁸⁰ The Rome Declaration on World Food Security was adopted at the World Food Summit, 13-17 November 1996, Rome, Italy. The Summit was called by FAO and aimed at reiterating global commitments to fight hunger and react against widespread under-nutrition and growing concern about the capacity of agriculture to meet future food needs. The Rome Declaration calls for the members of the United Nations to work to halve the number of chronically undernourished people on the Earth by the year 2015. The conference produced a second key document: the World Food Summit Plan of Action. The Plan of Action sets a number of targets for government and non-governmental organizations for achieving food security, at the individual, household, national, regional and global levels. Full text available at <http://www.fao.org/docrep/003/w3613e/w3613e00.htm>

⁴⁸¹ The Green Revolution is a controversial example of such a policy. While in the book F. M. LAPPÉ, J. COLLINS, AND C. FOWLER, *cit.*, the authors condemn the social and economic consequences of the Green Revolution (because the boost of food production in some developing countries replaced valuable traditional varieties with high-yielding new varieties of rice and wheat); Conway and Toennissen argue that there is a need for a second Green Revolution, which would avoid the pitfalls of the first one, and bring more benefits to the poor. They “point to the need for a second Green Revolution, yet one that does not simply reflect the successes, and mistakes, of the first. In effect, we require a “Doubly Green Revolution”, an agricultural revolution that is both more productive and more “green” in terms of conserving natural resources and the environment than the first. We believe that this can be achieved by a combination of: ecological approaches to sustainable agriculture; greater participation by farmers in agricultural analysis, design and research; and the application of modern biotechnology directed towards the needs of the poor in developing countries.” G. CONWAY AND G. TOENNIESSEN, 1999, “Feeding the World in the Twenty-First Century”, *Nature*, Vol. 402at p. C55-56.

⁴⁸² Frison et al believe that “[t]here is a new recognition of the profound challenges faced in increasing production to meet the needs of a growing population under changing climates and the need to do so in a sustainable manner. (...) While the temptation will always be to look for quick fixes, these are unlikely to be sustainable or to meet current concerns for an environmentally acceptable agriculture that responds to the needs of small-scale farmers throughout the world. Almost all of the approaches used to date in agricultural intensification strategies, for example the substitution and supplementation of ecosystem function by human labor and petrochemical products, contain the seeds of their own destruction in the form of increased release of greenhouse gases, water supplies depleted by mining, and degraded soils. We need to build production systems that deliver intensification without simplification.” E. A. FRISON, J. CHERFAS, AND T. HODGKIN, 2011 *op.cit.* at p. 246-247.

⁴⁸³ M. R. BELLON, D. HODSON, AND J. HELLIN, 2011, “Assessing the Vulnerability of Traditional Maize Seed Systems in Mexico to Climate Change”, *Proceedings of the National Academy of Sciences of the United States of America*, Vol. 108, (33).

harness the genetic revolution. Cutting-edge work associated with genetic mapping, molecular markers, and biotechnology must be focused on benefiting poor people and the environment. It is vital to realize the promise of this revolution while avoiding the pitfalls.”⁴⁸⁴

This section aimed at describing the gap, which grew wider and wider, between a minority of mega agro-chemical companies controlling the agricultural market and a majority of small-scale farmers around the world (and mainly in developing countries), who encounter increasing difficulties in producing their food. This gap contributes to strongly politicize the sphere of agricultural negotiations.

Section 3. The tension between “informal” exchange networks and “over-regulation” on seeds: raising a social sharing disruption

“Seed exchange is an important, yet poorly understood, factor shaping agrobiodiversity and helping its dynamic conservation.”⁴⁸⁵ At all levels of use, accessing available PGRFA is a necessity, whether to grow ones’ food or to carry out breeding, research and training activities. However, the current over-regulation (resulting from the above mentioned regime complex) disrupts the fluid exchange of seeds through various networks, at different levels. This Section highlights the impact of such disruption in seed networks on social sharing.

For immemorial times, farmer and breeder communities managed the exchange of PGRFA⁴⁸⁶ and have accessed seeds through local markets or farmers’ seed networks as a social practice.⁴⁸⁷ As Pautasso *et al.* state, “seed circulation is typically as social process: it is based on trust, may or may not be reciprocal, and is influenced by socio-cultural norms and practices (...)”.⁴⁸⁸ Bertacchini confirms that “[s]uch an exchange does not occur as a bilateral

⁴⁸⁴ I. SERAGELDIN, 1999 *op.cit.* at p. 387-388.

⁴⁸⁵ M. PAUTASSO *et al.*, 2013 *op.cit.*, at p. 165. Pautasso *et al.* recognize that “the methods available to study the role of seed exchange networks in preserving crop biodiversity j-have only recently begun to be considered.” M. PAUTASSO *et al.*, 2013 *op.cit.* at p. 152.

⁴⁸⁶ R. Pistorius, “A history of the plant genetic resources movement”, Scientist, plants and politics, IPGRI, Rome, Italy, 1997. See also, the Crucible II group, “Policy options for genetic resources: people, plants and patents revisited”, Seedling Solutions vol. 1, IPGRI, Rome, Italy, 2000.

⁴⁸⁷ For an analysis of current PGRFA networks, see B. VISSER AND H. SMOLDERS, “An Analysis of Effectiveness in Plant Genetic Resources Networks”, ; and N. LOUWAARS, “Seeds of Confusion. The Impact of Policies on Seed Systems,” Agrobiodiversity network analyses remain however few and limited up to now.

⁴⁸⁸ M. PAUTASSO *et al.*, 2013 *op.cit.* at p. 156.

impersonal market transaction.⁴⁸⁹ On the contrary, it is grounded on mechanism of reciprocity and cooperation. Indeed, traditional seed systems are mostly based on social and family relations, cast in the context of mutual interdependence and trust, often forming dynamic networks with a high degree of complexity.⁴⁹⁰ Until recently, it was common practice for breeders and researchers to similarly access seeds through farmers' seed networks and between collaborators from different laboratories, situated in different regions or continents. This common practice was made possible because there was no "ownership" over PGRFA, controlling access under specific conditions.

However, the regulatory intensification of the past thirty years created a regime complex⁴⁹¹ where an "over-regulation" on access to seeds has favoured only one type of situation: i.e. the dominant neoliberal monopolistic seed market. Anvar confirms that the current regime hinders the mere existence of any other type of seed system,⁴⁹² where flexibility and heterogeneity would allow for a plurality of situations to co-exist, thereby unlocking the current monopolistic and enclosing system. Furthermore, the current system narrows the value of seeds and seed networks to merely an economic value, whereas it is recognized that the value of seeds and seed networks is much wider and touches upon cultural heritage, social dimensions, ecosystems, etc.⁴⁹³ In his thesis, Enrico Bertacchini argues that "[t]raditional farming systems – with practices of seed saving and exchange based more on reciprocity and cooperation – should be seen as a *form of social sharing* for germplasm

⁴⁸⁹ A forthcoming wide-ranging study by McGuire and Sperling, based on a uniquely comprehensive data set of 9660 observations across six countries and covering 40 crops, list eleven different means of accessing seeds, that is to say through: the farmer's own stock, exchange, gift, bought, vouchers, direct seed distribution, seed loan, food aid, money credit, casual labor, and "other". S. MCGUIRE AND L. SPERLING, 2016, "Seed Systems Smallholder Farmers Use", *Food Security*, Vol. 8, (1) at p. 13.

⁴⁹⁰ E. E. BERTACCHINI, "Property Rights and Plant Genetic Resources for Food and Agriculture," at p. 91. McGuire and Sperling demonstrate that "farmers access 90.2% of their seed from informal systems with 50.9% of that deriving from local markets. In contrast, formal sector sources were modest, even though several decades of investment have largely focused on either the formal public or formal private sector. To review select findings tied to current models: a) the channels routinely supported supply an insignificant proportion of seed sown by smallholder farmers; b) new varieties are not being accessed sustainably through supported channels; and c) the array of crops needed for production, nutrition and resilience goals will not likely be promoted via a commercialized formal sector approach alone. (...) At a minimum, our results suggest a need to address the imbalance in seed channel focus so as to give attention to the main seed systems smallholders use, including several informal channels." S. MCGUIRE AND L. SPERLING, 2016 *op.cit.* at p. 20. Up to now, no other study has analyzed and provided such a wide range of data and statistics on the topic. It should be noted however, that the analysis is mainly focused on African countries, and therefore the results cannot be generalized worldwide, calling for further studies.

⁴⁹¹ See Chapter 2 above.

⁴⁹² L. S. ANVAR, "Semences Et Droit. L'emprise D'un Modèle Économique Dominant Sur Une Règlementation Sectorielle,"

⁴⁹³ See *inter alia* D. A. CLEVELAND, D. SOLERI, AND S. E. SMITH, 1994, "Do Folk Crop Varieties Have a Role in Sustainable Agriculture?", *BioScience*, Vol. ; R. ELLEN AND S. PLATTEN, 2011, "The Social Life of Seeds: The Role of Networks of Relationships in the Dispersal and Cultural Selection of Plant Germplasm", *Journal of the Royal Anthropological Institute*, Vol. 17, (3) J. R. VETETO AND K. SKARBØ, 2009, "Sowing the Seeds: Anthropological Contributions to Agrobiodiversity Studies", *Culture & Agriculture*, Vol. 31, (2); A. L. DEL ANGEL-PÉREZ AND M. B. M. ALFONSO, 2004, "Totonac Homegardens and Natural Resources in Veracruz, Mexico", *Agriculture and Human Values*, Vol. 21, (4); B. STHAPIT *et al.*, 2008, "The Value of Plant Genetic Diversity to Resource-Poor Farmers in Nepal and Vietnam", *International journal of agricultural sustainability*, Vol. 6, (2).

production and distribution, which in turn enhances crop genetic diversity.” (Emphasis added).⁴⁹⁴ However, the current setting leads to a gridlock, a situation where “formal” and “informal” seed networks are opposed and competing.⁴⁹⁵ “Formal” seed networks is locked by economic pressures (i.e. monopolies; conventional agriculture and increasing use of hybrid varieties) and by complex legal regulations (CBD and its contractual approach to accessing genetic resources, IPRs, UPOV, constraining national seed legislations)⁴⁹⁶, which both hinder the social sharing dimension of seed networks. The “formal” system grows in time and space, reducing the viability space for “informal” networks to co-exist, and therefore reducing the viability for cultural, social, ecological purposes of seed networks. Because neither market approaches nor neo-regulatory solutions are supposed to fit traditional farmers’ interests within such system, Bertacchini explores the options and economic implications to support the traditional farmers’ organization of germplasm production and distribution and refocus the debate on the social sharing value that

⁴⁹⁴ E. E. BERTACCHINI, "Property Rights and Plant Genetic Resources for Food and Agriculture," at p.90.

⁴⁹⁵ Whereas McGuire and Sperling call for more integration of both formal and informal seed networks in order to “deliver the types of products needed to catalyze smallholder advances: to encourage increased production; nutritional gains; and to foster farming system resilience.” They conclude *inter alia* that “the seed sector strategy has to become more smallholder-focused.” S. MCGUIRE AND L. SPERLING, 2016 *op.cit.* at p. 23.

⁴⁹⁶ FAO accompanies African countries in adopting national seed legislations. “With the support of FAO, the Southern African Development Community (SADC), the Economic and Monetary Union of West Africa (UEMOA) and the Economic Community of West African States (ECOWAS) have undertaken the harmonization of national seed regulatory frameworks in their respective Member States. Through a participatory process involving the key stakeholders in the countries, a legal framework for the harmonization of seed legislation is developed and subsequently adopted by these regional bodies.” See http://www.fao.org/agriculture/crops/core-themes/theme/seeds-pgr/seed_sys/rules/en/. See also the FAO 2015 “Voluntary Guide for National Seed Policy Formulation” available at <http://www.fao.org/3/a-i4916e.pdf>. However, one may question the result and impact of such capacity-building project when reading the recently adopted African Regional Intellectual Property Organization (ARIPO) Arusha Protocol for the Protection of New Varieties of Plants. The Protocol was adopted by the four least developed countries of the 18 member states present at the Diplomatic Conference held in Arusha, the United Republic of Tanzania on July 6, 2015. The Protocol remains open for signature by Member States of the Organization and other States, members of the African Union until December 31, 2015. Available on ARIPO website at: <http://www.aripo.org/news-events-publications/news/item/81-the-united-republic-of-tanzania-signs-the-arusha-protocol#sthash.COYlQcmq.dpuf> The Arusha Protocol has been strongly criticized *inter alia* because the Protocol compromises the implementation of the CBD and the Plant Treaty. A major point of contention regards farmers’ right to save, use, exchange and sell farm-saved seed and other propagating material. Indeed, the Protocol is said to hinder member countries to adopt a *sui generis* plant variety protection system, thereby suppressing the possibility to establish more flexible farmers’ rights, not to mention the fact that according to farmers’ organizations, the Protocol is inappropriate for the African region, it undermines national sovereignty, and diverges from positions articulated by African nations at the regional and international levels. A recent German governmental study confirms what civil society organizations have recommended, i.e. that “developing countries that have not yet joined UPOV should consider opting for alternative *sui generis* systems of PVP that allow for more flexibility in meeting the obligations of different treaties, for balancing the interests of diverse actors, and for protecting and promoting Farmers’ Rights, compared with the UPOV system.” See A. CHRISTINCK AND M. WALLOE TVEDT, 2015, , at p. 6. On the side of NGOs and farmers’ organizations see LA VIA CAMPESINA AND GRAIN, 2015; see also Sangeeta Shashikant (2015), Seed Freedom Press Release “Draft ARIPO Plant variety Protocol Undermines Farmers’ Rights to Save, exchange and Sell seeds” available at <http://seedfreedom.info/draft-aripo-plant-variety-protocol-undermines-farmers-right-to-save-exchange-sell-seeds/>

characterize traditional agricultural systems.⁴⁹⁷ However, few studies exist on the role(s) of seed networks in preserving and sustainably using crop biodiversity.

As Pautasso *et al.* argue, further (interdisciplinary) studies are needed to understand better the role of seed exchange networks in biodiversity conservation and use in a more holistic manner. They state indeed that “with seed exchange itself, it is difficult to separate purely biological from social factors (...); rather, these factors interact to a considerable degree, both in cause and effect.”⁴⁹⁸ This need for further study of seed networks is increased in that “local seed exchange networks are essential to agrobiodiversity conservation, because they permit access to seed and the maintenance of landraces in agro-ecosystems throughout the world, despite the trend towards more uniform seed material flowing through formal, commercial seed systems.”⁴⁹⁹ Pautasso *et al.* suggest an exhaustive list of research methods that include: ethnographic fieldwork, participatory approaches, public good experiments, biogeography and landscape genetics, simulation models, scenarios, statistical analysis, indicators, life cycle assessments and impact evaluations, meta-analyses and finally network analyses. To complement this last research method proposed, nodal governance⁵⁰⁰ could be added as one method particularly useful in analysing the social sharing aspect of seed exchange networks. This approach could contribute to enhancing the continuum between “formal” and “informal” seed networks (favouring systems’ heterogeneity, flexibility and pluralism) and between traditional and improved varieties rather than supplanting one system by the other.⁵⁰¹

Section 4. The North / South divide: a political stake

The purpose of this Section is to highlight that the North-South divide renders reaching food security and sustainable agriculture objectives necessarily more complex to attain. The

⁴⁹⁷ E. E. BERTACCHINI, "Property Rights and Plant Genetic Resources for Food and Agriculture," At p. 90.

⁴⁹⁸ M. PAUTASSO *et al.*, 2013 *op.cit.* at p. 157.

⁴⁹⁹ M. PAUTASSO *et al.*, 2013 *op.cit.* This interdisciplinary approach to seed networks will also allow for the study of the multifunctionality of seed networks. “The concept of multifunctionality recognizes agriculture as a multi-output activity producing not only commodities (food, feed, fibers, agrofuels, medicinal products and ornamentals), but also non-commodity outputs such as environmental services, landscape amenities and cultural heritages.” International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) 2007 Synthesis Report p.18.

⁵⁰⁰ “Nodal governance is an elaboration of contemporary network theory that explains how a variety of actors operating within social systems interact along networks to govern the systems they inhabit.” in S. BURRIS, P. DRAHOS, AND C. SHEARING, 2005 *op.cit.* at p. 33. See also P. DRAHOS, 2004, “Securing the Future of Intellectual Property: Intellectual Property Owners and Their Nodally Co-Ordinated Enforcement Pyramid.”, *Case Western Reserve Journal of International Law*, Vol. 36.

⁵⁰¹ However, due to the scope limits of this work, this approach will not be searched further.

differences in political discourse and objectives from countries of the North and countries of the South⁵⁰² complicate the negotiation and implementation of international environmental treaties.⁵⁰³ The aim here is not to review the literature on North-South international relations,⁵⁰⁴ nor to examine its origin in colonialism and post-colonial policies.⁵⁰⁵ The analysis will be limited to what is directly relevant to the seed issues dealt within this thesis.

Regarding the international negotiations on biodiversity (in general) and on access and benefit-sharing in particular, De Jonge and Louwaars recognise that there is a South-North imbalance in resource allocation and exploitation.⁵⁰⁶ Studying the perceptions of different stakeholders, they have identified six principles underlying ABS. The first three are 1) the South–North imbalance in resource allocation and exploitation, 2) biopiracy and the imbalance in IPRs, and 3) an imbalance between IP protection and the public interest. These principles are driven by the perception of imbalance and a motivation to increase equity. The last three principles are 4) the need to conserve biodiversity, 5) a shared interest in food security and 6) the protection of the cultural identity of traditional communities. This second set of principles concentrate on other aims such as nature conservation, food security and the preservation of traditional cultures.

Sections 1 to 3 of the present Chapter confirm this analysis in that the mentioned tensions (between “public seeds” versus IPRs; advancements in biotechnology versus small-scale farmers; and “informal” exchange networks versus “over-regulation” on access to seeds) are crystallized in the more general divide between the gene-poor but economically and technologically rich Northern countries and the gene-rich but economically and technologically poor Southern countries. This picture will be further analysed in this final Section.

⁵⁰² Rothstein examines what is covered by the concept of “North” and “South” in the debate around the New International Economic Order negotiations in the 1990s. He discusses the utility of maintaining such dichotomy although one can clearly not easily categorize such a diversity of countries in two, or even more groups. He states that “issues such as the *global commons*, (...) are sensible candidates for North-South negotiations.” (emphasis added) See R. L. ROTHSTEIN, 1984, “Is the North-South Dialogue Worth Saving?”, *Third World Quarterly*, Vol. 6, (1) at p. 166.

⁵⁰³ C. G. GONZALEZ, 2015, “Bridging the North-South Divide: International Environmental Law in the Anthropocene”, *PACE ENVIRONMENTAL LAW REVIEW*, Vol. 32, at p. 408.

⁵⁰⁴ A selection of few articles are nonetheless proposed for further reading: Ravenhill provides a description of the debate in the early 1990s, while Gonzalez updates the debate to current trends. See J. RAVENHILL, 1990, “The North-South Balance of Power”, *International Affairs (Royal Institute of International Affairs 1944-)*, Vol. ; C. G. GONZALEZ, 2015 *op.cit.*

⁵⁰⁵ C. G. GONZALEZ, 2015 *op.cit.* at pp. 411-420.

⁵⁰⁶ B. DE JONGE AND N. LOUWAARS, “The Diversity of Principles Underlying the Concept of Benefit Sharing”, in G. WINTER AND E.C. KAMAU (eds), *Genetic Resources, Traditional Knowledge and the Law - Solutions for Access and Benefit Sharing*, London, Earthscan, 2009, at pp. 28-40. See also J. ESQUINAS-ALCAZAR, 2005 *op.cit.* at p xxv.

Over the last century, parallel developments took place within three related fields (the economic, environmental and agricultural fields), which all led to a belief of dispossession by the “poor” and the “small”. In the environmental field, bioprospecting activities – initially aimed at contributing to the conservation of genetic resources – were rapidly associated to biopiracy campaigns, which sole objective was believed to procure more benefits to big companies from the North. People from developing countries felt that these companies were stealing their resources and their associated traditional knowledge without any authorisation or compensation.

In the agricultural field, besides the information provided above in Section 2, the rise of GMOs and other modern biotechnologies, coupled with the expansion of patents over plants has increased farmers’ belief that they have been dispossessed of the seeds they had conserved, developed and improved over millennia, without any recognition for their role nor compensation.⁵⁰⁷

In the economic field and from a global perspective, a recent study published by Oxfam stresses on the growing economic divide between the majority of the world’s (poor) population and an infinite percentage of it, benefiting from most of the global wealth.⁵⁰⁸ As regards to food, the lack of resources to grow or purchase sufficient food to satisfy their dietary needs plunges 805 million people in chronic undernourishment.⁵⁰⁹ There is today a wide recognition that current social and economic inequities, across and within regions and states, are a significant barrier to achieving development goals,⁵¹⁰ and that trade liberalization, which opened developing country markets to international competition too quickly or too extensively, further undermined the rural sector and rural livelihoods.⁵¹¹ Indeed, the structural

⁵⁰⁷ Stoll writes that “[t]he recognition of plant breeders’ rights and the proprietary character of breeding lines were of comfort to the breeding industry – which in those days was mainly situated in the North. The so-called “farmers’ rights” and the concept of a sovereign right on GRs can be roughly considered a counterclaim of the South.” P.-T. STOLL, “Access to Grs and Benefit Sharing – Underlying Concepts and the Idea of Justice”, in G. WINTER AND E.C. KAMAU (eds), *Genetic Resources, Traditional Knowledge and the Law - Solutions for Access and Benefit Sharing*, London, Earthscan, 2009.

⁵⁰⁸ Oxfam reports that in 2014, the richest 1% of people in the world owned 48% of global wealth, leaving just 52% to be shared between the other 99% of adults on the planet. The richest 20% of the world’s population own approximately 95% of the planet’s wealth, leaving just 5.5% for the remaining 80% of people in the world. See D. HARDOON, “Wealth: Having It All and Wanting More. Oxfam International” (paper presented at the World Economic Forum, 2015, at p. 2).

⁵⁰⁹ FAO, 2014 at p. 11.

⁵¹⁰ International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) 2007 Synthesis Report p.17 and 24. Gonzalez strongly promotes a “fundamental restructuring of international economic law” in order to live in “a just and sustainable planet”. Throughout her analysis, she observes that “[i]nternational economic law systematically accelerates environmental degradation, subordinates the global South, and consigns environmental issues to the peripheries of legal discourse and policy-making.” In C. G. GONZALEZ, 2015 *op.cit.* at p. 433.

⁵¹¹ IIASTD Issues in brief “Business as Usual is Not an Option: Trade and Markets”.

changes in the agricultural market (in production and consumption) took away their autonomy to farmers, who became fully dependent on few monopolistic companies in every aspects of their work.⁵¹² These developments have strengthened the above mentioned belief of inequity and widened the South/North divide in international negotiation and failure in the implementation of international environmental treaties.⁵¹³

Conclusion

The objective of Part I was to draw a complete picture of the international seed regulatory system that developed during the twentieth century and of the tensions that arose from it. Understanding the past system and its weaknesses is a preliminary necessary step in order to assess the present regulatory setting (in Part II) and suggest ways forward to amend a future more equitable and effective scheme (in Part III). The hypothesis framed was that the historical evolution of PGRFA management has transformed what was previously considered as public goods available to all into overly privatized goods, accessible to few following strict (legal, economic and technical) access conditions. This evolution has crystallised an imbalance of rights pertaining to seeds and contributed to further limit access to and exchanges of seeds between all stakeholders. In turn, the limits in seed exchanges have weakened seed conservation and sustainable use objectives and rendered urgent the negotiation of a new international legally binding instrument to protect and promote seed conservation, sustainable use and fair and equitable exchange.

⁵¹² Aoki goes further by adding that “The contemporary global agrifood system is capital intensive, centralized, and consolidated, sourcing labor and natural resources where they are cheapest and selling where they bring the highest prices. In markets for other goods, if people can't generate a demand, they go without the particular good. ” K. Aoki, 2011, “Food Forethought: Intergenerational Equity and Global Food Supply-Past, Present, and Future”, *Wisconsin Law Review*, Vol., (2) at p. 478.

⁵¹³ Gonzalez concludes her analysis with these words: “[a] systematic examination of international environmental law from a North-South perspective can expose the historic and contemporary inequities that have compromised the effectiveness of international environmental law and hindered our ability to address the pressing environmental problems confronting the global community. This article has provided an overview of the origins of the North--South divide in colonial and post--colonial economic law and policy and the failure of sustainable development to remedy its social, economic and environmental consequences. The objective is to provoke further discussion and analysis about new approaches to international environmental law that will promote environmental justice in an era of growing economic inequality and looming ecological collapse.” C. G. GONZALEZ, 2015 *op.cit.* at p. 434.

PART II THE PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE REGIME: AN ASSESSMENT OF THE INTERNATIONAL TREATY

“The man of law is naturally liable to misunderstand the character of political tensions and the conflicts to which they give rise. He is inclined to see in them only “the object of litigation”; to cast in terms of legal dialectic what is in the highest degree of refractory to reasoning, to reduce to order what is essentially unbridled dynamism, in a word to depoliticize what is undiluted politics. (...) The most serious tensions are obviously those where stake is a new distribution of elements constituting the relative power of states such as (...) raw materials. Here reason vainly searches for a criterion, coming to a dead stop before the historical individuality of the State (...).”

Charles De Visscher (1968), “Theory and Reality in Public International Law”⁵¹⁴

Part I of the present thesis has pointed to the “undiluted politics” in the elaboration of the PGRFA international management system. As a second step to the inductive research method, Part II aim to evaluate whether the resulting international binding instrument – the Treaty and its MLS – reaches the objectives of conservation, sustainable use, access to, and benefit-sharing of PGRFA. The assessment takes the form of a legal study of the Treaty and of a stakeholders’ analysis on the Treaty. Indeed, this assessment phase is necessary to formulate normative proposals based on the theoretical ground of the commons theory, as solutions to the identified dysfunction of the Treat mechanism, in Part III of this dissertation.

The hypothesis framed for Part II is the following: by creating the Treaty and its MLS, Contracting Parties sought to strike an equitable balance between public and private interests in access to seeds but the Treaty tools and mechanisms do not necessarily fulfil this objective, and countries have difficulties in implementing the Treaty. As a result, a *de facto* imbalance of rights pertaining to seeds exists, which needs to be re-balanced in order to implement adequately the MLS and allow stakeholders to reach the Treaty’s objectives.

To verify this hypothesis, several research questions are posed. First, how do the Treaty and its mechanisms function, and are there data and evidences to assess the efficiency of the

⁵¹⁴ Charles De Visscher (1968), “Theory and Reality in Public International Law”, Corbett trans, at p. 79.

Treaty implementation? (Chapter 4) Second, what are the constraints or limits identified by stakeholders that hamper the efficient implementation of the Treaty? (Chapter 5)

To answer these questions, Part II contains a twofold analysis: (1) a legal study of the Treaty to understand the international legal rules established for the management of seeds, and to assess its implementation, and (2) a stakeholder analysis, to gather and consider the voice of stakeholders on the negotiation and implementation of the Treaty. Different methods are necessary to conduct these two types of assessments. First, a legal interpretation of the Treaty clauses (Chapter 4) is carried out, inspired from the classical method of public international law for Treaty interpretation.⁵¹⁵ This interpretative exercise is cross-checked with data and statistics on the implementation of the Treaty by its contracting parties (data come partly from the Treaty Secretariat website). The aim is to draw a precise picture of the limits in the Treaty text and in its implementation process by highlighting eight main topics which are crucial for understanding and implementing the Treaty. Secondly, information coming directly from actors involved in the Treaty negotiation and implementation are gathered (Chapter 5). This stakeholder analysis invited actors of the Plant Treaty to express their views by way of providing contributions to an edited volume.⁵¹⁶ The underlying idea of this stakeholder analysis was to broaden the borders of a strictly legal analysis to a wider and more practical understanding of the way rules and objectives of the Treaty are perceived by the actors involved. These two different methodologies provide a comprehensive set of information allowing for the identification of the problems and difficulties arising with the Treaty implementation.

⁵¹⁵ Vienna Convention on the Law of Treaties, 23 May 1969, 8 I.L.M. 679.

⁵¹⁶ C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., "*Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*", .

Chapter 4 The International Treaty on Plant Genetic Resources for Food and Agriculture: A Legal Analysis

“Some resources benefit from being shared (...). The more the resources are shared, the more they are preserved. Genetic resources are this type of good. In contrast to engendering a tragedy of the commons, where a common resource is used to depletion, the sharing of genetic material under an open system increases the global genetic pool, as it ensures the maintenance of genetic material in multiple locations. The open system that predated the expansion of IP rights and sovereign rights over genetic material accounts for the widespread distribution and preservation of crops and crop varieties away from their places of origin. The maintenance of genetic material in multiple countries and locations has benefited all.”

Sabrina Safrin (2004) *“Hyperownership in a Time of Biotechnological Promise: The International Conflict to Control the Building Blocks of Life”* ⁵¹⁷

The negotiations of the International Treaty on Plant Genetic Resources for Food and Agriculture were not alien to, but strongly influenced by the historical and geo-political context in which they were developed.⁵¹⁸ In the 1970s and 1980s, when a utopian socialism was still believed to be possible, the almost romantic concept of plant genetic resources, seen as “heritage of mankind” to be made “available without restriction”, was defended with passion by most developing countries and some developed countries. This idealistic vision was reflected in the 1983 International Undertaking on Plant Genetic Resources (IU). After the fall of the Berlin wall and the start of an era of the so called “real politics”, neo-liberal economic theories prevailed. Consequently to the increasing privatization of genetic resources, these concepts of seeds as “heritage of mankind” to be made “available without restriction” were replaced by those of “global concern”, “state’s sovereignty” and “facilitated access”, as reflected in the Convention on Biological Diversity (CBD) and later in the Plant Treaty. The adoption of the CBD in 1992, and two years later of the TRIPS Agreement in the context of the WTO Uruguay Round, as binding international agreements, was a wake-up call for the agricultural sector. With compliance being voluntary, the IU lacked sufficient legal and political weight to defend the specificities and interests of agriculture. Increasing pressure from the commercial and environmental sectors made possible what seemed unimaginable at the

⁵¹⁷ Sabrina Safrin (2004), “Hyperownership in a Time of Biotechnological Promise: The International Conflict to Control the Building Blocks of Life” *The American Journal of International Law* 98(4), p. 670.

⁵¹⁸ See above Part I of this dissertation. Parts of the following description are drawn from K. GARFORTH AND C. FRISON, 2007; and from C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., “*Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*”, at Chapter 1.

beginning of the “Seed Wars”⁵¹⁹ in the 1980s. Developing and developed countries, the seed industries and non-governmental organizations joined together with one common political objective: to transform the IU into a legally binding agreement that would (i) allow cooperation between trade and environmental sectors on an equal footing, and (ii) guarantee conservation, sustainable use and access to agriculturally important plant genetic resources for research and plant breeding through a fair system for access and benefit-sharing. Consequently, the new phase of the negotiations – specifically aiming at the development of the Treaty⁵²⁰ – commenced in a highly constructive atmosphere.⁵²¹

These formal negotiations took place between 1994 and 2001. The FAO Commission met in three regular sessions and six extraordinary sessions. In order to speed up negotiations by reducing the number of active negotiators, the Commission appointed a regionally balanced contact group composed of 47 countries. Between 1999 and 2001, the contact group held six meetings to discuss controversial issues and to pave the road for the Commission negotiations. The 6th extraordinary session of the Commission intended to conclude the negotiations, but its delegates could not reach agreement on several points. These pending issues were resolved during the 121st session of the FAO Council in October 2001.⁵²² In a euphoric atmosphere, the negotiations were completed during the 31st Conference of FAO, on 3 November 2001, with the adoption of the Plant Treaty by consensus with only two abstentions: Japan and the US.⁵²³ With an expression of disbelief and exultation after the vote, Director-General of FAO, Dr Jacques Diouf, qualified the Treaty as a milestone on North–South relationship.⁵²⁴

⁵¹⁹ K. AOKI, "Seed Wars : Controversies and Cases on Plant Genetic Resources and Intellectual Property", *op. cit.*

⁵²⁰ As requested by Resolution 7/93 of the FAO Conference.

⁵²¹ C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., "Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture", at p. 9. Indeed, at the 27th FAO Conference " [i]t was emphasized that the revision of the International Undertaking as well as the issue of access on mutually-agreed terms to plant genetic resources, including ex situ collections not addressed by the Convention on Biological Diversity as well as the issue of realization of Farmers' Rights, would be carried out through a process of intergovernmental negotiations, and that governments should therefore be invited at every stage and throughout the process and that the full participation of the developing countries should be secured. The Conference agreed that the Working Group of the CPGR should meet early in 1994 and an extraordinary session of the CPGR itself should be held in 1994 to begin this negotiating process." See §108 of Resolution 7/93 adopted at the Twenty-seventh Session of the Conference C 1993 (Rome, 6 - 24 November 1993).

⁵²² FAO Council, 121st session, Rome, 30 October to 1 November 2001. International Undertaking on Plant Genetic Resources, Information Pursuant to Rule XXI.1 of the General Rules of the Organization, Doc. CL 121/5-Sup.1; see also Appendix III, Doc. CL 121/5, the International Convention on Plant Genetic Resources for Food and Agriculture, as adopted at the 6th extraordinary session of the Commission on Genetic Resources for Food and Agriculture, Rome, 25–30 June 2001, and reviewed by the 72nd session of the Committee on Constitutional and Legal Matters, Rome, 8–10 October 2001.

⁵²³ See 31st Session of the Conference of FAO, 2–13 November 2001, C 2001/PV, p. 73. See also Conference Resolution 3/2001, available at <ftp://ftp.fao.org/unfao/bodies/conf/C2001/Y2650e.doc> (last accessed November 2010). See also D. CHARLES, 2001, "Seed Treaty Signed; U.S., Japan Abstain", *op.cit.*

⁵²⁴ C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., "Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture", at p. 10.

The Plant Treaty⁵²⁵ was adopted on November 3rd 2001; it entered into force on June 29, 2004, after it was ratified by more than 40 countries.⁵²⁶ However, the following analysis will show that the Treaty has only really started to be operational around the years 2010-2011, once its main tools and mechanisms had been developed and adopted by the Governing Body (*inter alia* the SMTA, the Compliance Committee, etc.). To date, 140 States are Contracting Parties.⁵²⁷ Nine countries are signatory⁵²⁸ but not yet party to the agreement, comprising notably the U.S.A. There remain forty-four non-members including *inter alia* Bolivia, Botswana, China, Gambia, Israel, Mexico, Mozambique, New Zealand, the Russian Federation, and South Africa.

The objectives of this Chapter are to (1) understand the legal rules established under the Treaty for the management of seeds, (2) highlight data and evidences to assess the efficiency of the Treaty implementation by Contracting Parties. This analysis will contribute to the objective of Part II of this book in assessing whether the Treaty functions well or not, and whether it reaches its objectives.

To carry out this analysis, different methodologies are implemented. First, the obligations established by the Plant Treaty will be read and explained following a method inspired from by legal interpretation of Treaty rules of the 1969 Vienna Convention on the Law of Treaties. The Plant Treaty is the central instrument studied in this doctoral thesis.⁵²⁹ It will not be compared systematically to other environmental treaties, although specific references to the CBD text or the IU⁵³⁰ will be made when appropriate.⁵³¹ The legal

⁵²⁵ International Treaty on Plant Genetic Resources for Food and Agriculture, Food and Agriculture Organization, 2400 UNTS 303. The Treaty was registered with the Secretariat of the United Nations on 13 December 2006 under No. 43345.

⁵²⁶ Entry into force operated 90 days after the fortieth instrument of ratification, acceptance, approval or accession occurred. Plant Treaty Article 28.1. However, several operationalizing tools were not yet designed nor adopted by the Governing Body of the Treaty on that date (notably the Standard Material Transfer Agreement, adopted in 2006), thereby significantly limiting the possibility for States to implement all their obligations deriving from the Treaty.

⁵²⁷ Number of States listed as Contracting Parties on the Plant Treaty website on 20 June 2016. In comparison, the CBD has 196 Contracting Parties and the Nagoya Protocol has 59.

⁵²⁸ On November 30, 2015, signatory members to the Treaty were Colombia, Cabo Verde, Dominican Republic, Haiti, Malta, the Former Yugoslav Republic of Macedonia, Nigeria, Thailand and the U.S.A. According to Article 18 of the Vienna Convention on the Law of Treaties, these signatory States have the obligation to refrain from acts which would defeat the object and purpose of the Treaty.

⁵²⁹ See also another PhD in law on the subject: Thi Thuy Van Dinh (2010), "Le Traité international sur les ressources phytogénétiques pour l'alimentation et l'agriculture : instrument innovant pour la gestion de l'agro-phytodiversité", Thèse doctorale présentée le 18 janvier 2010 à l'Université de Limoges, Faculté de droit et des sciences économiques, Centre de recherches interdisciplinaires en droit de l'environnement, de l'aménagement et de l'urbanisme (CRIDEAU/OMIJ).

⁵³⁰ The text of the IU and its three annexes are available in Appendix 3 of the online PDF file of this thesis, available on my ResearchGate profile.

⁵³¹ Some literature is available on comparative legal studies with the CBD, the Nagoya Protocol and other relevant international instruments. See K. GARFORTH AND C. FRISON, 2007; see also R. ANDERSEN, 2005, "The Interaction between International Agreements Pertaining to the Management of Plant Genetic Resources for Food and Agriculture and the Response of Developing Countries", *Conference Papers -- International Studies Association*, Vol. and M. W. TVEDT, 2015, "Access to Plant Genetic

explanation of the Treaty,⁵³² of its goals and operational tools, will show how it attempts to reconcile private and public interests in the management of seeds debate. Treaty provisions are screened with various degrees of depth and are grouped under specific themes. Peripheral provisions (e.g. Institutional Provisions) or more technical provisions (such as the General Provisions, the Supporting Components or the Financial Provisions)⁵³³ will either not be explained or only briefly, while main legal issues such as Farmers' Rights and the MLS will be analysed in great detail. The aim of the legal interpretation is to "clarify any unclear text" of the Treaty,⁵³⁴ with the purpose to establish the intention of the negotiating parties⁵³⁵ in designing the Treaty text and in its implementation.⁵³⁶ The sources used for the interpretation include the preamble and the text of the Treaty as well as the reports of Treaty meetings. Less direct sources will also be examined when necessary, such as the IU and documents related to the negotiation of the Treaty (i.e. from the revision of the IU), legal doctrine or experts' reports requested by the Treaty Governing Body.⁵³⁷ This is necessary as not all negotiation documents are accessible (e.g. verbatim proceedings of preparatory and negotiation meetings do not exist⁵³⁸ or are confidential), which limits the

Resources - Legal Questions for Material on Its Way into the Multilateral System of the Plant Treaty", *Law, Environment and Development Journal*, Vol. 11, (1).

⁵³² In 2005, the IUCN World Conservation Union published an "Explanatory Guide to the International Treaty on Plant Genetic Resources for Food and Agriculture" written by Gerald Moore and Witold Tymowski, two legal experts in the field. This guide explains the Treaty clause by clause and constitutes a solid basis for anyone willing to understand the Treaty profoundly. G. MOORE AND W. TYMOWSKI, "Explanatory Guide to the International Treaty on Plant Genetic Resources for Food and Agriculture", 2005

⁵³³ This does not mean that obligations under Part II "General Provisions", Part V "Supporting Components" or Part VI "Financial Provisions" are not considered important. On the contrary, they are crucial for an effective implementation of the Treaty. However, this thesis analyses the legal aspects of PGRFA international management and governance, and focuses therefore on the most contentious legal issues in the Treaty.

⁵³⁴ U. LINDERFALK, 2007, "On the Interpretation of Treaties: The Modern International Law as Expressed in the 1969 Vienna Convention on the Law of Treaties", Springer Science & Business Media at p. 10; see also Lina Kestemont, pp. 5-14.

⁵³⁵ U. LINDERFALK, *cit.* p. 30. A Treaty should be interpreted with the aim to allow the realization of its objectives and overall goals, as they may be set in the preamble of a Treaty. The principle of effectiveness or "principe de l'effet utile" (*ut res magis valeat quam pereat*) should prevail when interpreting Treaty provisions, insofar as it really corresponds to the intent of Contracting Parties. Indeed, political strategies and objectives of States may explain why Contracting Parties limit the effectiveness of a Treaty in its implementation as regard to the said (contradicting or limiting) purpose and objective of the Treaty. States may voluntarily render a Treaty partially ineffective according to their will not to engage themselves beyond a certain point. C. DE VISSCHER, 1955, "Théories Et Réalités En Droit International Public", A. Pedoné At p. 313.

⁵³⁶ Indeed, Charles de Visscher confirms that "[c]'est que l'interprétation consiste non pas simplement à retrouver la signification primitive d'un instrument juridique, mais à lui donner, sous réserve toujours du respect du texte, la signification spécifique que postule son application pratique; non pas seulement à "repenser, mais à achever de penser une idée" pour en découvrir et lui faire produire toutes ses virtualités". C. DE VISSCHER, 1963, "Problèmes D'interprétation Judiciaire En Droit International Public", A. Pedone, at p. 29.

⁵³⁷ Experts' reports will be used in different instances to draw a full picture of the context on which interpretation is based: when it is a government report; when the information has been requested by the Governing Body to all Treaty stakeholders, including civil society, by the Treaty Governing Body in a resolution; and when the information is authored by an academic which is contracted by FAO to provide a report as background information document in support to Treaty or CGRFA meetings.

⁵³⁸ However, the *Earth Negotiations Bulletin* (ENB) – an independent reporting service on United Nations environment and development negotiations - provides detailed daily coverage of all Treaty meetings, which includes summaries, analyses of the negotiations as well as more informal but invaluable information such as what is said "in the corridors". I will occasionally refer to ENB reports when no other official documents are accessible. Available at <http://www.iisd.ca/>

legal documents on which interpretation can be based.⁵³⁹ Legal sources that are available before the adoption of the Treaty are the reports of the FAO Conference meetings, the FAO Council meetings, the Commission on Genetic Resources for Food and Agriculture (CGRFA) meetings,⁵⁴⁰ and the Intergovernmental Technical Working Group on Plant Genetic Resources for Food and Agriculture⁵⁴¹ meetings. Since the adoption of the Treaty, the Governing Body of the Treaty has also issued some reports, although verbatim proceedings of its sessions do not exist.⁵⁴² *Inter alia*, reports of the *Ad Hoc* Technical Working Group on Access and Benefit-sharing for Genetic Resources for Food and Agriculture⁵⁴³ and of the Team of Technical and Legal Experts on Access and Benefit-sharing⁵⁴⁴ established by the FAO Commission on PGRFA are also used in the current analysis.

The second question is answered by collecting data on the implementation of the Treaty by its Contracting Parties, mainly, but not only, from the Treaty Secretariat website.⁵⁴⁵ This step is only possible after several years of implementation of the Treaty, and is rather preliminary. Indeed, there has not been any official standard reporting mechanism put in place yet⁵⁴⁶ and some Treaty tools and mechanisms are still immature. The implementation assessment is first based on the Resolutions of the Treaty Governing Body. Data, statistics and other information from the Treaty Secretariat website, as well as reports and information from

⁵³⁹ This limitation justifies the use of a second method of research that will be explained in the following Chapter 5, where a stakeholder analysis is carried out.

⁵⁴⁰ Established as the Commission on Plant Genetic Resources by the Council at its 85th Session (1983, Resolution 1/85) as requested by the Conference (1983, Resolution 9/83). Broadened to cover all components of biodiversity of relevance to food and agriculture by the Conference (1995, Resolution 3/95), under its current name. Open to all Members and Associate Members of the Organization, and composed of those Members or Associate Members that notify the Director-General of their desire to be considered Members. 179 members. Reports of regular and extraordinary sessions.

⁵⁴¹ The Commission may establish Intergovernmental Sectorial Working Groups, with appropriate geographical balance, in the areas of plant, animal, forestry and fisheries genetic resources. There are currently three Sectorial Working Groups, the two others being the Intergovernmental Technical Working Group on Animal Genetic Resources for Food and Agriculture and the Intergovernmental Technical Working Group on Forest Genetic Resources.

⁵⁴² It is important to note that contrarily to the UN practice, no sound recordings are available for the negotiation and implementation of the Plant Treaty meetings. See CBD Rules of Procedures Article 55, UNEP/CBD/COP/1/17, p.93.

⁵⁴³ The *Ad Hoc* Technical Working Group on Access and Benefit-sharing for Genetic Resources for Food and Agriculture was established by the Commission to review the situation and issues related to agrobiodiversity in the area of PGRFA and advise and make recommendations to the Commission on these matters; consider the progress made in implementing the Commission's programme of work on plant genetic resources for food and agriculture as well as any other matters referred to the Working Group by the Commission; and report to the Commission on its activities.

⁵⁴⁴ The Team of Technical and Legal Experts on Access and Benefit-sharing was created in 2013 by the FAO Commission on PGRFA to prepare written materials and propose guidance on access and benefit-sharing and together with the Secretariat to compile Draft Elements to Facilitate the Domestic Implementation of Access and Benefit-Sharing for Different Subsectors of Genetic Resources for Food and Agriculture, and communicate the Draft Elements to FAO regions for information.

⁵⁴⁵ The data I refer to was analysed in 2015. This data include *inter alia*: numbers of Contracting Parties to the Treaty, numbers of PGRFA collections included in the MLS; numbers of SMATs signed and data on germplasm flow; an estimated total number of accessions held in the MLS; data on CGIAR Centres' acquisition and distributions of PGRFA using the SMTA; data on the amount of money received by the Benefit-sharing Fund; the list of countries, which passed legislation on Farmers' Rights; etc.

⁵⁴⁶ The first "standard voluntary reports" are due for October 2016. IT/Governing Body-5/13/Report, Appendix A, p. 44.

the CGIAR or other international organisations, research centres or civil society complement the information.

This Chapter is divided into eight thematic sections. Each section is first explained from a contextual and legal perspective; then, where appropriate, it is cross-checked with data and statistics on its implementation in order to assess its implementation effect. Section 1 covers the overall goals of sustainable agriculture and food security; section 2 addresses the issue of scope of the Treaty and its MLS; section 3 deals with Farmers' Rights; section 4 deals with access to seeds; benefit-sharing obligations and the Benefit-sharing Fund are itemized under section 5; the Third Party Beneficiary and other related legal procedures (monitoring, sanctions, conflict resolution) are included in section 6; information and knowledge are addressed in section 7; and finally governance issues related to stakeholders' participation are examined in section 8. The Treaty text can be found in Appendix 1 to this dissertation; the Standard Material Transfer Agreement in Appendix 2.⁵⁴⁷

Section 1. Sustainable agriculture and food security as Treaty overall goals

Sustainable agriculture (§1) and food security (§2) are the two overall goals of the Treaty.⁵⁴⁸ These overall goals sustain and justify the Treaty's direct objectives of conservation, sustainable use and access and benefit-sharing. They also match well some important aspects for the theory of the commons, notably the central role of sustainability in common-pool resource management systems. Both objectives are intrinsically related to each other: there may be no sustainable agriculture without assuring food security, and food security will not be reached without the establishment of a sustainable agriculture.⁵⁴⁹ These overall objectives represent the final reasons, the "all-embracing" motives for Contracting Parties to act collectively in facing the global challenges of agricultural biodiversity erosion and repetitive food crises, which no country can face alone. These underlying objectives are critical in guiding Contracting Parties in their implementation of the Treaty. They remind that conservation, sustainable use, or ABS are not meant for other purposes than promoting a sustainable agriculture and reaching food security. To give an example, ABS is not meant to facilitate access to seeds that will then be improved and appropriated by a limited number of

⁵⁴⁷ Appendixes are to be found on the online PDF file of this thesis, available on my ResearchGate profile.

⁵⁴⁸ Plant Treaty Article 1.1.

⁵⁴⁹ IPES-Food, 2016.

stakeholders, excluding the majority of actors in their access and in their benefits. ABS policies and measures should serve the overall objectives of food security and sustainable agriculture.

§ 1 Sustainable agriculture

Sustainable agriculture appears all along the Treaty text, but can be found mainly in Treaty Articles 1 (Objectives), 5 (Conservation), 6 (Sustainable Use) and 11 (Coverage of the Multilateral System), as well as in several paragraphs of the preamble. The analysis below shows that the overall goal of sustainable agriculture derives from specific characteristics related to PGRFA and that it entails a number of specific obligations in the Treaty. These aspects are explained in the sub-section defining the concept of sustainable agriculture (A). An evaluation of the implementation effect of the sustainable agriculture overall goal in the Treaty is then provided (B).

A. Defining the concept of sustainable agriculture

(1) Specific characteristics pertaining to seeds calling for sustainable agriculture

In this section, six components justifying the promotion of a sustainable agriculture by Contracting Parties are detailed. They can be found in different parts of the preamble and text of the Treaty, and explain the intentions of the Parties when they negotiated the text.⁵⁵⁰ They serve as guiding compass when interpreting and implementing Treaty provisions.⁵⁵¹

⁵⁵⁰ In international law, a preamble allows the reader to position a Treaty vis-à-vis the plethora of other related international instruments. It introduces the Treaty by enumerating its Parties, the motivations for the creation of the convention and its purposes and objectives. It may even contain auxiliary provisions (in the form of a reminder of general principles that inspired the creation of the instrument), which enlighten the interpretative exercise on the will of Contracting Parties when interpreting the substantive provisions of the Treaty. See International Court of Justice, Rights of Nationals of the United States of America in Morocco (France v. United States of America), Judgment of 27 August 1952, at p. 184.

⁵⁵¹ The Plant Treaty preamble contains fifteen paragraphs, which set the basic assumptions on which Contracting Parties have negotiated the Treaty. They are part of the Treaty but do not create legally binding obligations, as opposed to the substantive provisions set by the thirty-five Articles of the Treaty. Rather, these fifteen items set the context in which the Plant Treaty was designed, explains the reasons behind its creation and specifies the overall objectives of the Treaty, thereby enabling to determine the intentions of the Parties. See International Court of Justice, South-West Africa Cases (Second Phase), Judgment of 18 July 1966, p.6. However, in a previous judgment from the IJC, the Court stated that a principle mentioned in the preamble of a convention, “was intended to be of a binding character and not merely an empty phrase”. See International Court of Justice, Rights of Nationals of the United States of America in Morocco (France v. United States of America), Judgment of 27 August 1952, at p. 184.

(a) The issue of under-use of PGRFA

The use of PGRFA, contrary to other natural resources, does not suffer from over use/exploitation, but rather suffers from its under-use.⁵⁵² This reflects the opposite situation of the “tragedy of the commons”,⁵⁵³ that is to say a situation of “anticommons”.⁵⁵⁴ PGRFAs are in danger not because they constitute a wide range of overused scarce resources – like many other natural resources such as water – but rather because they are an abundant range of different resources that are underused and that are directly affected by the lack of their conservation and use, as well as by pollution or by climate change, etc. It is therefore important to realize that there may be no (sufficient) conservation if there is no use of PGRFA, and this is clearly reflected in Articles 5 and 6 of the Treaty.

(b) The role of farmers

Another important issue in these articles relates to the frequent reference to farmers (six references to farmers and/or local communities), thereby reinforcing the importance of their role in the conservation and sustainable use process, and implicitly strengthening the recognition of Farmers’ Rights.⁵⁵⁵ Contracting Parties’ will to embed the conservation and sustainable use obligations in a broader social reality⁵⁵⁶ implies a central role for farmers within a global interdependent network for a food secure world.⁵⁵⁷ Indeed, Resolution 7/2013 in its paragraph 1 recognizes “*the pivotal role of sustainable use of plant genetic resources for food and agriculture* (PGRFA) in addressing global challenges, including food security, biodiversity loss, climate change adaptation and the fight against poverty, especially

⁵⁵² An important exception to this general rule for under-use of PGRFA relates to the exploitation of in-situ wild relatives collected for direct use, i.e. plants that are collected from the wild and which are not cultivated. For these in-situ wild relatives, the “tragedy of the commons” over-exploitation dilemma may exist.

⁵⁵³ This is developed further below in Chapter 6. Buchanan and Yoon state that “[a]nticommons” is a useful metaphor for understanding how and why potential economic value may disappear into the “black hole” of *resource underutilization*, a wastage that may be quantitatively comparable to the overutilization wastage employed in the conventional commons logic.” (Emphasis added) However, I note that the anticommons concept covers a situation where there exist multiple rights to exclude, which is not necessarily the case with PGRFA conservation and use. JAMES M. BUCHANAN AND YONG J. YOON, 2000, “Symmetric Tragedies: Commons and Anticommons”, *Journal of Law and Economics*, Vol. 43, (1) at p. 2.

⁵⁵⁴ M. A. HELLER, 1998 *op.cit.*; see also M. A. HELLER AND R. S. EISENBERG, 1998, “Can Patents Deter Innovation? The Anticommons in Biomedical Research”, *Science*, Vol. 280, (5364); and K. AOKI, 1999, “Neocolonialism, Anticommons Property, and Biopiracy in the (Not-So-Brave) New World Order of International Intellectual Property Protection Symposium: Sovereignty and the Globalization of Intellectual Property”, *op.cit.*.

⁵⁵⁵ This is confirmed by Resolution 4/2015 which “[e]mphasises the key role of sustainable use of PGRFA and the link between Farmers’ Rights under Article 9 and the provisions on conservation and sustainable use under Articles 5 and 6 of the Treaty.”

⁵⁵⁶ In resolution 7/2013, the Vision of the WP-SU states that “[p]lant genetic resources for food and agriculture are used sustainably in farming systems in accordance with Article 6, to enable more inclusive, sustainable and efficient agricultural and food systems at local, national and international levels.” Available at http://www.planttreaty.org/sites/default/files/MO314_IT-GB-6-15-12_en.pdf

⁵⁵⁷ N. MAXTED, S. KELL, AND J. MAGOS BREHM, “Options to Promote Food Security: On-Farm Management and in Situ Conservation of Plant Genetic Resources for Food and Agriculture”, 2011 .

for smallholder farmers,” and in its paragraph 3 emphasizes “the *key role of the sustainable use of PGRFA* and the link between Farmers’ Rights under Article 9 and the provisions on conservation and sustainable use under Articles 5 and 6 of the Treaty.” (Emphasis added)

(c) Common concern for genetic erosion and special nature of seeds

The first three paragraphs of the preamble express the importance of dealing with the “continuing erosion of plant genetic resources for food and agriculture” as a “common concern of all countries” in a separate international instrument, due to the “special nature of PGRFA, their distinctive features and problems needing distinctive solutions”,⁵⁵⁸ as recognized by Resolution 3 of the Nairobi Final Act.⁵⁵⁹ This uniqueness of PGRFA was formally recognized by the Conference of the Parties of the CBD in 1995,⁵⁶⁰ which supported the negotiations on the Treaty within FAO. The uniqueness of PGRFA is based on the following criteria: they are crucial to satisfying basic human needs and they are man-made biological diversity being developed since the origins of agriculture. Because of the degree of human management of PGRFA, its conservation in production systems is inherently linked to its sustainable use.

Furthermore, PGRFAs are not randomly distributed throughout the world, but concentrated in the so-called “centres of origin and diversity” of cultivated plants and the countries’ interdependence regarding PGRFA is much greater than for any other kind of biodiversity. Finally, the target for conservation and use are not the species as such, but genetic diversity within each species.⁵⁶¹

⁵⁵⁸ Plant Treaty Preamble § 1. This was also recognized in Decision II/15 of the second meeting of the Conference of the Parties of the CBD adopted on 17 November 1995. During the FAO negotiations, the need for distinct solutions became especially apparent, particularly in relation to the application of bilateral mechanisms for access, to and sharing of benefits derived from the use of PGRFA. The high transaction costs and the technical and legal difficulties in bilateral access systems such as those provided under the CBD, stimulated negotiating countries to design a multilateral solution that would fit to the special nature of PGRFA and answer its special needs. See J.J. Hardon, B. Vosman and Th.J.L. van Hintum (1994), “Identifying Genetic Resources and their Origin: The Capabilities and Limitations of Modern Biochemical and Legal Systems”, Background Study paper n° 4, Commission on Plant Genetic Resources, First Extraordinary Session, Rome, 7 - 11 November 1994; and Visser, B., Eaton, D., Louwaars, N. and Engels, J. (2003) “Transaction costs of germplasm exchange under bilateral agreements”, Proceedings of the GFAR-2000 Conference, Dresden.

⁵⁵⁹ The Nairobi Final Act stresses the importance of the agreements reached within FAO and called for the IU to be revised in harmony with the CBD. Resolution 3 from the Nairobi Final Act (the relationship between the Convention on Biological Diversity and the promotion of sustainable agriculture) was adopted 22 May 1992 in Nairobi. Available at www.cbd.int/doc/handbook/cbd-hb-09-en.pdf (last accessed December 2010).

⁵⁶⁰ Report of the Second Meeting of the Conference of the Parties to the Convention on Biological Diversity, *Jakarta, Indonesia* 6-17 November 1995, Decision II/15; UNEP/CBD/COP/2/19 at p. 26

⁵⁶¹ C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., “*Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*”, at p. 9.

The first three paragraphs of the preamble justify the mere existence of a new Treaty specifically dedicated to the question of PGRFA.⁵⁶² The notion of “interdependence between countries” is referred to in paragraph three when it states “that [PGRFA] are a common concern of all countries, *in that all countries depend very largely on [PGRFA] that originate elsewhere*”. (Emphasis added) This seems to be a crucial element for any effective PGRFA management system. And indeed, this concept of interdependence is explicitly mentioned in the Treaty MLS⁵⁶³ as one of the two criteria (the other one being food security) used to determine which PGRFA should be included in Annex I.⁵⁶⁴ As for the concept of common concern, as explained in Chapter 2, it reduces significantly the importance of the initial concept held in the IU of “heritage of mankind”.

(d) Conservation and crop genetic improvement

Preamble paragraph number six acknowledges that PGRFA are the “raw material indispensable for crop genetic improvement” (whether by farmers’ selection, standard plant breeding or modern biotechnology means), essential to adapt to unpredictable environmental and future human needs. Thereby, Contracting States validate taking action for broad international conservation of seeds. Breeding activities are positioned as a central means to realize food security and poverty alleviation. Moreover, intergenerational equity is implied when mentioning “future human needs”, thereby highlighting the link between the different components justifying the promotion of a sustainable agriculture.

(e) Intergenerational responsibility

Paragraph thirteen of the preamble recognizes the responsibility of the present generation to past and future generations to conserve the World’s diversity of PGRFA. This shows the temporal interdependence of generations for a future sustainable livelihood. It is the second reference to the intergenerational aspect of seed management, similar to preamble paragraph four.

⁵⁶² C 1999 § 60 “The Conference considered that the successful completion of the negotiations for the revision of the [IU], as an international instrument for the conservation and sustainable utilization of plant genetic resources for food and agriculture, and for access to these resources, was *essential in ensuring global food security and sustainable agriculture for present and future generations*”. (Emphasis added)

⁵⁶³ Plant Treaty Article 11.1.

⁵⁶⁴ See below § 2 on Food Security.

(f) Sustainable development approach to PGRFA management

Finally, preamble paragraph twelve reminds that the subject-matter dealt within the Treaty is at the meeting point between agriculture, the environment and trade, i.e. a sustainable development law issue, requiring synergy among these sectors. This statement highlights the need to address PGRFA management through a multi-sector approach, probably also as a reaction to the absorption of the matter by the environmental sector during the CBD negotiations, at the “exclusion” of agriculture ministries.⁵⁶⁵ It reinforces the growing need for collaboration between the relevant international institutions (e.g. with the CBD representing the environmental sector, or the WTO representing the trade sector⁵⁶⁶), mentioned in paragraph nine of the preamble. An example of such a multi-sector approach can be provided by the Memorandum of Cooperation concluded between the Secretariats of the Plant Treaty and the CBD in October 2010 on a Joint Capacity Building Programme for the harmonious implementation of the Treaty and the CBD as well as the Nagoya Protocol.⁵⁶⁷

These six elements explain why it is compulsory for Contracting Parties to address PGRFA management in a sustainable manner, through sustainable use practices to promote the development of a sustainable agriculture.

(2) Specific obligations in the Treaty directed towards sustainable agriculture

The above six components justifying the promotion of a sustainable agriculture are translated into specific obligations within several Treaty provisions. The following three main Articles dealing with sustainability are explained below: Article 1 on the Objectives of the Treaty and Articles 5 and 6 specifying Contracting Parties’ obligations relating to Conservation and Sustainable Use of PGRFA.

(a) Article 1 – Treaty objectives

The objectives of the Treaty as outlined in Article 1 are:

⁵⁶⁵ It is only at the very end of the CBD negotiations that the agricultural sector “woke up” and took part in the discussions at the CBD forum in order to impose on Contracting Parties of the environmental sector the recognition in Resolution 3 of the Nairobi Final Act of the fact that the specific character of PGRFA management requires distinctive solutions.

⁵⁶⁶ WTO was an observer to Treaty meetings at the Second Session of the Governing Body in 2007.

⁵⁶⁷ The objectives of this joint initiative are: “(1) Support to the ratification of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (NP) and its harmonious implementation with the ITPGRFA and its Multilateral System of Access and Benefit-sharing (MLS); (2) Joint initiative for on-farm conservation, sustainable use of PGRFA and protected areas; and (3) Joint initiative for the promotion of the importance of biodiversity and plant genetic resources for food and agriculture for food security under a changing climate.” See appendix 1 of the Governing Body 4 document n° IT/GB-5/13/14 “Report on Cooperation with the Convention on Biological Diversity”.

“1.1 (...) the *conservation and sustainable use* of plant genetic resources for food and agriculture and the *fair and equitable sharing of the benefits* arising out of their use, in harmony with the Convention on Biological Diversity, *for sustainable agriculture and food security*. (Emphasis added)

1.2 These objectives will be attained by closely linking this Treaty to the Food and Agriculture Organization of the United Nations and to the Convention on Biological Diversity.”

i. Three untangled objectives

The three objectives outline the general framework for the Treaty’s implementation. Each of them is further defined in later Articles (Article 5 on Conservation; Article 6 on Sustainable Use; and Articles 10 to 13 on Access and Benefit-sharing). Each objective can be considered as a complementary strategy for the implementation of the other Treaty objectives. They stand at the same level of importance and are intrinsically related in their realization. For example, adopting and implementing a seed conservation measure that does not facilitate access to seeds and does not take into account fair and equitable sharing of the benefits derived from the use of these PGRFA would not conform to the Treaty’s objectives. The text of this clause is very much “inspired” by the three same objectives set in Article 1 to the CBD.⁵⁶⁸ It differs in the specification and details in terms of their means and scope, which are for the Treaty, detailed later in the MLS Part IV, Article 10 to 13. This affiliation with the CBD clearly posits the Treaty in the same “hyperownership” logic over genetic resources, as demonstrated in Chapters 2 and 3 above. This is an important point to make, as it entails that all the choices made by Contracting Parties in the design of the Treaty tools and mechanisms are directed towards this appropriation trend, excluding other potential modes or directions in the management of seeds.

Furthermore, this affiliation formalizes the change of perception of PGRFA management from the IU into an international legally-binding convention. Indeed, Article 1 of the IU stated that “[t]he objective of this Undertaking is to ensure that plant genetic resources *of economic and/or social interest*, particularly for agriculture, will be explored, preserved, evaluated and made available for plant breeding and scientific purposes. This Undertaking is based on *the*

⁵⁶⁸ CBD Article 1 states that “[t]he objectives of this Convention, to be pursued in accordance with its relevant provisions, are the *conservation of biological diversity*, the *sustainable use of its components* and the *fair and equitable sharing of the benefits* arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.” (Emphasis added)

universally accepted principle that plant genetic resources are a heritage of mankind and consequently should be available without restriction.” (Emphasis added) The notion of “social interest” at the same level as the economic one has vanished from the current Treaty text, while the principle of heritage of mankind was “downgraded”⁵⁶⁹ into the concept of “common concern” referred to in the Preamble of the Treaty and not in its substantive provisions anymore.

ii. Sustainable agriculture as overall objective

Article 1 of the Treaty is an essential provision as it sets the overall goals of the Treaty, i.e. sustainable agriculture and food security. These overall goals represent the final reasons, the “all-embracing” motives for Contracting Parties to act collectively in facing the global challenges of agricultural biodiversity erosion and repetitive food crises, which no country can face alone. These overall goals are critical in guiding Contracting Parties in their implementation of the Treaty. They remind that the objectives of conservation, sustainable use, and ABS are not meant for other purposes than promoting a sustainable agriculture (and reaching food security). To give an example, ABS is not meant to facilitate access to seeds that will then be improved and appropriated by a limited number of stakeholders, excluding the majority of actors in their access and in their benefits. ABS policies and measures should serve the overall goals of food security and sustainable agriculture.

(b) Conservation and Sustainable Use of PGRFA

i. A non-contentious negotiation

Articles 5 and 6 on conservation and sustainable use of PGRFA were non-contentious during the negotiations of the Treaty and offer a modern framework for States to act for the benefit of conservation and sustainable use of PGRFA.⁵⁷⁰ This framework is based on earlier provisions of the IU (Articles 3 and 4) combined with text and suggestions derived from the CBD (Decision III/11) and from the Global Plan of Action for Plant Genetic Resources for Food

⁵⁶⁹ The downgrading of the “heritage of mankind” principle had begun in 1993 with the adoption of FAO Conference Resolution 3/90, “Annex 3 to the International Undertaking on Plant Genetic Resources”, which stated that “the concept of mankind's heritage, as applied in the International Undertaking on Plant Genetic Resources, is subject to the sovereignty of the states over their plant genetic resources.” See generally on this notion K. BASLAR, *cit.*; and L. F. E. GOLDIE, 1983, “Note on Some Diverse Meanings of the Common Heritage of Mankind”, *Syracuse Journal of International Law and Commerce*, Vol. 10. Specifically applied to PGRFA see K. AOKI, KENNEDY LUVAI, 2007, “Reclaiming Common Heritage Treatment in the International Plant Genetic Resources Regime Complex”, *Michigan State Law Review*, Vol., (1); S. B. BRUSH, 2004, “Heritage Protection: Seeking a Middle Ground”, *Current Anthropology*, Vol. 45, (5); and V. TILMAN, “Propriété Intellectuelle, Soutenabilité Et (Biens) Communs: Approche Philosophique Et Étude De Cas Sur L'appropriation De La Biodiversité Agricole,” at pp. 276-297.

⁵⁷⁰ D. COOPER, 2002, “The International Treaty on Plant Genetic Resources for Food and Agriculture”, *op.cit.*.

and Agriculture (GPA - a voluntary non-legally binding instrument).⁵⁷¹ Article 5 deals with the “Conservation, Exploration, Collection, Characterization, Valuation and Documentation of PGRFA”. Article 6 is entitled “Sustainable Use of Plant Genetic Resources”. They both support an integrated approach to conservation and sustainable use, suggesting actions the joint implementation of which increase their mutual effectiveness. The details of the technical, scientific and political actions promoted, such as: promoting collection of PGRFA, promoting on-farm conservation and management by farmers and local communities, strengthening research for the benefit of farmers, broadening the genetic base of crops and increasing the range of genetic diversity available to farmers, etc., will not be dealt with here. What is especially interesting to note from a legal perspective is the reference to the principle of national sovereignty in Article 5 when stating that each Contracting Party shall, “subject to national legislation” promote the above-mentioned integrated approach. This reference marks the overall influence of the CBD in the “privatization” of biodiversity management through the (state) control over genetic resources.

ii. Specific actions for conservation and sustainable use

Both articles are quite specific in their content (as opposed to similar articles in the CBD), which might facilitate a benchmarking when monitoring the effective implementation of these articles. Articles 5.2 and 6 jointly promote rather an environmentally friendly and diverse agricultural policy, which mitigates the threats to PGRFA identified thanks to the actions proposed under Article 5.1. The lists of actions to be taken under both Articles are none exhaustive (as the terms “in particular”, and “such measures as” suggest) and mutually supportive. These actions are driven from the Global Plan of Action (covered below in more detail under Plant Treaty Article 14), which is an international yet voluntary framework for PGRFA-related efforts. What is also worth noting is that conservation and sustainable use are inevitably interrelated. The Treaty objective “sustainable use of PGRFA” covers concrete actions to promote the development of the “sustainable agriculture” overall goal.

⁵⁷¹ Adopted during the International Technical Conference on Plant Genetic Resources in 1996 (Fourth International Technical Conference on Plant Genetic Resources, Leipzig Germany, June 1996). The GPA lists twenty agreed priority activity areas organized into four groups: In-situ conservation, ex-situ conservation, utilization of PGR and institutions & capacity building. The GPA was intended to be monitored, reviewed and updated by the FAO CGRFA as a rolling plan of action. It was endorsed by the FAO Conference at its 29th session in 1997.

B. Implementing the conservation and sustainable use provisions

In the following section, the intention of the parties regarding their sustainable agriculture overall goal is highlighted within specific Treaty provisions and legal obligations through the analysis of the way they are implementing these provisions, and in particular Articles 5 and 6.

(1) Sustainable use of PGRFA as core agenda item of every Governing Body meeting

The “Implementation of Article 6 on Sustainable Use” item has systematically been included in the agenda of every session of the Governing Body,⁵⁷² and three Resolutions have been adopted by the Governing Body.⁵⁷³ This is not the case for Article 5 on Conservation because *ex situ* conservation has been dealt with by States through other instruments at the national (national policies and genebanks for PGRFA conservation)⁵⁷⁴ and international levels (such as the establishment of the CGIAR and their genebanks, the GPA,⁵⁷⁵ the State of the World’s PGRFA,⁵⁷⁶ and more recently with the Global Crop Diversity Trust (GCDT)⁵⁷⁷ for several decades already. Indeed, a considerable amount of money is dedicated to the implementation of national and international *ex situ* conservation activities,⁵⁷⁸ contrary to *in-situ* and on-farm conservation, which have received little attention and funding up to now.⁵⁷⁹ Moreover, conservation activities are implicitly and intrinsically included within Article 6, as sustainable

⁵⁷² “The implementation of Article 6 is a standing priority item on the agenda of the Governing Body of the International Treaty, with the aim of promoting an integrated approach to the sustainable use of plant genetic resources for food and agriculture (PGRFA) among Contracting Parties.” § 1 in document n° IT/GB-6/15/12 “Implementation of the Programme of Work on Sustainable Use of Plant Genetic Resources for Food and Agriculture” presented at Governing Body 6 as Agenda Item n°11. Available at http://www.planttreaty.org/sites/default/files/MO314_IT-GB-6-15-12_en.pdf

⁵⁷³ Resolution 7/2011; 7/2013; and 4/2015.

⁵⁷⁴ National policies and structures for *ex situ* conservation are in place in most countries since FAO member states have developed and implemented international policies which have been translated at the national levels. There is no need for more structure, bodies or policies (excepting the need for further funding, as in every field).

⁵⁷⁵ The GPA is included in the Treaty as a “supporting component” in its Article 14. FAO, “Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture”, 2011 A.B.F.C.A.I.R. SESSION Available at <http://www.fao.org/agriculture/crops/thematic-sitemap/theme/seeds-pgr/gpa/en/>

⁵⁷⁶ FAO Member States had to submit their country reports for Second States of the World’s PGRFA report. The country reports include a number of aspects of direct relevance to the implementation of Article 6, namely: information systems; PGRFA-related policies and regulations; and utilization of PGRFA. These reports also fulfil the countries’ obligations under Article 17.3 of the Treaty to cooperate with the Commission in periodically assessing the state of the world’s PGRFA in order to facilitate the updating of the rolling Global Plan of Action. See FAO, “Second Report on the State of the World’s Plant Genetic Resources for Food and Agriculture”, 2010 See also the First report FAO, “The State of the World’s Plant Genetic Resources for Food and Agriculture”, 1996 Available at <http://www.fao.org/agriculture/crops/thematic-sitemap/theme/seeds-pgr/sow/sow2/en/>

⁵⁷⁷ The GCDT is considered a component of the Plant Treaty through the financial implementation of *ex situ* conservation.

⁵⁷⁸ For example, in comparing two funding from the Treaty for conservation activities, as for *ex situ* conservation activities the GCDT endowment fund received US\$ 170 million, while the Benefit-sharing Fund of the Treaty dedicated around US\$ 10 to 15 million for *in-situ* and on-farm conservation projects.

⁵⁷⁹ E. FRISON AND T. HODGKIN, “Strategic Opportunities to Strengthen Community-Based Approaches to Seed Agrobiodiversity”, in THE GLOBAL ALLIANCE FOR THE FUTURE OF FOOD (eds), *The Future of Food: Seeds of Resilience - a Compendium of Perspectives on Agricultural Biodiversity from around the World*, 2016.

use of PGRFA is implemented through *in-situ* and on-farm conservation.⁵⁸⁰ Furthermore, the fourth session of the Governing Body established an *Ad Hoc* Technical Committee on Sustainable Use of Plant Genetic Resources for Food and Agriculture (ACSU),⁵⁸¹ which “emphasized the *direct complementarity between in-situ, on-farm and ex-situ approaches to conservation of PGRFA* and the resulting PGRFA information (...). The ACSU *noted the continuum between conservation and sustainable use of PGRFA, and the need to address current gaps in in-situ, on-farm conservation and sustainable use of PGRFA* through the support of Contracting Parties and donors.”⁵⁸² (Emphasis added)

(2) National implementation lagging behind

At the Third Session of the Governing Body, Contracting Parties “noted that in many regions the implementation of Article 6 is lagging behind in comparison to other elements of the International Treaty.”⁵⁸³ The situation improved at its Fourth Session, where parties recognized that most countries do implement explicit policy and legal measures for different aspects of the concept of sustainable use, through a variety of policies even though there does not appear to be an integrated and coordinated approach towards the promotion of sustainable use of PGRFA. For this reason, Contracting Parties established the *Ad Hoc* Technical Committee on Sustainable Use.⁵⁸⁴ The Committee aims at assisting Contracting Parties in various ways. One of the Committee’s tasks is to develop a toolbox to assist countries in the design of measures to promote sustainable use. Another task is to convene a stakeholders’ consultation to gather information to devise and elaborate elements of a Work Programme on Sustainable Use, in collaboration with relevant international organizations and key actors engaged in sustainable use of PGRFA.⁵⁸⁵ Furthermore, at its fifth session, the

⁵⁸⁰ Moreover, it is easier to request new funding to develop sustainable use activities to face climate change, increase crop resilience or develop stable productivity system (which *de facto* include *in situ* and on-farm conservation activities), than requesting funding for the same activities under the scope of Article 5, which is associated to high financial means (compared to *in-situ* activities). Sustainable use policy is still in its infancy and requests a drastic need for structure, guidance, legislations, etc. Contracting Parties’ focus on Article 6 remedies this situation and promotes the development and implementation of sustainable use actions.

⁵⁸¹ The ACSU was established following Governing Body resolution 7/2011. Resolution 7/2013 established the five goals of the ACSU, which are of two types: “Monitoring, implementing and ensuring technical support” (goal 1, 2, and 3) and “Cooperating and improving partnerships” (goal 4 and 5).

⁵⁸² At § 8, document n° IT/GB-6/15/12 “Implementation of the Programme of Work on Sustainable Use of Plant Genetic Resources for Food and Agriculture” presented at Governing Body 6 as Agenda Item n°11. Available at http://www.planttreaty.org/sites/default/files/MO314_IT-GB-6-15-12_en.pdf

⁵⁸³ (§ 44 report GB 3) check IT/GB-3/09/Inf.5

⁵⁸⁴ The Committee met twice: in 2012 and in 2015. see <http://www.planttreaty.org/content/ad-hoc-technical-committee-sustainable-use>

⁵⁸⁵ The Stakeholder Consultation is accessible on the Treaty Website as an online survey; available at http://www.planttreaty.org/sites/default/files/files/ITPGRFA_SU_toolbox_stakeholder_survey_FINAL_EN.pdf

Governing Body adopted resolution 7/2013, which requests Contracting Parties to take three different actions regarding sustainable use of PGRFA: (1) to promote access of all farmers to PGRFA in the Multilateral System; (2) to implement measures and activities of the Work Programme on Sustainable Use; and (3) to report on the implementation activities of the PW-SU to the Governing Body using the indicators of the second GPA. Besides, this Resolution also requests the Treaty Secretariat to take various actions to promote the implementation of Article 5 and 6.⁵⁸⁶

(3) National reports on the implementation of Articles 5 & 6

Up to now (December 2015), submissions were made by Contracting Parties⁵⁸⁷ to the Treaty Secretariat and by other stakeholders such as civil society organizations and international research centres.⁵⁸⁸ Until more national reports on the implementation of conservation and sustainable use obligations are received by the Treaty Secretariat, it is hard to assess the degree of implementation of these provisions. However, it is clear that the fact of having established the *Ad Hoc* Technical Committee on Sustainable Use and of having systematically set on the Governing Body agenda the issue of the implementation of Article 6 shows that there is an urgent need to promote the implementation of these obligations. Indeed, the latter are crucial in the implementation of all other Treaty obligations and which are very closely related to the implementation of Farmers' Rights at the national level.⁵⁸⁹ The work undertaken by the *Ad Hoc* Technical Committee on Sustainable Use further strengthens this very close link between Articles 5 & 6 and Article 9 of the Treaty.

(4) National seed legislations

A final comment relates to the relation between conservation and sustainable use of PGRFA and national seed legislations. Variety release and seed certification legislation are

⁵⁸⁶ For a synthetic view of these obligations, see the resolution 7/2013 scheme on the Treaty website, available at http://www.planttreaty.org/sites/default/files/Res7_2013_schema_en.pdf

⁵⁸⁷ Australia, Canada, Ecuador, Egypt, El Salvador, Germany, Italy, Kenya, Lesotho, Madagascar, Mali, Niger, Pakistan, Seychelles, Syria, Sweden, Tanzania, Uruguay, Zambia. Available at <http://www.planttreaty.org/content/sustainable-use-submissions>

⁵⁸⁸ Cooperazione Rurale in Africa e America Latina (ACRA) and consortium partners, the GREEN Foundation, Programa Colaborativo de Fitomejoramiento Participativo en Mesoamérica (FMPA), the Consultative Group for International Agricultural Research (CGIAR) and The Southeast Asia Regional Initiatives for Community Empowerment (SEARICE). Available at <http://www.planttreaty.org/content/sustainable-use-submissions>

⁵⁸⁹ See the "Vision, Mission and Goals of the Programme of Work on Sustainable Use of Plant Genetic Resources for Food and Agriculture and Supporting Initiatives", in particular Goal 1 & 4 (as adopted by the Resolution 7/2013), available at http://www.planttreaty.org/sites/default/files/MO314_IT-GB-6-15-12_en.pdf

obstacles to Farmers' Rights in the exchange and selling of farm-saved seed, and in the marketing of land races and of many farmers' varieties.⁵⁹⁰ This constitutes a serious hurdle to on-farm conservation and sustainable use of crop genetic diversity.⁵⁹¹ Andersen notes that “[i]t is a paradox that rules originally intended to protect plant health in fact contribute to removing the basis for ensuring plant health in [the] future, namely the diversity of genetic resources.”⁵⁹² Seed laws together with strict plant breeders' rights restrict traditional farming practices and traditional seed conservation, thereby contributing significantly to the further erosion of the primary material for all plant breeding and farming activities. Andersen questions the existing possibilities to make such laws more compatible with these customary rights of farmers – which are so crucial to the maintenance of agro-biodiversity for food security, today and in the future.⁵⁹³

§ 2 Food security

Food security has been a very important concept throughout the whole negotiation of the Treaty. In previous versions of Article 1, it appeared either as a more central principle, or as a more global and inter-generational obligation. See for example the consolidated negotiating text resulting from the deliberations during the Fourth Extraordinary Session of the CGRFA. One of the proposals states for instance that the objectives are “the conservation and sustainable use of plant genetic resources for food and agriculture *for future food security*

⁵⁹⁰ An example with European seed legislation is provided with the comprehensive paper by T. WINGE, “Seed Legislation in Europe and Crop Genetic Diversity”, (eds), *Sustainable Agriculture Reviews*, Springer, 2015.

⁵⁹¹ To overcome this hurdle, Andersen proposes that shared norms should be developed on how seed laws can be designed so as to ensure adequate legal space for farmers in this regard. See ‘Input paper for the Second Meeting Ad Hoc Technical Committee on Sustainable Use of Plant Genetic Resources for Food and Agriculture Rome’, Italy, 02/03/2015 - 03/03/2015 “Some Considerations on the Relation Between Farmers' Rights, Plant Breeders Rights and Legislation on Variety Release and Seed Distribution”. Based on informal international consultations and research carried out within the framework of the Farmers' Rights Project of the Fridtjof Nansen Institute, Norway. Regine Andersen, p. 5. Available at <http://www.planttreaty.org/sites/default/files/Appendix13.pdf>

⁵⁹² *Ibidem*.

⁵⁹³ Taking the example of EU seed legislation with Council Directive 98/95 EC, and three Commission Directives 2008/62/EC, 2009/145/EC, and 2010/60/EU several critics have emerged. Andersen summarizes them by stating that “[t]he European Union has tried to solve the problem with a specific directive on conservation varieties. However, the EU directive on conservation varieties is not adequate to solve these hurdles (...). One reason is that seed exchange and sale is still prohibited among farmers under the directive. Another reason is that only varieties deemed interesting for conservation and sustainable use by certain authorities can be covered by the system, which is limiting diversity. Furthermore, the variety release and certification criteria are still too strict. Also, the marketing and use of the varieties are limited to the regions of origin, which is not in line with the customary uses of exchange that has been so important to the development of crop genetic diversity. On top of this, only limited quanta of seeds can be used. Last but not least the conservation varieties cannot be further developed by farmers, which makes them less attractive to farmers altogether. Thus, the directive does not encourage the conservation and sustainable use of crop genetic diversity, and pose serious barriers to the implementation of Articles 5, 6 and 9 of the Plant Treaty. Efforts to change the legislation are underway, but have so far not succeeded.” *Ibidem*. See also T. WINGE, *op. cit.* and Christian Prip and Ole Kristian Fauchald “Securing Crop Genetic Diversity: Inconsistency between EU Seed legislation and international treaties to safeguard biodiversity?” (working paper, personal communication).

and the fair and equitable sharing of the benefits”; and in another proposal “[t]he Undertaking seeks to facilitate unrestricted access to plant genetic resources for food and agriculture and farmers’ efforts to *conserve and sustainably use* plant genetic resources for food and agriculture in order to *secure global food security* for present and future generations.”⁵⁹⁴ (Emphasis added). In the preamble and in Article 1, food security is matched with sustainable agriculture, as being the two overall goals of the Treaty. In Article 11.1, Contracting Parties use food security as one of the two criteria, with interdependence, for determining what PGRFA should be part of the Treaty Annex I list of crops and forages.

A. Defining food security

(1) Food security: evolution of the concept

The concept of food security has been on the political agenda of FAO for more than 30 years.⁵⁹⁵ There is no doubt that food security cannot be dealt with individually, but necessarily calls for global action. However, the concept has significantly evolved, from a simplistic view of producing more food in order to supply more foodstuffs to people,⁵⁹⁶ to the more complex approach encompassing the nutritional value of the food supplied, as well as the social and economic aspects of locally producing foodstuff in accordance with cultural preferences and traditions. FAO’s “Practical Guide: Basic Concepts of Food Security” provides a history of the concept and the evolution of the definition of food security.⁵⁹⁷ Its attempted simplified definition states that:

⁵⁹⁴ CGRFA (1997) “Consolidated negotiating text resulting from the deliberations during the Fourth Extraordinary Session of the CGRFA”, Fourth Extraordinary Session, document n° CGRFA/IUND/CNT, available at <http://ftp.fao.org/docrep/fao/meeting/014/aj589e.pdf>

⁵⁹⁵ D. J. SHAW, 2007, “*World Food Security : A History since 1945*”, Basingstoke England ; New York, Palgrave Macmillan See also B. McDONALD AND R. A. MATTHEW, “Food Security in a Global Age: Addressing Challenges from Malnutrition, Food Safety and Environmental Change,” in *American Political Science Association 2009 Annual Meeting* ed. S. CHAMBERS AND B.W. JENTLESON (Toronto: APSA, 2009), at pp. 5-7.

⁵⁹⁶ This initial meaning of the food security concept is close to Hardin’s reasoning behind the tragedy of the commons’ dilemma. World’s population is increasing drastically and there is not enough food for all. The logical conclusion is to produce more food, i.e. focus on quantity. This reasoning participated to the Green Revolution, which took place in developing countries in the 1960s.

⁵⁹⁷ The definition of food security has evolved with the year, and includes today a “world-wide” or “global” perspectives, compared to the initial definitions, more focused on the individual or households levels. FAO (1996) World Food Summit, published in the FAO Practical Guide: Basic Concepts of Food Security, Chapter 2, available at <http://www.fao.org/docrep/005/y4671e/y4671e06.htm> . For a redefinition of the concept see also D. J. SHAW, *cit.* At pp. 383-386. Shaw refers to five phases in the evolution of food security policies and practices (p.385) and stresses on the importance of the work by Amartya Sen on food entitlement in the evolution of the concept. See A. K. SEN, *cit.*; see also A. SEN, “*Poverty and Famines: An Essay on Entitlement and Deprivation*”, *op. cit.*; and more recently A. SEN, “*Ethique Et Économie*”, *op. cit.*.

“Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.”⁵⁹⁸

(a) Food sovereignty

The widening of the concept has occurred partly due to the appearance of the neighbouring concept of Food Sovereignty, which emerged in the 1980s in Central America⁵⁹⁹ in reaction to the too narrow concept of food security.⁶⁰⁰ The concept eventually reached the international spheres through proactive civil society movements,⁶⁰¹ and food sovereignty was asserted as a right at the NGO Forum to the World Food Summit held in Rome in 1996.⁶⁰² This concept became “Via Campesina’s central collective action frame”⁶⁰³ to fight against the “neo-liberal agriculture policies [which] have led to the destruction of our family farm economies and to profound crisis in our society.”⁶⁰⁴ In 2007, 500 delegates from more than 80 countries adopted the “Declaration of Nyéléni” in which the food sovereignty is defined as being:

“the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. It puts those who produce, distribute and consume food at the heart of food systems and policies rather than the demands of markets and corporations. It defends the interests and inclusion of the next generation. It offers a strategy to resist and dismantle the current corporate trade and food regime, and directions for food, farming, pastoral and fisheries systems determined by local producers. Food sovereignty prioritises local and national economies and markets and empowers peasant and family farmer-driven

⁵⁹⁸ Op. cit. FAO Practical Guide: Basic Concepts of Food Security, Chapter 2 (no date mentioned).

⁵⁹⁹At that time, Food Sovereignty meant “national food security” and was paired with the right to continue to produce one’s food. M. EDELMAN, 1999, “Peasants against Globalization: Rural Social Movements in Costa Rica”, Stanford University Press, at pp. 11-12. See also “Global Small-Scale Farmers’ Movement Developing New Trade Regimes”, *Food First News & Views*, Volume 28, Number 97 Spring/Summer 2005, p.2.

⁶⁰⁰ Windfuhr and Jonsen assimilate food security as a more of a technical concept, the right to food as a legal one, and food sovereignty as a rather political concept. M. WINDFUHR AND J. JONSEN, 2005, “*Food Sovereignty. Towards Democracy in Localized Food Systems*”, Heidelberg, Germany, FIAN-International.

⁶⁰¹ P. CLAEYS, 2014, “Food Sovereignty and the Recognition of New Rights for Peasants at the Un: A Critical Overview of La Via Campesina’s Rights Claims over the Last 20 Years”, *op.cit.*; see also P. CLAEYS, 2015, “The Right to Food: Many Developments, More Challenges”, *Canadian Food Studies/La Revue canadienne des études sur l’alimentation*, Vol. 2, (2).

⁶⁰² P. CLAEYS AND N. LAMBEK, “Introduction: In Search of Better Options: Food Sovereignty, the Right to Food and Legal Tools for Transforming Food Systems”, in N. LAMBEK, *et al.* (eds), *Rethinking Food Systems. Structural Challenges, New Strategies and the Law*, Dordrecht, Springer, 2014, at pp. 34-35.

⁶⁰³ N. LAMBEK *et al.*, *cit.* at p. 35.

⁶⁰⁴ Via Campesina, Seattle Declaration: Take WTO out of Agriculture. December 3, 1999. Cited in N. LAMBEK *et al.*, *cit.* at p. 35.

agriculture, artisanal fishing, pastoralist-led grazing, and food production, distribution and consumption based on environmental, social and economic sustainability.”⁶⁰⁵

In April 2008 the International Assessment of Agricultural Science and Technology for Development (IAASTD), an intergovernmental panel under the sponsorship of the United Nations and the World Bank, defined Food sovereignty as being “the right of peoples and sovereign states to democratically determine their own agricultural and food policies.”⁶⁰⁶

The concept of food sovereignty was born in reaction to the narrow definition of food security and has clearly influenced the evolution of the concept of food security as well as the negotiation of international policies on food and agriculture.⁶⁰⁷ In my view, food sovereignty emphasizes the importance of local control and self-sufficiency, while food security focuses on the reliance on the global economy and liberalized agricultural markets.⁶⁰⁸

(b) Food security and the right to food

The right to food was recognized as a Human Right,⁶⁰⁹ in particular in Article 11 of the International Covenant on Economic, Social and Cultural Rights.⁶¹⁰ Notwithstanding the development of this right within the UN for a, its implementation and realization has been slow.⁶¹¹ In order to accelerate the recognition and implementation of Human Rights, including the right to food, the Human Rights Council adopted Resolution 5/1⁶¹² establishing the Human Rights Council Advisory Committee⁶¹³ (hereinafter “the Advisory Committee”), which mandate

⁶⁰⁵ Declaration of Nyéléni adopted at the Global Forum for Food Sovereignty, which took place in Sélingué, Mali on 27 February 2007.

⁶⁰⁶ International Assessment of Agricultural Knowledge, Science and Technology for Development (2008) “Agriculture at a Crossroads”, Global Summary for Decision Makers, at p. 15. Available at [http://www.unep.org/dewa/agassessment/reports/IAASTD/EN/Agriculture%20at%20a%20Crossroads_Global%20Summary%20for%20Decision%20Makers%20\(English\).pdf](http://www.unep.org/dewa/agassessment/reports/IAASTD/EN/Agriculture%20at%20a%20Crossroads_Global%20Summary%20for%20Decision%20Makers%20(English).pdf)

⁶⁰⁷ I. HADIPRAYITNO, 2014, “Food Security”, *Encyclopedia of Food and Agricultural Ethics*, Vol. ; see also K. V. CADIEUX AND R. BLUMBERG, *ibid.* Food Security in Systemic Context”, Vol. .

⁶⁰⁸ I refer to the excellent PhD thesis of Priscilla Claeys, who explains very clearly the role of social movements (and in particular La Via Campesina) and human rights activists in reclaiming the right to food. P. CLAEYS, “Human Rights and the Food Sovereignty Movement. Reclaiming Control.”.

⁶⁰⁹ The Members of the United Nations declared in 1948 that everyone has a right to be free from hunger and to adequate food including drinking water, as set out in Article 25 of the Universal Declaration of Human Rights. Article 11 of the International Covenant on Economic, Social and Cultural Rights. Article 6 of the International Covenant on Civil and Political Rights; Articles 24 and 27 of the Convention on the Rights of the Child.

⁶¹⁰ For a summary of the development of the right to food in International Law, and a comparative analysis with FRs and IPRs, see H. MORTEN HAUGEN, “The Right to Food, Farmers’ Rights and Intellectual Property Rights: Can Competing Law Be Reconciled?”, in N. LAMBEK, *et al.* (eds), *Rethinking Food Systems. Structural Challenges, New Strategies and the Law*, Dordrecht, Springer, 2014 .

⁶¹¹ P. CLAEYS, 2015, “The Right to Food: Many Developments, More Challenges”, *op.cit.*.

⁶¹² Human Rights Council Resolution 5/1 of 18 June 2007, §§ 65 to 84.

⁶¹³ The Advisory Committee is composed of 18 experts, has been established to function as a think-tank for the Council and work at its direction. It replaces the former Sub-Commission on the Promotion and Protection of Human Rights. The Committee held its first meeting in August 2008. It meets twice a year.

is to “provide expertise to the Council in the manner and form requested by the Council, focusing mainly on studies and research-based advice.”⁶¹⁴ In 2010, the Human Rights Council mandated the Advisory Committee to undertake a preliminary study on ways and means to further advance the rights of people working in rural areas, including women, in particular smallholders engaged in the production of food and/or other agricultural products.⁶¹⁵ The final study of the Advisory Committee on the advancement of the rights of peasants and other people working in rural areas⁶¹⁶ was presented to the Human Rights Council in March 2012, and on 27 September 2012, the Human Rights Council adopted a Resolution on the promotion and protection of the human rights of peasants and other people working in rural areas. In this resolution it decided to create a Working Group to negotiate, finalize and present to the Human Rights Council a draft UN Declaration on the Rights of peasants and other people working in rural areas,⁶¹⁷ on the basis of the Declaration proposed by the Advisory Committee in its Final study presented in March 2012. To date, three sessions have taken place⁶¹⁸ in order to finalize the UN Declaration on the Rights of peasants.

(c) Food security in international instruments

Many different commitments to reduce hunger and poverty have been taken by States, one of the most famous being the first Millennium Development Goal (MDG).⁶¹⁹ In 1996 already, a Declaration on World Food Security was adopted in Rome,⁶²⁰ where the growing

⁶¹⁴ Human Rights Council Resolution 5/1, § 75.

⁶¹⁵ Human Rights Council Resolution 13/4, 24 March 2010. Within the context of its work on the right to food, the Advisory Committee has to date undertaken and finalized studies on discrimination in the context of the right to food; on ways and means to further advance the rights of people working in rural areas; and on the relationship between severe malnutrition and childhood diseases, taking children affected by noma as an example. The Advisory Committee furthermore transmitted to the Council at its 19th session a preliminary study on the urban poor and their enjoyment of the rights to food, and a concept paper on a preliminary study on rural women and their enjoyment of the right to food.

⁶¹⁶ The study is available at http://ap.ohchr.org/documents/dpage_e.aspx?si=A/HRC/19/75

⁶¹⁷ Advanced Version 27/01/2015, Draft UN Declaration on the Rights of Peasants and Other People Working in Rural Areas, available at <http://www.ohchr.org/EN/HRBodies/HRC/RuralAreas/Pages/2ndSession.aspx>

⁶¹⁸ Pursuant to paragraph 1 of Human Rights Council resolution 21/19, the First session of the open-ended intergovernmental working group on a United Nations declaration on the rights of peasants and other people working in rural was held from 15 to 19 July 2013. Pursuant to paragraph 1 of Human Rights Council resolution 26/26, the second session of the working group took place from 2 to 6 February 2015. Pursuant to paragraph 1 of Human Rights Council resolution 30/13, the third session of the working group took place from 17 to 20 May 2016.

⁶¹⁹ In 2000, the general Assembly of the United Nations adopted the Millennium Declaration. This Declaration sets out 8 goals to be attained by 2015; eradication of extreme hunger and poverty is the first one A/RES/55/2. In a recent review of the MDGs, LEISEROWITZ associates the MDGs to a short-term benchmark for sustainable development, where there would be no need for fundamental value changes to attain these goals, as these are present for a long time already, but there would rather be a need for collective changes in actions and behaviour. A. A. LEISEROWITZ, R. W. KATES, AND T. M. PARRIS, 2006, "Sustainability Values, Attitudes, and Behaviors: A Review of Multinational and Global Trends", *Annual Review of Environment and Resources*, Vol. 31, (1) at pp. 434-435.

⁶²⁰ The Rome Declaration on World Food Security was adopted at the World Food Summit, 13-17 November 1996, Rome, Italy. The Summit was called by FAO and aimed at reiterating global commitments to fight hunger and react against widespread under-nutrition and growing concern about the capacity of agriculture to meet future food needs. The Rome Declaration calls

interdependence between nations and regions is recognized, and for which international cooperation and solidarity between areas experiencing different levels of development are seen as indispensable to achieving food security for all.⁶²¹ International aid in times of crisis is put forward as an emergency solution to critical food insecurity, but the past and current crises show that this response is not sufficient and that it does not solve the problem at its root.⁶²²

More recently, the 2008 Cordoba Declaration on the Right to Food and the Governance of the Global Food and Agriculture System⁶²³ has expressed concerns from experts and academics in the way food crisis are poorly dealt with.

“The current hunger crisis is not a time-restricted famine but the sudden worsening of a chronic problem that has affected hundreds of million people for decades. Hunger is a structural problem and therefore *demands structural changes, with consequences for institutional development and food system governance*. Food security for all must be considered as a *global public good* and it must be made a central focus of global governance as well as of national development, taking into account that often the main problem is not too little food production but the inability of many to have access to food.”⁶²⁴ (Emphasis added)

The Declaration diagnoses many related factors affecting hunger and the lack of access to adequate food, including the “lack of support for small scale food production regarding access to or control over seeds” (emphasis added). It further makes recommendations as to how these factors could be mitigated at all local, national and global levels, and specially calls countries to “fully implement the International Treaty on Plant Genetic Resources for Food

for the members of the United Nations to work to halve the number of chronically undernourished people on the Earth by the year 2015. The conference produced a second key document: the World Food Summit Plan of Action. The Plan of Action sets a number of targets for government and non-governmental organizations for achieving food security, at the individual, household, national, regional and global levels. Full text available at <http://www.fao.org/docrep/003/w3613e/w3613e00.htm>

⁶²¹ Objective 7.5 (d) of the Rome Declaration on World Food Security.

⁶²² I. KAUL, I. GRUNBERG, AND M. A. STERN, 1999, “*Global Public Goods International Cooperation in the 21st Century*”, New York Oxford, Oxford University Press, Inc. at p. xiii.

⁶²³ This Declaration was launched on the occasion of the 60th anniversary of the Universal declaration of Human Rights, 10 December 2008. The Cordoba process was started at an international seminar on the right to food at CEHAP, Cordoba October 2007, further pursued at the Right to Food Forum organised by the FAO Right to Food Unit in October 2008, and completed in its present version following a second meeting convened in Cordoba by CEHAP (Catedra de Estudios sobre Hambre y Pobreza, University of Cordoba, Spain) on November 28-29, 2008. The Declaration is available at [http://www.uco.es/internacional/cooperacion/documentos-de-interes/documentos/CEHAP/Cordoba-Declaration-RtF-and-Global-Food-System-\(english\).pdf](http://www.uco.es/internacional/cooperacion/documentos-de-interes/documentos/CEHAP/Cordoba-Declaration-RtF-and-Global-Food-System-(english).pdf)

⁶²⁴ Cordoba Declaration, Preamble, § 9.

and Agriculture, in particular its multilateral system for access and benefit sharing and its article 9 on the Farmer Rights.”⁶²⁵

Finally, the very recently adopted 2015 Sustainable Development Goals (SDGs)⁶²⁶ has named its second goal “Zero Hunger” and identified five targets to guide countries in reaching this goal, thereby setting the question of Food Security high in the international agenda. However, voices argue that access to affordable and sufficient food is not recognized as a universally guaranteed human right, at the same level as access to water, health and education,⁶²⁷ thereby rendering impossible to reach food security following the SDGs.

(2) Food security in the Treaty

Literature has stressed the importance of taking into account food security in the design of scientific research but also of national, regional and international policies,⁶²⁸ thereby recognizing the tight link between PGRFA, and the criteria of interdependence and food security. Fowler and Hodgkin consider for example that “genetic resources underpin plant breeding and agricultural production and are thus essential to food security, livelihoods, and the development aspirations of every country on Earth.”⁶²⁹

During the negotiations of the Treaty, negotiators listed food security as one of the objectives to be attained by facilitating access to PGRFA through the creation of a multilateral agreement.⁶³⁰ In 1996, the Fourth International Technical Conference on Plant Genetic Resources adopted the Leipzig Declaration on Conservation and Sustainable Utilization of PGRFA.⁶³¹ This widely attended Conference recognized “the essential importance of plant genetic resources for food and agriculture, in particular for the food security of present and future generations”⁶³² in the very first sentence of the declaration. In its 7th paragraph, participants “recognize the interdependence of countries and peoples regarding plant genetic

⁶²⁵ Cordoba Declaration, at pp. 3-4.

⁶²⁶ <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

⁶²⁷ J. L. V. POL AND C. SCHUFTAN, 2016, "No Right to Food and Nutrition in the Sdgs: Mistake or Success?", *BMJ Global Health*, Vol. 1, (1).

⁶²⁸ O. DESCHUTTER, "The Role of the Right to Food in Achieving Sustainable Global Food Security", 2009 ; L. A. THRUPP, 2000, "Linking Agricultural Biodiversity and Food Security: The Valuable Role of Agrobiodiversity for Sustainable Agriculture", *International Affairs*, Vol. 76, (2); J. ESQUINAS-ALCAZAR, 2005 *op.cit.*.

⁶²⁹ C. FOWLER AND T. HODGKIN, 2004 *op.cit.* at p. 144.

⁶³⁰ See for example the Report of the First Round of Discussions of the Friends of the Chair's Contact Group Established by the Chair of the Working Group on Scope and Access, 11 December 1996, CGRFA-Ex3/96/Rep, at p. 50.

⁶³¹ Fourth International Technical Conference on Plant Genetic Resources, adopted on June 23, 1996. Full text available at <http://www.fao.org/FOCUS/E/96/06/more/declar-e.htm>

⁶³² *Ibid.* Fourth International Technical Conference on Plant Genetic Resources, adopted on June 23, 1996.

resources for food and agriculture. Access to and the sharing of both genetic resources and technologies are essential for meeting world food security and needs of the growing world population, and must be facilitated. Such access to and sharing of technologies with developing countries should be provided and/or facilitated under fair and most favourable terms, including on concessional and preferential terms, as mutually agreed to by all parties to the transaction.” By adopting this language, stakeholders have voluntarily linked interdependence and food security to the idea of a multilateral mechanism facilitating access to and benefit sharing of PGRFA.

B. Implementing the concept of food security in the Treaty

(1) Interdependency of States and food security as intertwined criteria for determining Annex I PGRFA

Under Article 11.1, negotiators used the criteria of “interdependency” and “food security” to determine which crop should be covered by the MLS. States need to feed their population, and food security is the principle that embraces the rules and tools that States will define and implement to reach that objective. Interdependence of countries is the contextual fact, which States have to bear in mind when setting up policies for reaching food security. Indeed, if States do not recognize, protect and promote the concept of countries’ interdependence with regard to seed access, food security cannot be reached.

(2) Interdependence of States

PGRFA interdependence between countries results from long run human cooperation and collaboration in the exchange of food and feed plants across the world. The degree of dependence of a country’s main food crops on genetic diversity in areas of origin and primary diversity located elsewhere (see Table 4.1 below) has been established⁶³³ and later on confirmed⁶³⁴ by several world-wide studies.⁶³⁵ It showed that all regions in the world are

⁶³³ This study was requested by the CGRFA and complements the first report of the State of the World’s Genetic Resources for Food and Agriculture. X. F. PALACIOS, 1997.

⁶³⁴ In 2010, a second report of the State of the World’s Genetic Resources for Food and Agriculture was published by FAO, which updates data on the matter. I nonetheless refer to data from the 1997 study as it is based on this publication (and on the first report of the State of the World’s Genetic Resources for Food and Agriculture) that negotiators were able to gather the necessary information during the negotiations of the Treaty.

⁶³⁵ C. K. KHOURY *et al.*, "Where Our Food Crops Come From: A New Estimation of Countries’ Interdependence in Plant Genetic Resources", 2015 .

highly dependent upon resources originating for another region, North America being the highest dependent region, and Asia and the Pacific region being the least dependent region.

Region	% Mean of dependence
Africa	72,84
Asia and the Pacific region	47,07
Europe	82,32
Latin America	84,04
Near East	52,63
North America	90,21
Mean	71,37

Table 4. 1: Estimated percentage of interdependence of regions on PGRFA originating from elsewhere (based on numbers from Palacios’ study)⁶³⁶

As Palacios says in the FAO study, PGRFA “constitute the biological cornerstone of world food security and contribute to the survival of humanity. They include the genetic diversity provided by landraces, modern cultivars, wild relatives of cultivated crops and other species of wild plants used for food. Plant genetic resources represent the most important raw material for farmers and plant breeders, and serve as a repository of genetic adaptability and thus as a safety net in the event of environmental change.”⁶³⁷ Moreover, “[m]odern agriculture is heavily dependent on plant genetic resources from practically all countries.⁶³⁸ (...) There is therefore an ongoing need to exchange plant genetic resources.”⁶³⁹

⁶³⁶ X. F. PALACIOS, 1997.

⁶³⁷ X. F. PALACIOS, 1997 p. 3.

⁶³⁸ Palacios adds that “crops such as cassava, maize, groundnut and bean originated in Latin America but have become food staples in many countries of sub-Saharan Africa, illustrating the interdependence of cropped species in the developing countries. Cassava is the main food crop for 200 million Africans in 31 countries and has a farm gate value of over US\$ 7 billion. At the same time, Africa and its indigenous varieties of millet and sorghum have helped feed other parts of the world such as southern Asia (13%) and Latin America (8%).” X. F. PALACIOS, 1997 p. 3.

⁶³⁹ X. F. PALACIOS, 1997 p. 3. See also FAO, "Second Report on the State of the World’s Plant Genetic Resources for Food and Agriculture", 2010.

(a) Interdependency requires effective international cooperation in PGRFA management

A wide literature provides examples of this country-interdependence,⁶⁴⁰ some of them are given in an annotated bibliography addressing the international pedigrees and flows of PGRFA,⁶⁴¹ published by Bioversity International.⁶⁴² They all conclude that there is not a single self-sufficient country for crop genetic resources. All countries are both donors and recipients of PGRFA. This means that breeding new varieties repeatedly necessitates genetic material from elsewhere.⁶⁴³ The average degree of interdependence among countries for their most important crops is around 70 percent.⁶⁴⁴ Most of the efforts that are necessary to manage plant genetic resources can therefore only be carried out through international cooperation.⁶⁴⁵ Very recent studies confirm this trend, highlighting that the interdependency “has increased over the past 50 years in concert with economic and agricultural development and the globalization of food systems. Increased utilization of these “foreign” crops is correlated with greater dietary diversity and higher [Gross Domestic Product (GDP)].”⁶⁴⁶

(b) The economic and social dimensions of interdependency

It is argued that this country-interdependence contains a dual social and economic dimension underpinning the concept of benefit sharing. The social dimension is understood as

⁶⁴⁰ Halewood states that the “interdependence criterion reflects an appreciation of the fact that the crops to be included in the multilateral system should be those which have been openly shared for long enough that they have become adopted around the world; that access to, and ability to reassemble, portions of the dispersed gene pool is a necessary precondition for research and breeding (...). To the extent that this criterion is paid-attention to, the ITPGRFA discourages inclusion of crops and forages whose use is limited to specific areas, and whose generation, conservation and sustainable use does not engage an internationally dispersed set of actors.” M. HALEWOOD, 2013, “What Kind of Goods Are Plant Genetic Resources for Food and Agriculture? Towards the Identification and Development of a New Global Commons”, *op.cit.* at p. 296.

⁶⁴¹ FRISON C., & HALEWOOD M., (2005) “Annotated bibliography addressing the international pedigrees and flows of plant genetic resources for food and agriculture” information document submitted by the System-wide Genetic Resources Programme (SGRP) of the CGIAR to the eighth Conference of the Parties of the Convention on Biological Diversity (COP 8) and the Ad hoc Open-ended Working Group on Access and Benefit-sharing.

⁶⁴² Bioversity International is one of 15 international agricultural research centres supported by the CGIAR. It is dedicated to the conservation and use of agricultural biodiversity to improve the livelihoods of poor people. Information available at <http://www.bioversityinternational.org/>

⁶⁴³ Another recent chapter provides six case-studies of countries’ interdependence, taking the example of rice, maize, lupin, peanut, cacao, and banana/plantain. See M. RAMIREZ *et al.*, “Demonstrating Interdependence on Plant Genetic Resources for Food and Agriculture”, in M. HALEWOOD, I.L. NORIEGA, AND S. LOUAFI (eds), *Crop Genetic Resources as a Global Commons. Challenges in International Law and Governance*, Oxon, Earthsacn from Routledge, 2013 At pp. 39-61.

⁶⁴⁴ J. ESQUINAS-ALCAZAR, 2005 *op.cit.*.

⁶⁴⁵ C. FOWLER AND T. HODGKIN, 2004 *op.cit.*.

⁶⁴⁶ C. K. KHOURY *et al.*, 2015 At p. 1. This publication summarizes the results of a new research which provides plant genetic resources interdependence metrics for calories, protein, fat, and food weight in national food supplies, and production quantity, harvested area, and production value in national production systems, for 177 countries covering 98.5% of the world’s population. The study also includes an assessment of change in the past 50 years in countries’ interdependence in these food supply and production metrics, and an analysis of the relationship between interdependence and diversity in national food systems, as well as GDP. See C. KHOURY *et al.*, 2015 See also SGRP, 2010, “The Impact of Climate Change on Countries’ Interdependence on Genetic Resources for Food and Agriculture”, *SGRP*, Vol.

encompassing networks involved in governing the flows of PGRFA. These networks deal with exchanging seed and related information, research collaborations (e.g. North-South university collaboration), collaborative efforts for genetic resources management at a regional level such as European Genebank Integrated System (AEGIS)⁶⁴⁷ and other conservation efforts⁶⁴⁸ (whether on farm or *ex situ*). They may be formal,⁶⁴⁹ such as national gene banks or international agricultural research centres, or informal⁶⁵⁰ networks, such as farmers' networks or local seed associations outside the formal commercial market of seed. Globalization compels countries to preserve and enhance international exchange collaboration to promote conservation and sustainable use of PGRFA in order to face global external factors such as climate change.⁶⁵¹ These human networks of farmers, breeders and scientists have therefore a crucial role in safeguarding the availability of and accessibility to PGRFA diversity.

The economic dimension of countries' interdependence is a consequence of the rapid globalization and economic integration, and of growing cross-boundary flows of trade, financial capital, technology and know-how. More specifically, interdependence between supply and use of genetic resources is much higher for the agricultural sector compared to other sectors using genetic resource such as pharmaceuticals or bio-engineering industries.⁶⁵²

Both social and economic interdependencies between stakeholders and states are intensifying through increasing trade, increasing world population movements, and increasing awareness of common challenges, such as climate change. It has been argued that these trends limit states' leeway to deal with these challenges autonomously because "internal

⁶⁴⁷ The European Genebank Integrated System has decided to use the SMTA for all PGRFA transfers in the European Union. See their Strategic Framework and Memorandum of Understanding, which entered into force in July 2009. The Treaty's SMTA with the footnote is used. Available at http://www.ecpqr.cgiar.org/AEGIS/AEGIS_home.htm

⁶⁴⁸ O. H. FRANKEL, "Genetic Conservation in Perspective", in O.H. FRANKEL AND E. BENNETT (eds), *Genetic Resources in Plants—Their Exploration and Conservation*, London, Int. Biol. Program./ Blackwell, 1970 at pp. 469–89. Fowler and Hodgkin say that "materials held in genebanks eventually require regeneration, ideally in the same environment in which they were collected in order to avoid changes in the genetic composition of the sample, and even loss of some genes or alleles. Because most collections contain materials from many countries, cooperation is needed if high conservation standards are desired. In Europe, there is increasing collaboration. In some cases, different genebanks concentrate on maintaining different crops, and for a number of crops, common information resources have been developed.

⁶⁴⁹ E. KALAUGHER *et al.*, 2002, "A Summary and Analysis of Existing International Plant Genetic Resources Networks - Fao Background Study Paper N°16", *Commission on Genetic Resources for Food and Agriculture*, Vol. H. L. SHANDS, 1995 *op.cit.*.

⁶⁵⁰ See Chapter 3 of the present thesis for more explanation on formal and informal seed networks. See also E. KALAUGHER *et al.*, 2002 *op.cit.* and C. J. ALMEKINDERS AND N. P. LOUWAARS, 2002, "The Importance of the Farmers' Seed Systems in a Functional National Seed Sector", *Journal of New Seeds*, Vol. 4, (1-2); R. BOCCI *et al.*, "Farm Seed Opportunities, Recommendations for on-Farm Conservation in Europe", in N. MAXTED, *et al.* (eds), *Agrobiodiversity Conservation Securing the Diversity of Crop Wild Relatives*, CABI, 2011.

⁶⁵¹ SGRP, 2010 *op.cit.*. See also C. G. GONZALEZ, 2011, "Climate Change, Food Security, and Agrobiodiversity: Toward a Just, Resilient, and Sustainable Food System", *Fordham Environmental Law Review*, Vol. 22, p. 493, 2011, Vol. ; and M. R. BELLON, D. HODSON, AND J. HELLIN, 2011 *op.cit.*.

⁶⁵² Furthermore, it is likely that industry will more and more need to access new PGRFA material.

dynamics are to an increasing extent determined by external processes.”⁶⁵³ Already in the 70s, political scientist Ernst Haas had understood that “[i]nterdependence is (...) the perception that constraints on the utilization of a technology can be overcome only on the basis of management, of some degree of cooperation with other actors.”⁶⁵⁴ In the same article, he adds that “[i]t is not true that interdependence means equality among nations. But the kinds of systems change associated with rising interdependence do imply a tendency toward strengthening weaker actors against strong states as the web of relationships increases perceived sensitivities, vulnerabilities and opportunity costs for the stronger.”⁶⁵⁵ This savvy may partly explain why the multilateral system of benefit sharing concept is so well entrenched in the management of PGRFA and so well adapted to the Plant Treaty specifically.⁶⁵⁶

To conclude on the Treaty’s overall goals of food security and sustainable agriculture, it can be said that they justify the mere existence of the MLS (and even perhaps its enlargement to all PGRFA), and that their relevance is likely to increase in the future due to environmental, economic and other hazards. The fact that food crises continue to be chronic, that hunger and malnutrition have diminished but are far from being eradicated, shows that food security remains a key objective to be attained through the promotion of sustainable agriculture(s). However, the way the MLS is designed and implemented does not seem to contribute significantly to reaching food security. Perhaps new ways of envisaging and implementing these overall goals are necessary to enable their realization.⁶⁵⁷

Section 2. Scope of the Treaty

The scope of the Treaty refers to two different aspects: 1) the resources the Treaty relates to; 2) the boundaries of the Treaty application. Several Treaty provisions cover this topic: Articles 2 and 3 refer to the resources dealt with by Contracting Parties, i.e. plant genetic resources for food and agriculture; Article 11 deals with the coverage of the MLS; and

⁶⁵³ P. OOSTERVEER (eds.), *Global Food Governance*, 2005 at p. 32.

⁶⁵⁴ E. B. HAAS, 1975, “Is There a Hole in the Whole? Knowledge, Technology, Interdependence, and the Construction of International Regimes”, *International Organization*, Vol. 29, (3) at p 863.

⁶⁵⁵ E. B. HAAS, 1975 *op.cit.* at p 861.

⁶⁵⁶ Latin American and the Caribbean countries stated – during the negotiation of the Treaty, in the Bogota Declaration (18-22 March, 1996) – that “[t]he trend toward globalization of the international economy and the inherent growing interdependency find clear expression in the issue of sharing of and access to the world’s Genetic Resources for Food and Agriculture.” CGRFA-Ex2/96/REP, p. 4. This view was shared by most negotiating countries.

⁶⁵⁷ See below Chapter 6 for proposals on how to deal with food security and sustainable agriculture in the Treaty.

Article 15 contains a provision on the CGIAR material integrated in the coverage of the MLS. “Scope” can be understood in three ways, which are defined under §1, where an explanation of the resources will be first provided (A), and followed by details on the boundaries of application of the Treaty and of the MLS (B), i.e. to who are Treaty/MLS obligations applicable? What accessions are included in the MLS? etc. Finally, detailed description of specific rules and procedures relating to the scope of the MLS will be provided (C). Under §2, a short description will show where Contracting Parties stand regarding the implementation of these provisions.

§ 1 Defining the scope of the Treaty

A. PGRFA: a definition of the resource

In this Section, the analysis is limited to defining “PGRFA” and “genetic material”, as these two terms are determinant in understanding the scope of application of the Treaty and of the MLS. Article 3 specifies that the “Treaty relates to PGRFA” that is to say, to “any genetic material of plant origin *of actual or potential value for food and agriculture*” (Article 2§4). In order to define PGRFA in a comprehensive manner, the analysis will include the definition dating back from the IU to the current definition included in Article 2 of the Treaty. Defining what should be understood by PGRFA is crucial, as it determines to what resources the Treaty (and its objectives of conservation, sustainable use and access and benefit-sharing) should be applied. Generally speaking, PGRFA are crops and forages used as nutrients for humans and animals. The notion of “PGRFA” encompasses both the physical material (i.e. the plant, the seed, the tuber, cuttings, bulbs, etc.), and the related information and data accompanying the material. Indeed, PGRFA would be useless to farmers, scientific researchers and breeders if they had no information about the characteristics of a specific variety compared to another, or about the environment (soil, weather, ecosystem conditions, etc.) where this variety originally comes from. PGRFA should therefore be approached as being both a tangible and an intangible good, as these two sides of the same coin are intrinsically linked.⁶⁵⁸ This dual character complicates the management of seeds significantly, especially as far as the intellectual protection of the intangible aspect of the PGRFA is concerned.⁶⁵⁹

⁶⁵⁸ For an in-depth study of traditional knowledge related to PGRFA, see N. BRAHY, 2008, *The Property Regime of Biodiversity and Traditional Knowledge : Institutions for Conservation and Innovation*, Bruxelles, Larcier.

⁶⁵⁹ Carlos M. Correa (1999) “Access to Plant Genetic Resources and Intellectual Property Rights”, Commission on Genetic Resources for Food and Agriculture, Background Study paper n° 8.

(1) PGRFA in the International Undertaking

The IU defines “plant genetic resources [as] the reproductive or vegetative propagating material of the following categories of plants:

- i) cultivated varieties (cultivars) in current use and newly developed varieties;⁶⁶⁰
- ii) obsolete cultivars;
- iii) primitive cultivars (land races);⁶⁶¹
- iv) wild and weed species, near relatives of cultivated varieties;⁶⁶²
- v) special genetic stocks (including elite and current breeders' lines and mutants);⁶⁶³

This part of the definition postulates that landraces and elite germplasm are equally covered under the definition of PGRFA, thereby pertaining the same rights and obligations (of free access) to all Contracting Parties. This means that developed countries may access freely landraces for further breeding, while developing countries may equally freely access developed material. This has created many tensions and resulted in an amendment to the IU through several agreed Interpretations.

Furthermore, Article 2.2 of the IU states that “[t]his Undertaking relates to the plant genetic resources described in para. 2.1(a), of *all species of economic and/or social interest*, particularly for agriculture at present or in the future, and has particular reference to food crops.” (Emphasis added) This clause places the economic and the social value of PGRFA on an equal footing.

(2) PGRFA in the Treaty

As for the Treaty, the definition is much shorter. Article 2 states that PGRFA “means any genetic material of plant origin of actual or potential value for food and agriculture.” The Treaty further defines genetic material as “any material of plant origin, including reproductive

⁶⁶⁰ A *cultivar* or *cultivated variety* is a variety of a plant produced by selective breeding. See R. PISTORIUS, *cit.* at p. 131. *Variety* means a plant grouping, within a single botanical taxon of the lowest known rank, defined by the reproducible expression of its distinguishing and other genetic characteristics. IU Article 2.1 (a).

⁶⁶¹ A *landrace* is a population of plants genetically heterogeneous that is commonly developed in traditional agriculture on the basis of many years of farmer-directed selection and specifically adapted to local conditions. See A. F. KRATTIGER, 2007, *Intellectual Property Management in Health and Agricultural Innovation : A Handbook of Best Practices : Executive Guide*, Oxford ; Davis, CA, MIHR : PIPRA at p. 390.

⁶⁶² A *wild species* is a species that has not been subject to breeding with intent to alter them from their wild state; A. F. KRATTIGER, *cit.* at p. 390.

⁶⁶³ IU Article 2.1 (a). The *genetic stock* is a variety or strain known to carry (a) specific gene(s). An *elite germplasm* or improved material is manipulated for use in a breeding programme for specific combinations of traits.

and vegetative propagating material, containing functional units of heredity.” Compared to the terms under the IU, PGRFA are defined in a very vague manner. Requiring that the PGRFA must be of actual or *potential* value leaves the door wide open to include as many crops and forages as possible, as one cannot predict the potential use of genetic material for future needs. However, this wide scope is narrowed by the consideration that the said value should be related to food and agriculture purposes. This is consistent with the *lex specialis* characteristic of the Treaty as opposed to its “mother” international legal instrument covering all other genetic resources: i.e. the CBD.

(3) Genetic material in the Treaty

Regarding the genetic material, its definition mentions “functional units of heredity”. There has been a debate during the negotiation of the Treaty as to specifying in Article 2 whether the functional units of heredity defined as “genetic parts or components” (understood as being individual genes or gene sequences) would be considered as PGRFA by themselves.⁶⁶⁴ As a compromise, Contracting Parties left the definition ambiguous, although it might mean leaving the Governing Body to interpret the matter at a later stage. Finally, the term “functional units of heredity” is not specified, but according to Moore and Tymowski, it “would include at least all genetic elements containing DNA, i.e. genes.”⁶⁶⁵ Defining PGRFA will be even more important when dealing with the MLS, below.

The lack of precision on contentious terms was voluntary in order to satisfy Contracting Parties with opposing views and to allow the negotiation to progress. By keeping some terms outside the list of words defined under Article 2, and by defining vaguely other terms in the list, Contracting Parties showed their will to move on with the negotiation, and not to block the conception of the instrument. However, it has not erased the contentious views but only postponed the agreement on difficult questions for the implementation phase, which contributes to rendering complex the implementation of the Treaty.

⁶⁶⁴ G. MOORE AND W. TYMOWSKI, 2005 at p. 35.

⁶⁶⁵ G. MOORE AND W. TYMOWSKI, 2005 p. 35.

B. Coverage of the Multilateral System

The scope of the Treaty⁶⁶⁶ (Article 3) encompasses a more limited PGRFA coverage for the MLS (Article 11), similar to a Russian doll. Within the Treaty's general scope of application, the specific clauses on Access and Benefit-sharing obligations (the MLS) only relate to the Annex I list of 64 crops and forages.

(1) A short history of the negotiation of Annex I

Negotiations on the scope of the MLS were difficult and often caused considerable tensions. While some parties initially wanted to apply the MLS to all PGRFA (similar to the other Treaty provisions) to facilitate as wide an access as possible following the spirit of the IU, others strongly opposed this wide scope of application, arguing that this wide access would formally recognize and facilitate the exploitation of genetic material originating from the South to the only benefit of the North.⁶⁶⁷

It is important to note that all the Treaty provisions apply to all PGRFA, but that the obligations deriving from the MLS only cover those PGRFA listed in Annex I to the Treaty, i.e. 64 crops and forages, representing most (but not all) staple food of the World's population. Clauses dealing with the Conservation and Sustainable Use of PGRFA (Articles 5 and 6), with the Global Plan of Action (Article 14), with the International Cooperation (Articles 7 and 8), the Funding Strategy (Article 18) or the Global Information System (Article 17) cover all PGRFA.

It has been argued that the scope of the Treaty is *de facto* too limited because the facilitated access mechanism only applies to PGRFA used for breeding, research and training purposes. For example, Lawson questions whether the SMTA can *really* deliver appropriate value(s) for providers, because for him, the limited scope of the Treaty could prevent providers from using the Treaty mechanism to facilitate the exchange and use of the genetic

⁶⁶⁶ It should be noted that the text in the Treaty differs significantly from the "Jurisdictional Scope" of Article 4 of the CBD. CBD Article 4 states that "[s]ubject to the rights of other States, and except as otherwise expressly provided in this Convention, the provisions of this Convention apply, in relation to each Contracting Party: (a) In the case of components of biological diversity, in areas within the limits of its national jurisdiction; and (b) In the case of processes and activities, regardless of where their effects occur, carried out under its jurisdiction or control, within the area of its national jurisdiction or beyond the limits of national jurisdiction."

⁶⁶⁷ C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., "Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture",

resources.⁶⁶⁸ The scope of the MLS – i.e. material listed in Annex I for the uses prescribed by the Treaty – is a reflection of the political climate during which the Treaty was negotiated, and which, in many ways, prevails until the present day. However, it is clear from the history of the negotiations, and from the way in which the list of materials included in the MLS fluctuated during the negotiations,⁶⁶⁹ that the Treaty might never have been finalized if some delegations would have insisted on the MLS covering *all* PGRFA for *all* purposes.

Coupled to this issue is the question of whom are the Treaty obligations applicable to? All providers and recipients of PGRFA in all Contracting Parties' territories? Do they extend to recipients in non-contracting parties, as the SMTA contains a viral clause of application? The geographical scope of the Treaty is an important question to tackle. It raises the difficult problem of porous boundaries of the whole system. As long as countries with major genebanks, such as the US or China are outside the Treaty, it is relatively easy to free-ride the MLS system by accessing identical PGRFA accessions outside the MLS. Expanding the scope of the Treaty to all PGRFA and to all countries would be a way to circumvent the free-riding problem.

(2) Interpretation of Article 11

Article 11 is subdivided into five paragraphs and reads as follow:

“11.1 In furtherance of the objectives of conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of benefits arising out of their use, as stated in Article 1, the Multilateral System shall cover the plant genetic resources for food and agriculture listed in Annex I, *established according to criteria of food security and interdependence.*

11.2 The Multilateral System, as identified in Article 11.1, shall include all plant genetic resources for food and agriculture listed in Annex I that are *under the management and control of the Contracting Parties and in the public domain.* With a view to achieving the fullest possible coverage of the Multilateral System, the Contracting Parties invite all other holders of the plant genetic resources for food and agriculture listed in Annex I to include

⁶⁶⁸ C. LAWSON, 2009 *op.cit.* at p. 252. This being said, one should not underestimate the breadth of what is included in Annex I; nor should one underestimate the broad range of activities that fall within the meaning of “utilization and conservation for research, breeding and training for food and agriculture”. Moreover, the Treaty does not aim at ‘delivering appropriate value to providers’ but at conserving, sustainably using and facilitating ABS to seeds for research, breeding and training for food and agriculture (Treaty Articles 1 and 12.3(a)).

⁶⁶⁹ E. Lim and M. Halewood, (2008) “A Short History of the Annex I List”, in G. Tansey and T. Rajotte (eds), *The Future Control of Food* (London: Earthscan, 2008), Annex 3, at p. 249.

these plant genetic resources for food and agriculture in the Multilateral System. 11.3 Contracting Parties also agree to take appropriate measures to *encourage natural and legal persons within their jurisdiction* who hold plant genetic resources for food and agriculture listed in Annex I to *include such plant genetic resources* for food and agriculture in the Multilateral System.

11.4 Within two years of the entry into force of the Treaty, *the Governing Body shall assess the progress in including the plant genetic resources* for food and agriculture referred to in paragraph 11.3 in the Multilateral System. *Following this assessment, the Governing Body shall decide whether access shall continue to be facilitated to those natural and legal persons* referred to in paragraph 11.3 that have not included these plant genetic resources for food and agriculture in the Multilateral System, or take such other measures as it deems appropriate.

11.5 *The Multilateral System shall also include the plant genetic resources for food and agriculture listed in Annex I and held in the ex situ collections of the International Agricultural Research Centres of the Consultative Group on International Agricultural Research (CGIAR), as provided in Article 15.1a, and in other international institutions, in accordance with Article 15.5.*” (Emphasis added)

(a) Article 11.2 Criteria to identify material covered by the Multilateral System

Coming back to Article 11.2, the provision makes it clear that, although the Treaty applies to all PGRFA (Article 3), the MLS covers only the identified 64 world’s major food crops and forage species,⁶⁷⁰ which are crucial for food security and constitute the foodstuff on which countries are most dependent.⁶⁷¹ Article 11 enumerates five types of PGRFA which form the MLS basket of material: 1) PGRFA listed in Annex I, which are under the management and control of Contracting Parties and in the public domain (Article 11.2); 2) contributions from all other holders of PGRFA listed in Annex I, upon invitation by Contracting Parties (Article 11.2); 3) PGRFA included voluntarily by natural and legal persons within the jurisdiction of the Contracting Parties, who hold material listed in Annex I (Article 11.3); 4) PGRFA listed in Annex I and held in *ex situ* collections of the CGIAR (Articles 11.4 and 15.1a); and 5) PGRFA listed in Annex I and held in *ex situ* collections of other international institutions (Articles 11.4 and 15.5). Moreover, there is only one case in which the obligations under Article 11 can be

⁶⁷⁰ However, many important crops vital to food security like soybean or tomato remain excluded of the system.

⁶⁷¹ It is estimated that these crops, combined, provide about 80 percent of our food from plants.

limited, that is to say when the PGRFA is “under development”.⁶⁷² In this case, the material “shall be at the discretion of its developer, during the period of its developments” (Article 12.3(e)). Yet, in practice, it is difficult to identify which material is effectively included in the MLS, and the boundaries of the MLS basket of accessions seem to be rather blurred. The question of the coverage of the MLS has been one of the most contentious issues during the Treaty negotiations: what material is to be included in the MLS by Contracting Parties? And indeed, it is an important question as the access will be facilitated only to those specific PGRFA, and as the effectiveness of the benefit-sharing mechanism will partly depend on the material included in the system.

ii. Widening or narrowing the scope of the MLS

Article 11.2 provides three criteria determining whether a PGRFA shall be included in the MLS by Contracting Parties: material “*under the management and control of the Contracting Parties and in the public domain*” (emphasis added). Depending on how these criteria are interpreted will either widen or narrow the number of accessions to be included “automatically” in the MLS by Contracting Parties. In 2010, one of the Treaty’s inter-sessional committees⁶⁷³ has provided some clarity on the interpretation of these terms, following the rules of the Vienna Convention on the Law of the Treaties.⁶⁷⁴ Besides, very few lawyers external to the Treaty have processed to an in-depth interpretation exercise of this Treaty provision. “Treaty people” like Michael Halewood (from Bioversity International), Carlos Correa (regular legal expert and consultant for the CGRFA and the Treaty Secretariat and author of the mentioned interpretation analysis for the *Ad Hoc* Advisory Technical Committee on the SMTA and the MLS of the Treaty), and Gerald Moore (formerly Bioversity International) are all lawyers which have published on the matter.⁶⁷⁵ Unsurprisingly, they have a very similar understanding of what PGRFAs should be covered under Article 11.2 (going rather for the “wide” interpretative coverage). Morten Walløe Tvedt⁶⁷⁶ has recently published an analysis of

⁶⁷² Including material being developed by farmers. Article 12.3(e).

⁶⁷³ The *Ad Hoc* Advisory Technical Committee on the SMTA and the MLS of the Treaty, first meeting.

⁶⁷⁴ IT/AC-SMTA-MLS 1/10/4.

⁶⁷⁵ M. HALEWOOD *et al.*, 2013, “Implementing Mutually Supportive Access and Benefit Sharing Mechanisms under the Plant Treaty, Convention on Biological Diversity, and Nagoya Protocol”, *Law Env’t & Dev. J.*, Vol. 9; and C. M. CORREA, “Plant Genetic Resources under the Management and Control of the Contracting Parties and in the Public Domain”, in M. HALEWOOD, I.L. NORIEGA, AND S. LOUAFI (eds), *Crop Genetic Resources as a Global Commons - Challenges in International Law and Governance*, Oxon, Earthscan from Routledge and Bioversity International, 2012; G. MOORE AND W. TYMOWSKI, 2005 at pp. 83-85.

⁶⁷⁶ Morten Walløe Tvedt is Senior Research Fellow at the Fridtjof Nansen Institute, specialised in IPRs and ABS issues. He rather comes from the CBD forum, which explains some of his views.

these three criteria⁶⁷⁷ in an attempt to diversify the options for interpretation (in particular regarding the “public domain” criterion).

ii. Three cumulative criteria: management, control, and public domain

The “management”, “control” and “public domain” criteria function as three cumulative items allowing countries to determine what PGRFA are mandatorily part of the MLS.⁶⁷⁸ When reading this provision together with Article 10, it is understood that those accessions that do not meet all three criteria fall under the sovereign rights of States,⁶⁷⁹ and *de facto* under the Nagoya Protocol to the CBD.⁶⁸⁰

Halewood *et al.* explain that it is often obvious to determine whether PGRFA are under the management and control of the national government and in the public domain. Seeds held in national gene banks and which are not subject to intellectual property rights or restricted contractual agreements constitute a straightforward example where PGRFA are clearly automatically part the MLS Annex I.⁶⁸¹

According to the same authors, it is equally clear when PGRFA are not in the MLS. Those seeds that are either not “in the management and control” of the national government and/or not “in the public domain”, are not covered under Annex I. Examples are seeds on land or in collections controlled by provincial or municipal governments; material in farmers’ fields or in community gene banks; genetic resources in companies’ collections, or subject to plant breeders’ rights or patents. Similarly, material deposited by a natural or legal person in a gene bank under a contract, which stipulates that the gene bank will not regenerate or redistribute the material (referred to as “black box” conditions), are also excluded from Annex I material.⁶⁸²

⁶⁷⁷ M. WALLØE TVEDT, 2015, "Access to Plant Genetic Resources – Legal Questions for Material on Its Way into the Multilateral System of the Plant Treaty", *Law, Environment and Development Journal*, Vol. 11, (1)

⁶⁷⁸ M. WALLØE TVEDT, 2015 *op.cit.* at p. 6.

⁶⁷⁹ See below section 4, §1, A. For a summary explanation of the concept of sovereign rights under the CBD and Nagoya Protocol, and the relationship with the treaty, see E. C. KAMAU AND G. WINTER, 2013, "Introduction to the International Abs Regime and a Comment on Its Transposition by the Eu, An", *Law Env't & Dev. J.*, Vol. 9 at pp. 108-122.

⁶⁸⁰ M. BUCK AND C. HAMILTON, 2011, "The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity", *Review of European Community & International Environmental Law*, Vol. 20, (1); see also B. COOLSAET *et al.*, *cit.*; E. MORGERA, M. BUCK, AND E. TSIUMANI, *cit.*; E. MORGERA, E. TSIUMANI, AND M. BUCK, *cit.*. The Treaty acknowledges the close relationship with the CBD and works with the CBD secretariat on joint implementation initiatives; see IT/AC-SMTA-MLS 4/12/5, and IT/AC-SMTA-MLS 4/12/Report at §§ 26-29.

⁶⁸¹ M. HALEWOOD *et al.*, 2013 *op.cit.* p. 79.

⁶⁸² M. HALEWOOD *et al.*, 2013 *op.cit.* at p. 79.

iii. Three step process to identify resources under the Multilateral System

Sometimes, it is not that obvious to determine whether a seed is covered by Annex I or not. Halewood *et al.* illustrate this situation with “collections held by parastatal corporations or national public universities”;⁶⁸³ they wonder whether seeds held by these entities are considered to be under the management and control of the national government or not. In order to answer these specific situations, Halewood *et al.* propose a straightforward three step process to determine whether a PGRFA is to be *prima facie* included in the MLS:

“• First, identify the collections of Annex 1 PGRFA held by national public organisations. Identify lands owned or controlled by the national government where there may be in-situ populations of Annex 1 crops;

• Second, if there is any reason for doubting that material held by the organisation is under the management and control of the national government, examine evidence such as the legislation or executive order creating the organisation (or protected area), to ascertain whether or not the organisation is independent to set its own policies regarding the management of the collections concerned or if they are subject to the overriding authority of the national government; and

• Third, once it is confirmed that a collection or in-situ population is under the management and control of the national government, consider whether materials in that collection are subject to intellectual property rights (and therefore not in the public domain).”⁶⁸⁴

In cases where material does not fulfil these cumulative criteria, the material can nonetheless be included in the MLS if the institution where it is held consents to integrate it to the system. This situation is detailed below under Treaty Article 11.3.

iv. The criterion: “under the management” of Contracting Parties

The first criterion requires PGRFAs to be “under the management” of Contracting Parties. The Concise Oxford English Dictionary defines the verb “to manage” with different meanings, including “to administer and regulate resources under one’s control”, “to maintain control or influence over”, “to control the use or exploitation of”.⁶⁸⁵ A literal interpretation of

⁶⁸³ M. HALEWOOD *et al.*, 2013 *op.cit.* at p. 79.

⁶⁸⁴ *Ibid.* at p. 80.

⁶⁸⁵ “Concise Oxford English Dictionary”, (Oxford: Oxford University Press, 2008).

these words is sufficient to understand Contracting Parties' intention when they included this criterion, which clearly "indicates a degree of physical handling, taking care of, conserving, or storing the resources."⁶⁸⁶

Correa confirms this rather "administrative" interpretation, but he adds additional interesting information. According to him, the title attributed to the seed does not determine whether the seed is covered by the MLS or not. From the moment the seed is not handled physically by the Contracting Party or a third party under its instruction, the seed is not to be covered by the MLS "regardless of the title that may be attributed to the 'managed" resources."⁶⁸⁷ The *Ad Hoc* Advisory Technical Committee document confirms this view.⁶⁸⁸

v. The criterion: under the "control" of Contracting Parties

Correa suggests that the "control" criteria may reinforce the concept of "management".⁶⁸⁹ However, he adds that a nuance should be considered, due to the fact that both terms were deliberately included in the provision. According to him, control⁶⁹⁰ would rather refer to the fact that "Contracting Party should also have the power to decide on the treatment to be given to such resources."⁶⁹¹ According to Moore and Tymowski, the expression "under the management and control" contains both a factual and a legal qualification.⁶⁹² The factual qualification for the "control" criterion can be understood as "the capacity to exercise physical acts over the resources."^{693, 694} Walløe Tvedt specifies that "the material must be factually held and such holding may not be the result of an illegitimate or illegal act."⁶⁹⁵ This confirms the legal qualification of the criterion, for which "the state

⁶⁸⁶ M. WALLØE TVEDT, 2015 *op.cit.* at p. 7.

⁶⁸⁷ C. M. CORREA, "Plant Genetic Resources under the Management and Control of the Contracting Parties and in the Public Domain", in M. HALEWOOD, I.L. NORIEGA, AND S. LOUAFI (eds), *Crop Genetic Resources as a Global Commons*, Oxon, Earthscan by Routledge - Bioversity International, 2013 at p. 181.

⁶⁸⁸ IT/AC-SMTA-MLS 1/10/4, at pp. 4-5.

⁶⁸⁹ IT/AC-SMTA-MLS 1/10/4, at p. 5.

⁶⁹⁰ Correa makes an important note regarding the notion of control. He states that "Article 11 does not refer to the "property", "ownership" or "possession" of the PGRFA. Paragraphs 2 and 3 in Article 11 refer to "holders" and those "who hold", respectively. In relation to the resources possessed by the CGIAR Centres, the term "held" is also used (article 15.1). C. M. CORREA, "Plant Genetic Resources under the Management and Control of the Contracting Parties and in the Public Domain", *op. cit.* at p. 181.

⁶⁹¹ C. M. CORREA, "Plant Genetic Resources under the Management and Control of the Contracting Parties and in the Public Domain", *op. cit.*

⁶⁹² G. MOORE AND W. TYMOWSKI, 2005 at p. 83.

⁶⁹³ C. M. CORREA, "Plant Genetic Resources under the Management and Control of the Contracting Parties and in the Public Domain", *op. cit.* at p. 182.

⁶⁹⁴ Tvedt states that "[t]he factual side of control implies that the accessions must be physically available in collections over which the government exercises control." M. WALLØE TVEDT, 2015 *op.cit.* at p. 7.

⁶⁹⁵ M. WALLØE TVEDT, 2015 *op.cit.* at p. 7.

institution must have a legal title to the PGRFA in question.”⁶⁹⁶ Halewood specifies that the legal control can take various legal statuses: from “genetic resources in the public domain, [to] genetic resources that are considered to belong to everyone and genetic resources which are recognized to be subject to prior, deeper rights of control or ownership vested in individuals, or countries who voluntarily enter into agreements to pool, share, and co-manage those resources.”⁶⁹⁷ Besides, one should keep in mind that control over PGRFAs might also be subject to technical limitations, especially in developing countries.

vi. Ex situ and/or in situ Annex I material?

Tvedt further argues that these two criteria imply that the PGRFAs referred to are mainly those conserved in *ex situ* collections. He mentions that there are “strong initiatives among core actors in the implementation of the ITPGRFA to include also *in situ* plant material, which is on governmental or public land. Such a broadening of the interpretation could make farmers’ varieties mandatorily included in the MLS if these farmers are using publicly owned land. If this interpretation is chosen, it in consequence diminishes the rights of farmers that are using governmentally owned land. Farmers owning their own land would be outside this inclusion, whereas the one[s] using public land would also have [to] share their PGR (Plant Genetic Resource). This author is of the opinion that *in situ* are not mandatorily included in the MLS and that the objective and background for the ITPGRFA strongly suggests that *in situ* PGRs were not meant to be mandatorily included in the MLS.”⁶⁹⁸

One can disagree with this interpretation, for several reasons. First, Article 12.3(h) clearly states that PGRFA found in *in situ* conditions are “provided according to national legislation” or in the absence of such legislation according to other standards set by the Governing Body. This expressly recognizes the right to States to deal with their *in situ* PGRFA as they wish. Furthermore, upon request for clarification on this issue by the Governing Body, the *Ad Hoc* Advisory Technical Committee document explicitly says that “Article 11. 2 applies to materials maintained in “*ex situ*” as well as “*in situ*” conditions, as no distinction between these two categories is made. [However, t]his is without prejudice to the particular conditions

⁶⁹⁶ M. WALLØE TVEDT, 2015 *op.cit.* at p. 7.

⁶⁹⁷ M. HALEWOOD, "International Efforts to Pool and Conserve Crop Genetic Resources in Times of Radical Legal Change", in M. CIMOLI, *et al.* (eds), *Intellectual Property Rights. Legal and Economic Challenges for Development*, Oxford, Oxford University Press, 2014 at p. 305.

⁶⁹⁸ M. W. TVEDT, 2015 *op.cit.* at p. 8.

that might be implemented to provide access to PGRFA held “*in situ*”, in accordance with article 12.3(h) of the Treaty.”⁶⁹⁹

Second, the Treaty’s scope encompasses all PGRFAs, whether *in situ* or *ex situ*, and when the IU was being renegotiated to design the Treaty, there was no intention to create a system specifically and exclusively for *ex situ* PGRFA. The fact that the MLS applies to a list of crops is the result of a political bargain, and not of a clear choice of Contracting Parties to limit the scope of the MLS to *ex situ* material. It is true however, that *ex situ* collections constitute the vast majority of the MLS accessions for the simple reason that these resources are the most easily identifiable and have been managed for decades by national and international research institutions with well-organized repositories, seed data libraries, etc.

Third, the very fact that Contracting Parties are now devoting more interest and energy in activities related to *in situ* material rather confirms their intention that *in situ* material is covered by the MLS. According to Halewood, “[a]s long as the materials satisfies these [management, control and public domain] conditions, it does not matter if they are in *ex situ* collections in gene banks or in *in situ* conditions (for example, in fields and protected areas) in the country concerned.”⁷⁰⁰

Fourth, and probably most importantly, when reading Annex I, it is clear to me that crop wild relatives (most of which are maintained *in situ*) are part of the Annex. Indeed, for specific crops, Contracting Parties expressly excluded some crop wild relatives (for example the banana and plantain are included in the MLS except for its *Musa textilis* crop wild relative). This demonstrates that for crops where no exceptions are specified, their related crop wild relatives are also included in the MLS, both materials being maintained *in* and *ex situ*.

Finally, the argument made by Tvedt as to the restriction of the rights of farmers that are using governmentally owned land does not take into account the “management and control” criteria. Indeed, if a farmer uses governmental land to grow crops, it is the farmer who manages and controls the crops, not the State. The fact that the land used to grow the crops belongs to the State does not hinder the necessity to bear the three cumulative

⁶⁹⁹ IT/AC-SMTA-MLS 1/10/4, at p. 4. Article 12.3(h) states that “[w]ithout prejudice to the other provisions under this Article, the Contracting Parties agree that access to plant genetic resources for food and agriculture found in *in situ* conditions will be provided according to national legislation or, in the absence of such legislation, in accordance with such standards as may be set by the Governing Body.

⁷⁰⁰ M. HALEWOOD, 2010, “Governing the Management and Use of Pooled Microbial Genetic Resources: Lessons from the Global Crop Commons”, *op.cit.*, at p. 408.

criteria at the same time in order for a Contracting Party to include seeds in the MLS. Therefore, farmers' varieties developed on State land do not fulfil these three criteria concomitantly and Tvedt's argument turns out void.

vii. The "public domain" criterion: the influence of IP law

Regarding the third criterion, the Oxford English Dictionary defines "public domain" as "the state of belonging or being available to the public as a whole, especially through not being subject to copyright or other legal restrictions."⁷⁰¹ However, the interpretation of the "public domain" in the Treaty text is more difficult and will depend on the legal lens taken to analyse the concept, i.e. administrative law or intellectual property law.⁷⁰² This difficulty is due to the fact that seeds have a dual nature: they are constituted by a "physical shell" and by the knowledge associated to the seed. These two constitutive elements are protected by different property rights.⁷⁰³

According to Correa, under administrative law "public domain" (or "public property") applies to things that are dedicated to the public's use (for example, a navigable river bed). Public property can be declared and exercised over quantifiable and individualized goods, or over an indeterminate quantity of resources (e.g. the water in rivers or hydrocarbons in the subsoil)." This would apply to the "physical shell". Regarding the knowledge or information associated with the seed, public domain can also be understood "as information that is not subject to [IPRs] which can therefore be freely used without payment to or authorization from third parties. This concept is comparable to that of "res communes", something that is available for common use. "Public domain" may be deemed to include information: (i) whose protection by intellectual property rights has expired; (ii) eligible for protection but not protected because of failure to comply with certain requirements for the acquisition of the applicable rights (e.g. filing of a patent application before the disclosure of the invention); (iii) not eligible for protection."⁷⁰⁴

⁷⁰¹ "Concise Oxford English Dictionary", .

⁷⁰² C. M. CORREA, "Plant Genetic Resources under the Management and Control of the Contracting Parties and in the Public Domain", *op. cit.*, pp. 182-183.

⁷⁰³ C. M. CORREA, "Plant Genetic Resources under the Management and Control of the Contracting Parties and in the Public Domain", *op. cit.* at p. 181. Correa explains that "when the issue of property rights over plant genetic resources arises, the distinction must be established between rights over a physical entity as such (physical property) and over the genetic information contained in these resources (intangible property)."

⁷⁰⁴ Correa adds a note here stating that "some legal experts, particularly in the area of copyright, consider that "public domain", *stricto sensu*, does not include information that was never eligible for protection (e.g., purely factual information). There is no room in the Treaty, however, to make this distinction." IT/AC-SMTA-MLS 1/10/4, at p. 6.

Correa explains that the IP lens is preferable in analysing the concept of public domain related to the Treaty⁷⁰⁵ for several reasons. First, the administrative understanding of public domain would equate the concept to that of “public property”, i.e. “a set of goods that belong to the general public and are dedicated to the public’s use (...) or a public service.”⁷⁰⁶ If Contracting Parties had understood public domain to be public property, then they would have used the words public property in the Treaty text, to avoid ambiguity.⁷⁰⁷ Indeed, if that had been the case “the concepts of “management and control” would be superfluous, because the latter [concept of public property] encompass the right to the former [concept of public domain]”.

Second, in the history of the Treaty negotiations, there is no reference to such concept of public property. Correa confirms that “there is no precedent suggesting that the parties opted to limit one of the basic sources of materials for the MLS to PGRFA in the public property of the Contracting Parties. Moreover, if this were the case, each Contracting Party might determine what is deemed public property or not, thereby leaving them great discretion to include or not materials in the MLS.”⁷⁰⁸

Finally, Article 12. 3(d) directly refers to IPRs, demonstrating that “negotiating parties were wholly conscious of the implications of intellectual property for accessing resources in the multilateral system.”⁷⁰⁹ Additionally, most authors who have analysed the Treaty within the context of law and economics or international relations have also taken the IP approach.⁷¹⁰

⁷⁰⁵ See C. M. CORREA, "Plant Genetic Resources under the Management and Control of the Contracting Parties and in the Public Domain", *op. cit.* at p. 184.

⁷⁰⁶ C. M. CORREA, "Plant Genetic Resources under the Management and Control of the Contracting Parties and in the Public Domain", *op. cit.* at p. 182.

⁷⁰⁷ C. M. CORREA, "Plant Genetic Resources under the Management and Control of the Contracting Parties and in the Public Domain", *op. cit.* at p. 184; see also IT/AC-SMTA-MLS 1/10/4, at p. 7.

⁷⁰⁸ IT/AC-SMTA-MLS 1/10/4, at p. 7.

⁷⁰⁹ C. M. CORREA, "Plant Genetic Resources under the Management and Control of the Contracting Parties and in the Public Domain", *op. cit.* at p. 184.

⁷¹⁰ F. BATUR AND T. DEDEURWAERDERE, 2014, "The Use of Agrobiodiversity for Plant Improvement and the Intellectual Property Paradigm: Institutional Fit and Legal Tools for Mass Selection, Conventional and Molecular Plant Breeding", *Life sciences, society and policy*, Vol. 10, (1); N. BRAHY, 2008, "The Property Regime of Biodiversity and Traditional Knowledge", Bruxelles, Larcier; A. TAUBMAN, "The Public Domain and International Intellectual Property Law Treaties", in C. WAEDELDE AND H. MACQUEEN (eds), *Intellectual Property. The Many Faces of the Public Domain*, Oxford, Oxford University Press, 2007; C. CHIAROLLA, 2006 *op.cit.*; C. CHIAROLLA, 2008, "Plant Patenting, Benefit Sharing and the Law Applicable to the Food and Agriculture Organisation Standard Material Transfer Agreement", *Journal of world intellectual property*, Vol. 11, (1); C. CHIAROLLA, *cit.*; E. E. BERTACCHINI, "Property Rights and Plant Genetic Resources for Food and Agriculture,"; E. BERTACCHINI, "Contractually Constructed Research Commons: A Critical Economic Appraisal," in *Global Science and the Economics of Knowledge-sharing Institutions (G-SEKSI)* (2009). For a dissenting interpretation, see M. WALLØE TVEDT, 2015 *op.cit.*

viii. A pragmatic approach in interpreting “public domain”

When Correa interprets these terms in their ordinary meaning, he states that public domain is “commonly used to allude to the entire pool or works and knowledge, including factual⁷¹¹ and scientific⁷¹² information that is not subject to [IPRs], including those that were not subject in the past, nor could have been, because they were not eligible for protection. A generally accepted definition of “public domain” is, in a sense, a “collection of things available for all people to access and consume freely” (Correa citing Inge Kaul)⁷¹³.⁷¹⁴ With regard to the Treaty, when taking into account its objectives, the purposes for which Contracting Parties established the MLS and the different tools created to implement the Treaty obligations, it becomes clear that what matters is the availability of seeds to all Treaty stakeholders. In that sense, due to the “symbiotic relationship”⁷¹⁵ with IP, the public domain can only be understood as encompassing all PGRFA which are not protected by IPRs, i.e. “all those materials that are the property of, held by or in the possession of the Contracting Parties, or that are under other forms of control or management of the Contracting Parties, with the sole exception of those resources under development⁷¹⁶ or subject to intellectual property rights.” This understanding focuses more on the policy aspect of the characterization of IP versus public domain concepts, rather than on their strictly legal definition.

ix. The policy dimension of the “public domain” definition

At an international law level in treaty law-making activities, Taubman confirms that “[t]he policy-maker’s task is rather to craft the optimal dynamic interplay between public domains and forms of legal exclusion, so as to optimise the production of those public goods which the policy process sets as priorities.”⁷¹⁷ These priorities are confirmed later in Article 11.2, which states that Contracting Parties should “invite all other holders of PGRFA listed in Annex I to include these PGRFA in the MLS”. This provision shows that States’ priority is to create as wide a MLS coverage as possible. Therefore, it is argued that Contracting Parties

⁷¹¹ C. McSHERRY, 2001, *Who Owns Academic Work: Battling over the Control of Intellectual Property*, Cambridge, Harvard University Press at p. 191.

⁷¹² J. H. REICHMAN AND P. F. UHLIR, 1999, “Database Protection at the Crossroad; Recent Developments and Their Impact on Science and Technology”, Vol.

⁷¹³ I. KAUL *et al.* (eds.), *Providing Global Public Goods - Managing Globalization*, Oxford, Oxford University Press, 2003, at p. 8. Cited in C. M. CORREA, “Plant Genetic Resources under the Management and Control of the Contracting Parties and in the Public Domain”, *op. cit.* at p. 183.

⁷¹⁴ C. M. CORREA, “Plant Genetic Resources under the Management and Control of the Contracting Parties and in the Public Domain”, *op. cit.* at p. 183.

⁷¹⁵ F. MACMILLAN, “Alternating the Contours of the Public Domain”, in C. WAELDE AND H. MACQUEEN (eds), *Intellectual Property. The Many Faces of the Public Domain*, Oxford, Oxford University Press, 2007, at pp. 108 and 113.

⁷¹⁶ According to Treaty Article 12.3(e).

⁷¹⁷ A. TAUBMAN, *op. cit.* at p. 84.

made “it clear that access to materials included in the system should not be blocked by such [IP] rights”.⁷¹⁸ The triple criteria for material to be automatically included in the MLS necessarily imply that all seeds, managed and controlled by Contracting Parties, and which are not subject to IPRs are *de facto* included in the MLS. A final note is made as to the fact that PGRFA protected by IPRs may also be included in the MLS, upon the decision of the right-holder.

To sum it up on the interpretation of Article 11.2, it seems that the intention of Contracting Parties is to interpret “under the management and control and in the public domain” in the widest sense possible in order to have a widest MLS coverage as possible. Indeed, the IU (and until very late in the negotiation of the Treaty) all PGRFA were part of the system. Moreover, Contracting Parties have reduced the scope of the MLS by creating the Annex I list as the result of a political bargain and not as a result of a clear will of ALL Parties to restrict the scope of the system. Furthermore, the wider the MLS will be, the more financial benefits are likely to return to the system.⁷¹⁹ For all these reasons, it is reasonable to understand that “public domain” encompasses all PGRFA which are not protected by IPRs.

(b) Articles 11.3 and 11.4

Moving on to the remaining provisions under Article 11, Contracting Parties are requested to “take appropriate measure to encourage natural and legal person” holding Annex I PGRFA to include them in the MLS (Article 11.3); establish a “built-in review”⁷²⁰ process to assess the progress in the inclusion of PGRFA in the MLS and pursuant to the review-process, decide whether access shall be continued (Article 12.2) or not to those natural and legal persons holding material who did not yet include them in the MLS (Article 11.4). The natural and legal persons are, for example, private collections of PGRFA, public entities which are not governmental, and holders of PGRFAs protected by IPRs. Again, these obligations demonstrate the clear will of Contracting Parties to have as wide an MLS as possible, at least within the limits of the 64 crops and forages listed in Annex I. Indeed, as Moore and Tymowski explain “the review provisions, and threat of possible exclusion from the benefits of the MLS, are intended to encourage the holders of semi-public and private collections, such as

⁷¹⁸ C. M. CORREA, "Plant Genetic Resources under the Management and Control of the Contracting Parties and in the Public Domain", *op. cit.* at p. 184.

⁷¹⁹ N. I. MOELLER AND C. STANNARD, "Identifying Benefit Flows. Studies on the Potential Monetary and Non-Monetary Benefits Arising from the International Treaty on Plant Genetic Resources for Food and Agriculture", 2013 .

⁷²⁰ G. MOORE AND W. TYMOWSKI, 2005, at p. 84.

provincial governments, universities and independent research institutes, and private collectors, to place their PGRFA voluntarily within the MLS.”⁷²¹

(c) Articles 11.5 and 15

Finally Article 11.5 formalizes the importance of the CGIAR *ex situ* collections for the Treaty by recognizing that PGRFA listed in Annex I and held in trust in the International Agricultural Research Centres (IARCs) of the CGIAR are included in the MLS by virtue of the agreements signed between the IARCs and the Governing Body, and in accordance with Article 15.1a of the Treaty. Moore and Tymowski note that the above mentioned triple criteria do not apply for PGRFA held by the IARCs.⁷²² This final provision of Article 11 also mentions that PGRFA listed in Annex I and held in other international institutions which have signed an agreement with the Treaty Governing Body are also part of the MLS, in accordance with Article 15.5.

Article 15.1 sets the rules for collaboration between the *ex situ* collections of the CGIAR centers and other international institutions through the design and signature of a specific agreement between the centres/international institutions and the Governing Body. This was a necessary step for these collections to be part of the MLS because most of the Centres are independent legal persons according to international law. However, these institutions are not states and although they possess a legal personality, they cannot become parties to the Treaty in their own right nor be bound by the Treaty itself. Following the signature of these agreements,⁷²³ CGIAR centres have started to distribute Annex I PGRFA in compliance the MLS provisions (in particular using the SMTA) in January 2007.⁷²⁴ Regarding non-Annex I material collected before the entry into force of the Treaty, they shall be made available in compliance with the provisions of the MTA used at that time by the CGIAR centres, pursuant to the 1994 agreements between the CGIAR and FAO.⁷²⁵ Following a consultation of the CGIAR centres on this question,⁷²⁶ the MTA previously used by the centres has been subject to modification following the conditions set under Article 15.1(b), and was endorsed by the Governing Body at

⁷²¹ G. MOORE AND W. TYMOWSKI, 2005 at p. 84.

⁷²² G. MOORE AND W. TYMOWSKI, 2005 at p. 85.

⁷²³ The signing ceremony took place on 16 October 2006 at FAO.

⁷²⁴ Although there has been a case of non-compliance by two CGIAR centres which engaged the Third Party Beneficiary procedure for the first time in 2012-2013. See below Section 7, §1.

⁷²⁵ On 26 October 1994, twelve of the CGIAR centres signed an agreement with FAO placing their PGRFA accession to be held in trust in the International Network of Ex Situ Collections under the Auspices of FAO. IT/GB-2/07/Inf.7, points 15-18.

⁷²⁶ IT/GB-2/07/13 and IT/GB-2/07/13 Rev. 1.

its Second Session.⁷²⁷ Those non-Annex I material are therefore *de facto* part of the MLS as explained in below.⁷²⁸

The Centres are also subject to policy guidance from the Governing Body for the *ex situ* collections held by them (Article 15.1(c)). In return, the Contracting Parties agree to provide Centres that have signed agreements with the Governing Body with facilitated access to Annex I PGRFA (Article 15.2). They are also encouraged to provide Centres with access on mutually agreed terms to non-Annex I material that are important for their programs and activities (Article 15.4). Special mention is made regarding non-Annex I material held by CGIAR centres and acquired by them after the entry into force of the Treaty. Article 15.3 specifies that for these specific accessions, access shall be made available following the terms of the agreement signed with the country of origin, in compliance with CBD obligations (and the Nagoya Protocol), or other relevant applicable law.

C. Rules and procedures related to the coverage of the MLS

As mentioned above, negotiations on the scope of the MLS were difficult and often caused considerable tensions. The adoption of the Annex I list of crops was the result of a strong political bargain.⁷²⁹ Inclusion/exclusion of PGRFA into the list was used as an argument to obtain progress on other issues, such as the question of FRs or benefit-sharing.⁷³⁰ Hence, negotiators used the criteria of interdependency and food security to determine which crop should be covered by the MLS.⁷³¹ This battle resulted in the Annex I list of 64 crops and forages, which are exchanged under the MLS using the SMTA.⁷³² While stories and strategies regarding the design of the scope of application of the MLS differ significantly, some authors contend that the criteria of interdependency and food security led to the designation of a

⁷²⁷ IT/GB-2/07/REPORT § 66. Following the consultation of the CGIAR centres on the various options available to comply with Treaty Article 15.1(b), the CGIAR Genetic Resource Policy Committee recommended at its 21st Session (in April 2007) to add an interpretative footnote to the SMTA indicating that these provisions should not be interpreted as precluding the use of the SMTA for transfers of non-Annex I material. This footnote functions as a clarification rather than an amendment to the SMTA, and is included in all SMTAs, to avoid having two versions.

⁷²⁸ See below §2,C.(2) of the current section.

⁷²⁹ C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., "*Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*", Chapter 1.

⁷³⁰ This bargain continued after the entry into force of the Treaty, where States would (counter-)balance the progresses made on issues such as the compliance mechanism, the funding strategy, FRs or benefit-sharing.

⁷³¹ See above section 1.

⁷³² For a detailed account of the "moving scope of Annex I", see B. VISSER, "The Moving Scope of Annex 1: The List of Crops Covered under the Multilateral System", in M. HALEWOOD, I.L. NORIEGA, AND S. LOUAFI (eds), *Crop Genetic Resources as a Global Commons*, Oxon, Earthscan by Routledge - Bioversity International, 2013. at pp. 265-282.

fairly wide list of crops and forages in Annex I to the Treaty,⁷³³ covering the world's major food crops and forage species and constituting the foodstuff on which countries are most dependent.⁷³⁴ However, important crops have remained outside of Annex I (such as tomato, peanuts, soybean, coconut, palm tree), mainly for political reasons.⁷³⁵ This section reviews for what type of use the materials included in the MLS can be accessed (1). It also details the specific rules and procedures applicable for products under development (2).

(1) A scope restricted to research, breeding and training for food and agriculture

Article 12.3(a) states that “access shall be provided solely for the purpose of utilization and conservation for research, breeding and training for food and agriculture, provided that such purpose does not include chemical, pharmaceutical and/or other non-food/feed industrial uses.”⁷³⁶ This means that PGRFA that are used for another purpose, such as the production of bio-fuels, cosmetics or pharmaceuticals are not considered as PGRFA under the MLS.⁷³⁷ This distinction is important because the exchange mechanism and applicable law will differ when the subject matter is PGRFA or other plant genetic resources. Indeed, for the latter, the CBD and its access and benefit-sharing obligations under the Nagoya Protocol is applicable.⁷³⁸ In fact, the same species can be both within and outside of the MLS, depending on the intended use. For example, this is the case for some yam (*Dioscorea* sp.) species which are in the MLS when intended to be used for food, but are not included if they are intended for a pharmaceutical purpose.⁷³⁹

Furthermore, material may be sold directly as a commodity, and is therefore not considered as a PGRFA under the Treaty definition.⁷⁴⁰ It is true that, as far as the Treaty is concerned, a provider can directly sell material to a buyer, without using the SMTA, for purposes outside those listed in the SMTA. This means that such transaction, being outside of its scope, will not provide funds to the Treaty through the benefit-sharing obligation. The

⁷³³ C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., *Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*, chapters 1, 5, 6, and 8.

⁷³⁴ It is estimated that these crops, combined, provide about 80 percent of our food from plants.

⁷³⁵ C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., *Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*, at p. 12.

⁷³⁶ Plant Treaty Article. 12.3 (a).

⁷³⁷ TREATY SECRETARIAT, "Non-Food/Non-Feed Uses of Plant Genetic Resources for Food and Agriculture", 2012 ; see also TREATY SECRETARIAT, "Report", 2012 , at points 19-21.

⁷³⁸ K. GARFORTH AND C. FRISON, 2007 at p. 4; see also TREATY SECRETARIAT, "Report", 2012 at points 27-31.

⁷³⁹ Yam wild relative is used to create the contraceptive pill.

⁷⁴⁰ SMTA Article 2 defines a “product” as “PGRFA that incorporate the Material or any of its genetic parts or components thereof that are ready for commercialization, excluding commodities and other products used for food, feed and processing.”

Treaty does not have the ambition to manage all the markets and sales of all PGRFA.⁷⁴¹ The Treaty maintains availability of PGRFA for research, breeding and training for food and agriculture.⁷⁴² The benefit-sharing provisions are triggered in a compulsory way when such availability is restricted.⁷⁴³

(2) The specific regime for products under development

Article 12.3(e) of the Treaty states that:

“Access to plant genetic resources for food and agriculture under development, including material being developed by farmers, shall be at the discretion of its developer, during the period of its development”.

In Annex III of the IU,⁷⁴⁴ a similar clause provided “that breeders’ lines and farmers’ breeding material should only be available at the discretion of their developers during the period of development”. This clause was added to the IU to protect the interests of breeders, who may restrict access “at their discretion” to breeders lines they are developing, during the course of their development. The intent is similar with Article 12.3(e) of the Treaty and Articles 6.5 and 6.6 of the SMTA, which provide that:

“6.5 In the case that the Recipient transfers a [PGRFA] under Development to another person or entity, the Recipient shall:

- a) do so under the terms and conditions of the [SMTA], through a new material transfer agreement, provided that Article 5a of the [SMTA] shall not apply;
- b) identify, in *Annex 1* to the new material transfer agreement, the Material received from the [MLS], and specify that the [PGRFA] under Development being transferred are derived from the Material;
- c) notify the Governing Body, in accordance with Article 5e; and
- d) have no further obligations regarding the actions of any subsequent recipient.

6.6 Entering into a material transfer agreement under paragraph 6.5 shall be without prejudice to the right of the parties to attach additional conditions, relating to further product development, including, as appropriate, the payment of monetary consideration.”

⁷⁴¹ C. FRISON, T. DEDEURWAERDERE, AND M. HALEWOOD, 2010 *op.cit.*, at p. 4.

⁷⁴² This view is clearly expressed in the SMTA, Annex 2 art. 1 §(c).

⁷⁴³ TREATY SECRETARIAT, "Report", 2012, at points 32-36.

⁷⁴⁴ See Appendix 3 of the online PDF file of this thesis for the IU text and its annexes, available on my ResearchGate profile.

These provisions recognize to the developer certain discretionary powers over material derived from the PGRFA he accessed from the MLS for the period during which he is developing the improved material, but where the material has not yet been developed into a final product; i.e. a product⁷⁴⁵ ready for commercialisation on the open market. This provision clearly recognizes the sequential innovation process⁷⁴⁶ of PGRFA breeding.

Article 6.5(b) requests the provider to identify the Material received from the MLS and specify that the transferred Product under Development (PUD) derives from that Material. This obligation has posed a problem to the CGIAR, for which all improved material are transferred with an SMTA.

(a) A pragmatic approach to the concept of “product under development”

Little has been written on the subject up to now, partly because the SMTA only became operational in 2007 and the development period for a PGRFA product generally varies between five to potentially more than twenty years. Therefore, breeders have not yet really had the time to transfer such product under development. Moreover, some sectors of the Seed Industry⁷⁴⁷ appear to avoid accessing material from the MLS.⁷⁴⁸ However, issues regarding the definition of PUD might arise in the future. Indeed, the term “PGRFA under development” is not defined under the Treaty. What can be said however is that it is clear from the wording of Article 12.3(e) that the term does not refer to the original material accessed from the MLS. PUD could therefore be understood as a material that is being developed, but that has not reached the final stage of development where it can be sold on the open market as a product. So PUD could be defined as material derived from the material accessed from the MLS, which is de facto distinct from the material “in the form received”⁷⁴⁹ from the MLS. Until the material remains under development, it will continually change its nature until the development has been completed into a final product to be commercialized. Once the product is commercialized on the open market, the period of development for the PUD is deemed to have ceased.

⁷⁴⁵ SMTA Article 2 defines “Product” as PGRFA that incorporate the Material or any of its genetic parts or components thereof that are ready for commercialization, excluding commodities and other products used for food, feed and processing.

⁷⁴⁶ PGRFA innovation process is sequential. This means that the innovation process is made through different stages in a certain period of time and with the interaction of many different stakeholders who build their innovation upon earlier findings. This is one of the reasons why there is a breeder’s exemption under UPOV, for example.

⁷⁴⁷ The European Seed Industry uses the MLS

⁷⁴⁸ N. I. MOELLER, “Summary of User Opinions, Following Interviews with Members of the Seed Industry”, 2014 .

⁷⁴⁹ Plant Treaty Article 12.3(d).

(b) The SMTA viral transfer clause

Besides, Article 12.4 of the Treaty and 6.4(a) and 6.5(a) of the SMTA rule for subsequent transfers (for research, breeding and training) of PGRFA accessed from the MLS to use of the SMTA for any further transfers. This allows for the material transferred to remain subject to the conditions of the SMTA even though it passes from one recipient to another.

To sum up, it can be said that the Treaty creates a special regime for PGRFA under development, where the material under development is part of the MLS, but it is subject to certain discretionary powers of the developer while it is under development. This special regime will be applied for a limited period of time and could be assimilated to a sort of trade secret protection mechanism.⁷⁵⁰ Indeed, the developer's discretionary powers include the authority not to transfer any information to the MLS Third Party Beneficiary,⁷⁵¹ to restrict access to the material being developed (not to the original material), and the power to set special conditions (including financial) on the transfer of that material during the period of development. Upon commercialisation of the product on the open market, the normal MLS regime applies again and the material sold will be subject to Article 13.2(d)(ii) regarding benefit-sharing obligations.

§ 2 Implementing the provisions on the scope of the Treaty

Implementation of the provisions relating to the scope and boundaries of the Treaty cross-cut with the implementation of the provisions on access to PGRFA under the MLS, addressed below under Section 4. Therefore, only brief information will be provided here.

A. PGRFA: a definition of the resource

Agreeing on a common understanding of what are the PGRFA covered by the Treaty and those covered by the MLS is important to implement Treaty obligation in a coherent and harmonized manner. During the implementation phase, States have had difficulties in identifying and designating the accessions that are meant to be part of the MLS. Indeed, few

⁷⁵⁰ I thank Esther van Zimmeren for sharing this idea with me.

⁷⁵¹ See Section 7, §1 for information on the Third Party Beneficiary.

information on the collections and accessions part of the MLS have been given to the Treaty Secretariat.⁷⁵²

B. Coverage of the Multilateral System

(1) Expanding the Annex I list of PGRFA

Today, Contracting Parties are envisaging reopening the debate on the coverage of the MLS.⁷⁵³ Although the subject was considered taboo for several years, more recently, on several occasions,⁷⁵⁴ discussions have arisen (generally informally) in the Governing Body forum as to an expansion of the Annex I list. However, despite these informal discussions, up to now, no concrete or formal debate has been set on the Governing Body agenda, mainly because the G-77 and the African groups are reluctant to discuss this option before significant progress is made on other issues, such as the implementation of the ABS mechanism (and in particular the benefit-sharing aspects), or the promotion of FRs. However, some stakeholders hope that enlarging the coverage of the MLS might contribute to increase the monetary returns to the Benefit Sharing Fund. Furthermore, it is argued that it would simplify significantly the administrative burden related to the access procedures, as it would harmonize the use of one unique material transfer agreement.

(2) Implementation of the scope of the MLS by the CGIAR

Under provisions Articles 11.5 and 15, the experience of the CGIAR Centres with the implementation of the Treaty⁷⁵⁵ seem to be positive, as the Treaty considerably simplifies the task of the Centres in making PGRFA available and notably reduces the administrative costs involved. Even more so since the Governing Body at its second meeting recognized that the Centres should use the same SMTA for both Annex I and non-Annex I material. However, as mentioned earlier, some difficulties have arisen regarding the tracking obligation when transferring PUDs.⁷⁵⁶ This question is being addressed by the Governing Body⁷⁵⁷ and will hopefully be solved once the review process of the MLS and SMTA is over.

⁷⁵² This item is covered below under Section 4, §2, A, (2).

⁷⁵³ See below Section 4, §2, B, (3).

⁷⁵⁴ Language in that sense can be found in working documents from the *ad hoc* Open-ended Working Group on the MLS set up in Oman in 2013. It is also mentioned in the IISD reporting Earth Negotiations Bulletin Vol. 9 No. 601 p. 4.

⁷⁵⁵ IT/GB-3/09/Inf. 15; IT/GB-4/11/Inf. 4, point 14; and IT/GB-4/11/Inf. 5.

⁷⁵⁶ See above §1, C(2).

Up to now, the major holdings brought into the Multilateral System are those of the CGIAR Centres. However, in addition to the eleven centres of the CGIAR, six international organizations have signed an agreement with the Governing Body regarding their *ex situ* collections: the Tropical Agricultural Research and Higher Education Center (16/10/2006), the International Coconut Genebank for Africa and the Indian Ocean (05/02/2007), the International Coconut Genebank for the South Pacific (09/05/2007), the Mutant Germplasm Repository of the FAO/IAEA Joint Division (18/07/2007), the International Cocoa Genebank (01/06/2009), and the Centre for Pacific Crops and Trees (CePaCT) - SPC Community (01/06/2009).

There is significantly more relevant information to analyse the importance of CGIAR's role, policy and experience in facilitating universal access to PGRFA and in sharing benefits through capacity building initiatives and research partnerships. Unfortunately, there is no space for such details in the present work.

C. Rules and procedures related to the coverage of the MLS

Through the implementation of the exchange of PGRFA rules, *de facto* enlargement of the scope of the MLS has occurred in at least two ways: 1) by transfers to recipients in non-Contracting Parties and 2) by using the SMTA for non-Annex I material.⁷⁵⁸

(1) *Transfers to recipients in non-contracting parties*

With regards to transfers to recipients in non-Contracting Parties, the Treaty is silent on the issue, but it appears there is nothing to prevent a provider in a Contracting Party to send materials to a recipient in a non-contracting party using the SMTA. Since the recipient in a non-Contracting Party would then be bound by the terms and conditions of the SMTA, he should use the SMTA for subsequent transfers of the same material (or new PGRFA incorporating the material received). By doing so, the “reach” of the MLS can *de facto* expand beyond the territories of Contracting Parties. The CGIAR Centres use the Treaty's SMTA when sending materials to non-contracting parties to the Treaty.⁷⁵⁹ Similarly, any

⁷⁵⁷ Resolution 1/2015, points 22-25.

⁷⁵⁸ C. FRISON, T. DEDEURWAERDERE, AND M. HALEWOOD, 2010 *op.cit.* at pp. 5-6.

⁷⁵⁹ A footnote explains that the reference to Annex I materials in the SMTA should not be interpreted as precluding the use of the SMTA for distributions of non-Annex I materials. The footnote states that “In the event the SMTA is used for the transfer of Plant Genetic Resources for Food and Agriculture other than those listed in Annex I of the Treaty: the references in the SMTA

organization or competent political authority can decide to use the SMTA in this way. Some European countries have adopted this approach.⁷⁶⁰

(2) *Using the SMTA for non-Annex I material*

Using the SMTA for non-Annex I materials is the second means that de facto enlarges the scope of the MLS. The Treaty anticipated, in Article 15, that the International Agricultural Research Centres of the CGIAR (CG Centres) would sign agreements with the Governing Body of the Treaty, placing the *ex situ* collections they host – both Annex I and non-Annex I materials – under the Treaty’s framework. The eleven Centres holding such collections in trust signed such agreements in 2006.⁷⁶¹ The Second Session of the Governing Body in 2007 recognized that the CGIAR Centres should use the SMTA when distributing non-Annex I materials.⁷⁶² All recipients of those materials from the Centres are receiving it on legal terms and conditions identical to those applying to materials in the multilateral system, and they are contractually bound, when passing them on (or new PGRFA incorporating those materials) under the SMTA. This may represent a significant *de facto* expansion of the Treaty’s MLS. Some countries have also decided to use the SMTA when distributing non-Annex I PGRFA. Very recently, countries participating in the European Genebank Integrated System (AEGIS)⁷⁶³ have agreed that they will use the SMTA for distributing important PGRFA designated as European Accessions, whether they are of crops listed in Annex I or not.⁷⁶⁴

Today, the wide range of views on this issue of the scope of the MLS evolved a bit. Few people still consider that the list is too extensive,⁷⁶⁵ or on the contrary that the MLS should apply to all PGRFA.⁷⁶⁶ Nonetheless, more and more Treaty stakeholders believe that modifying and/or expanding Annex I will be necessary in the medium term, especially because very

to the “Multilateral System” shall not be interpreted as limiting the application of the SMTA to Annex I Plant Genetic resources for Food and Agriculture, and the case of article 6.2 of the SMTA shall mean “under this agreement”; the references in article 6.11 and Annex 3 of the SMTA to “Plant Genetic resources for Food and Agriculture belonging to the same crop as set out in Annex I to the Treaty” shall be taken to mean “Plant Genetic resources for Food and Agriculture belonging to the same crop”.

⁷⁶⁰ J. HOPE, 2008, Harvard University Press, Cambridge at p. 79.

⁷⁶¹ The agreements are available on the Treaty website at <http://www.planttreaty.org/content/agreements-concluded-under-article-15>

⁷⁶² Report of the Second Governing Body of the Treaty, held in Rome, Italy, October 29–November 2, 2007. GB-2/07/Report, §§ 66–68.

⁷⁶³ Most European countries participate; see above Chapter 3, Section 1.

⁷⁶⁴ The European Genebank Integrated System, AEGIS, has decided to use the SMTA for all PGRFA transfers in the European Union. See their Strategic Framework and Memorandum of Understanding, which entered into force in July 2009. The Treaty’s SMTA with the footnote is used. Available at http://www.ecpar.cgiar.org/AEGIS/AEGIS_home.htm

⁷⁶⁵ C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., “Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture”, , Chapter 4.

⁷⁶⁶ *Ibid*, Chap 12. Brazil has completely reversed its position on this issue, advocating since 2012/13 the need for expanding the MLS to all PGRFA, while it was initially one of the strongest countries opposed to this option. Personal communication.

important crops, such as tomatoes, soybeans or peanuts are not included in the Annex,⁷⁶⁷ and because external factors, such as climate changes, might impact on what crop is or has become crucial for food security.⁷⁶⁸ Echoing the views of developing countries, some authors do not reject the idea of a modification of the list, potentially to all PGRFAs, but do not support such a development before it is clear that the MLS functions efficiently, in particular with respect to its benefit-sharing provisions.⁷⁶⁹

Section 3. Farmers' Rights

Farmers' Rights is an important topic in light of the theory of the commons because it expresses several important principles embedded in the theory: the notion of (farmers') community, the notion of self-organization, the idea of access and use of resources rights, etc. What does this concept cover under the Treaty and what impact does its implementation have? This topic is divided into two sub-sections: a first part on understanding what Farmers' Rights are (§1) and a second part on analyzing its implementation effect within the Treaty process (§2).

§ 1 Defining Farmers' Rights

Farmers' Rights has been one of the most contentious Treaty provision to be negotiated. As mentioned in Chapter 2, the increasing "hyper-ownership" over seeds during the end of the twentieth century have fed a rising debate among FAO member States about the "asymmetric benefits accruing to farmers whose efforts over centuries in breeding and selecting farmers' varieties have made an immense contribution to modern agriculture, and the producers of commercial varieties that take these farmers' varieties as a starting point and reap the benefits from what were characterized as relatively small improvements."⁷⁷⁰ Farmers' Rights were initially conceived to be a formal recognition of farmer communities' conservation and selection efforts over millennia, and a formal means allowing them to participate in the benefits derived from the use of improved seeds. Has the Treaty provision, as drafted in its Article 9, succeeded in this purpose?

⁷⁶⁷ *Ibid*, Chapters 5, 6, 7, 8 and 15.

⁷⁶⁸ *Ibid*.

⁷⁶⁹ *Ibid*, Chapters 3, 4 and 6.

⁷⁷⁰ G. MOORE AND W. TYMOWSKI, 2005 p. 67.

A. Origins of the concept

(1) *Farmers' Rights in the International Undertaking on Plant Genetic Resources*

The legal concept was first included in the International Undertaking on Plant genetic Resources through an Agreed Interpretation adopted at the FAO Conference⁷⁷¹ under Resolution 4/89 and further defined under Resolution 5/89 in the following terms: “Farmers' Rights mean rights arising from the past, present and future contributions of farmers in conserving, improving, and making available plant genetic resources, particularly those in the International Community, as trustee for present and future generations of farmers, for the purpose of ensuring full benefits to farmers, and supporting the continuation of their contributions, as well as the attainment of the overall purposes of the International Undertaking.” According to Moore and Tymowski, “[b]y declaring that Farmers' Rights were vested in the International Community, the Resolution sought to differentiate them from the rights of individual farmers to compensation for individual innovations.”⁷⁷² This approach was further developed by FAO Conference Resolution 3/91 which states that “Farmers' Rights will be implemented *through an international fund* on plant genetic resources which will support plant genetic conservation and utilization programmes, particularly, but not exclusively, in the developing countries.” (Emphasis added) However, for several reasons⁷⁷³ the FAO Member States decided to open a renegotiation of the IU, in order to “up-grade” the instrument into a legally binding international Treaty.⁷⁷⁴ Meanwhile, the recognition of a need to realize Farmers' Rights was also expressed in several other international fora, such as Chapter 14.60(a) of Agenda 21,⁷⁷⁵ Resolution 3 of the Nairobi Conference,⁷⁷⁶ as well as the Global Plan of Action.

(2) *What definition for Farmers' Rights?*

During the negotiation of the Treaty, agreeing on a definition of FRs was extremely difficult. Moore and Tymowsky report on the four main different understandings of the

⁷⁷¹ See Appendix 3 of the online PDF file of this thesis, available on my ResearchGate profile.

⁷⁷² G. MOORE AND W. TYMOWSKI, 2005at p. 67.

⁷⁷³ The three main reasons for the opening of the renegotiation of the IU are (1) its non-legally binding nature; (2) its vague definition of the concept and (3) new developments regarding biodiversity conservation within the context of the CBD.

⁷⁷⁴ FAO Conference Resolution 7/93.

⁷⁷⁵ Agenda 21 was approved at the UNCED, held in Rio de Janeiro in 1992.

⁷⁷⁶ Resolution 3 of the Nairobi Final Act of the Conference for the Adoption of the Agreed Text of the Convention on Biological Diversity, adopted on 22 May 1992 at the UNEP Conference held in Nairobi, Kenya.

coverage of the FRs concept. According to them, some stakeholders associated FRs to “a desire for a form of IPRs for farmer-developed materials”;⁷⁷⁷ other actors saw FRs as a means to “limit the encroachment of IPRs on PGRFA”;⁷⁷⁸ yet other stakeholders were moved by the “political motivation for the promotion of PGRFA-related activities of benefit to small, traditional farmers”; while others “were concerned that the “vesting of the rights in the international community” in the wording of [FAO] Conference Resolution 5/89 implied that the rights were too far removed from the farmers themselves.”⁷⁷⁹ These different understandings made it extremely difficult for Contracting Parties to agree on a coherent bundle of rights to define the legal concept of FRs in the Treaty, resulting in vague obligations at the discretion of national governments. While the purpose of the present analysis is certainly not to define the clear and specific content of FRs, an explanation of the Treaty provision is necessary to be able to assess the legal weight and implementation of Article 9.

(3) Intentions of the Parties

Paragraphs seven and eight of the Preamble deal with Farmers’ Rights (FRs). They acknowledge the importance of “the past, present and future contributions” of all farmers in conserving, improving and making available seeds. FRs are referred to as “the rights recognized under this Treaty to save, use, exchange and sell farm-saved seeds and other propagating material, and to participate in decision-making, and in the fair and equitable sharing of the benefits arising from, the use of PGRFA (...)”.⁷⁸⁰ These rights are considered “fundamental to the realization of FRs,” as well as their promotion at “the national and international levels.” It should be noted that the provisions in the preamble go beyond what is stated in Treaty Article 9, which leaves it entirely to national decision-making to protect the right to save, use, exchange and sell farm-saved seeds.

⁷⁷⁷ However, Brush clarifies that an important “criterion that distinguishes Farmers’ Rights from intellectual property is their duration. The monopoly right of a grant of the intellectual property is made to be temporary as a way to balance the goal of increased invention over the goal of open competition. The unlimited duration of Farmers’ Rights foregoes this balance, a policy of dubious merit if other communities or nations have valuable genetic resources or prove to be more effective conservationists.” S. B. BRUSH, 2005, “Protecting Traditional Agricultural Knowledge”, *op.cit.* at p. 90. See also E. E. BERTACCHINI, “Property Rights and Plant Genetic Resources for Food and Agriculture,” at pp. 90-94.

⁷⁷⁸ C. OGUAMANAM, 2007, “Agro-Biodiversity and Food Security: Biotechnology and Traditional Agricultural Practices at the Periphery of International Intellectual Property Regime Complex”, *Michigan State Law Review*, Vol. 2007, (215); B. DE JONGE AND N. LOUWAARS, *op. cit.* ; K. AOKI, 2010, “Seeds of Dispute: Intellectual-Property Rights and Agricultural Biodiversity”, *op.cit.*.

⁷⁷⁹ G. MOORE AND W. TYMOWSKI, 2005 p. 68.

⁷⁸⁰ The farmer’s privilege is articulated in the International Convention for the Protection of New Varieties of Plants (UPOV 1991), 2 December 1961, 33 U.S.T. 2703, 815 U.N.T.S. 89, as revised on 10 November 1972, 23 October 1978, and on 19 March 1991. For a general understanding of the link between PVPs and FRs see P. CULLET AND R. KOLLURU, 2003 *op.cit.*

It can be argued that this reference to wider rights could serve as basis for promoting an effective international recognition of FRs when implementing the Treaty Article 9. Indeed, even though the general rule is to consider preamble clauses as non-legally binding, the International Court of Justice has stated that a principle mentioned in the preamble of a convention could be “intended to be of a binding character and not merely an empty phrase”, if it was the will of its Contracting Parties.⁷⁸¹ Moore and Tymowski consider that FRs are recognized at the international level albeit in non-legally binding instruments such as in Agenda 21 and Resolution 3 of the Nairobi Final Act.⁷⁸² However, in my view, these texts do not formally recognize the rights included in the concept of FRs mentioned in the Preamble. Chapter 14 of Agenda 21 deals with “Promoting Sustainable Agriculture and Rural Development” but do not specifically recognize FRs. As for the Nairobi Final Act, it recognizes the need to discuss the question of FRs, which is not the same thing as actually recognizing the concept itself and the rights it covers. Moreover, these are indeed non-legally binding texts, thereby allowing my conclusion that FRs have not been formally recognized at the international level.

This preamble clause raises a kind of “chicken and egg dilemma”. The recognition of the three types of rights listed is “fundamental to the realization of FRs” (leaving the door open to a much wider concept of rights covered); but at the same time, this list should serve as promoting FRs at both national and international levels. Here, there is ambiguity as to what precisely is recognized as existing rights, at what level (national and/or international) and what ought to be promoted and created following the will of Contracting Parties. Furthermore, the right to save, use and sell seeds is dealt with on an equal footing as the two other rights listed (participation in decision-making and in ABS), however, this is not consistent with Article 9, where it is separate and rendered “neutral” by the fact that it is “subject to national law and as appropriate.” This ambiguity is further dealt with when analyzing Article 9 below.

⁷⁸¹ International Court of Justice, *Rights of Nationals of the United States of America in Morocco* (France v. United States of America), Judgment of 27 August 1952, at p. 184.

⁷⁸² G. MOORE AND W. TYMOWSKI, 2005 p. 26. See the Nairobi Final Act of the Conference for the Adoption of the Agreed Text of the Convention on Biological Diversity, adopted on 22 May 1992 at the UNEP Conference held in Nairobi, Kenya. Its Resolution 3 “recognizes the need to seek solutions to outstanding matters concerning plant genetic resources within the Global System for the Conservation and Sustainable Use of Plant Genetic Resources for Food and Sustainable Agriculture, in particular: (a) Access to ex-situ collections not acquired in accordance with this Convention; and (b) *The question of farmers’ rights*”. (Emphasis added)

B. Agreeing on a definition

The Treaty text reads as follow:

9.1 The Contracting Parties *recognize the enormous contribution that the local and indigenous communities and farmers of all regions of the world, particularly those in the centres of origin and crop diversity, have made and will continue to make for the conservation and development of plant genetic resources which constitute the basis of food and agriculture production throughout the world.*

9.2 The Contracting Parties agree that the *responsibility for realizing Farmers' Rights, as they relate to plant genetic resources for food and agriculture, rests with national governments. In accordance with their needs and priorities, each Contracting Party should, as appropriate, and subject to its national legislation, take measures to protect and promote Farmers' Rights, including:*

- a) *protection of traditional knowledge* relevant to plant genetic resources for food and agriculture;
- b) *the right to equitably participate in sharing benefits* arising from the utilization of plant genetic resources for food and agriculture; and
- c) *the right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of plant genetic resources for food and agriculture.*

9.3 *Nothing in this Article shall be interpreted to limit any rights that farmers have to save, use, exchange and sell farm-saved seed/propagating material, subject to national law and as appropriate.* (Emphasis added)

Several issues are important here.⁷⁸³ First, paragraph one recognizes the immense contribution of farmers to the conservation and development of PGRFA. This formal recognition is crucial to justify the establishment of the international benefit-sharing mechanism. Second, in paragraph two, the Treaty provision does not provide an exhaustive list of rights under the concept of FRs. Rather, it mentions three important issues (the protection of traditional knowledge⁷⁸⁴ related to seeds; the multilateral benefit-sharing concept;⁷⁸⁵ and

⁷⁸³ For a detailed explanation of this text, I refer the reader to the complete account made by Moore and Tymowski in the Treaty Guide. G. MOORE AND W. TYMOWSKI, 2005 at pp. 67-78.

⁷⁸⁴ Traditional Knowledge related to biodiversity has been formally recognized in the CBD Article 8j. Agricultural Traditional Knowledge is intrinsically related to the concept of FRs as a mutually supportive dynamic system of agricultural management. Numerous literatures exist on the topic. For this reason, it will not be covered in depth in the present thesis. Brush explained that within international for a, “[n]umerous parties and participants have struggled with the issue of protecting traditional agricultural knowledge and crop resources through binding international resolutions, formal contracting, and non-contractual benefit sharing mechanisms. The impetus for this was the recognition that resources and knowledge were eroding under the

the right to participate in national decisions on PGRFA), and leaves considerable discretion to States to specify these rights in further details within their national legislations.

C. A downgraded recognition of Farmers' Rights

Finally, with Article 9.3 paragraph, it should be noted that the concept has substantially been downgraded in terms of the “universal recognition” of FRs and the central role of the international community⁷⁸⁶ in their realization, from the initial intention in the IU text to the current Treaty text. This can be explained by the different understandings existing between parties. The fact that the right to save, use, exchange and sell farm-saved seeds is not formally recognized at the international level in Article 9 maintains FRs at a *de facto* “lower level” than breeders’ rights, which are expressed in the UPOV international agreement. This was exactly the purpose for some countries⁷⁸⁷ to include the following mentions that the realization of FRs “rests with national governments. In accordance with their needs and priorities, each Contracting Party should, as appropriate, and subject to its national legislation (...)”⁷⁸⁸ take suggested measures (emphasis added). This way, the potential of Article 9 to act as a “farmers’ privilege-type” clause (i.e. space for a recognized farmers’ exemption whether for PVP or patents) has been counteracted. Recognizing their past role in the use and conservation of

pressures of modernization, such as rapid population growth and commercialization of agriculture, but it also grew out of the North/South dialog of the mid-twentieth century”. S. B. BRUSH, 2005, “Protecting Traditional Agricultural Knowledge”, *op.cit.* at p. 108. Chiarolla warns that “the erosion of agro-biodiversity and the extinction of agricultural TK are inextricably related and mutually reinforcing processes, which require immediate action and appropriate legal frameworks to be halted.” C. CHIAROLLA, *cit.* at p. 128. See also N. BRAHY, “The Property Regime of Biodiversity and Traditional Knowledge : Institutions for Conservation and Innovation,”; E. C. KAMAU AND G. WINTER (eds.), “Genetic Resources, Traditional Knowledge and the Law. Solution for Access and Benefit Sharing”, London, Earthscan, 2009 K. R. SRINIVAS, 2008, “Traditional Knowledge and Intellectual Property Rights: A Note on Issues, Some Solutions and Some Suggestions”, *Asian Journal of Wto & International Health Law and Policy*, Vol. 3, (1); C. B. ONWUEKWE (eds.), “Ideology of the Commons and Propriety Rights: Who Owns Plant Genetic Resources and the Associated Traditional Knowledge?”, 2007; C. OGUAMANAM, 2007, “Agro-Biodiversity and Food Security: Biotechnology and Traditional Agricultural Practices at the Periphery of International Intellectual Property Regime Complex”, *op.cit.*; M. SARR AND T. SWANSON, 2006, “The Economics of Ipr for Traditional Knowledge - the Importance of Property Rights”, Vol.

⁷⁸⁵ B. DE JONGE AND N. LOUWAARS, *op. cit.*; B. D. JONGE AND M. KHORTALS, 2006, “Vicissitudes of Benefits Sharing of Crop Benefits Resources: Downstream and Upstream”, *Developing world business*, Vol. 6, (3);

⁷⁸⁶ During the negotiations, states attempted to define FRs: “[f]armers' rights mean rights to compensation arising from the past, present and future contributions of farmers, particularly those in the centres of origin/diversity of plant genetic resources, in conserving, improving and making available those resources. These rights are vested in the International Community as trustee for present and future generations of farmers, for the purpose of ensuring full benefits to farmers and supporting the continuation of their contributions as well as the attainment of the overall purposes of the International Undertaking.” Third Session of the Commission on Plant Genetic Resources “Progress Report on the International Undertaking on Plant Genetic Resources”, Working Group Report on the Negotiations for An Agreed interpretation of the International Undertaking on Plant Genetic Resources, Rome, 17-21 April 1989, Green Room, p. 4. According to Brush, like IPRs, Farmers’ Rights were justified as a mechanism to encourage the creation of socially valuable goods (plant genetic resources). Farmers’ Rights differed from Breeders’ Rights in that they were to be vested in the “International Community” rather than in individuals. S. B. BRUSH, 2005, “Protecting Traditional Agricultural Knowledge”, *op.cit.* at p. 87.

⁷⁸⁷ North American countries were strong opponents to FRs.

⁷⁸⁸ Treaty Article 9.2.

PGRFA does not equate to recognize their continuous (current and future) role in innovation and breeding – and therefore the rights attached to that role too.

D. Legal imbalance between Farmers Rights and intellectual property rights

Unfortunately, this downgrading and especially the non-recognition of a defined formal right at the international level, similarly to plant breeders' rights or patents, contributes to a difficult implementation of the Treaty at the present time. The rationale behind the creation of the FRs concept in the IU was to create a right that would put farmers and breeders at the same level, i.e. a safeguard for their use related privilege (farmers' and breeders' exemptions). This downgrading has created a legal imbalance between strong internationally recognized proprietary rights over improved seeds and internationally weak – not to say inexistent – FRs over the vast majority of the World's PGRFA.⁷⁸⁹ In that sense, I disagree with Moore and Tymowski who state that the Treaty text is “neutral”⁷⁹⁰ in this regard. By explicitly refusing to recognize FRs at the international level, in a similar way to breeders' rights, the Treaty favors one position, that of the breeding sector.⁷⁹¹ Indeed, the implementation of FRs is “subject to national legislation” “in accordance with Contracting Parties' needs and priorities” and takes place “as appropriate”. On the contrary, IPRs are explicitly recognized in Article 12.3(f)⁷⁹² and SMTA Article 5(d) and particularly Article 6.10 and Contracting Parties are requested to respect and enforce these rights. Furthermore, by creating a benefit-sharing mechanism mostly focused on the collection of financial outcomes originating from the enforcement of IPRs in

⁷⁸⁹ Some countries (notably India) have adopted strong FRs national legislations. However, these remain the exception and are restricted to the national level, which cannot contribute to counterbalancing the importance of proprietary rights in the international sphere. See below §2 of the current section.

⁷⁹⁰ G. MOORE AND W. TYMOWSKI, 2005, p. 75.

⁷⁹¹ FRs are not formally recognized as fully as breeders' right, both at the national and international levels. Even though both rights are subject to national sovereignty and are implemented at the national level, breeders' rights (and other property rights over genetic resources) are *de facto* strongly promoted at the international level through UPOV and WIPO (*inter alia* through capacity building activities), as well as through strong lobbies. This is not the case for FRs. This imbalance of 'power' at the international level is increased with seed legislations obstacle and with the fact that FRs are not well defined and that different actors have different understandings of what FRs should cover. Furthermore, this weak recognition refrains States which are generally in favour of FRs from implementing a national FRs legislation. There is a strong need for a comprehensive, international and collaborative promotion for better defining and implementing FRs' policies and legislations at the national level. The Treaty Benefit-sharing Fund attempts to mitigate this gap by funding projects, which focus on the implementation of (1) information exchange, technology transfer and capacity-building (reflecting Global Plan of Action priority activities 15 and 19), (2) managing and conserving plant genetic resources on farm (reflecting Global Plan of Action priority activity 2), and (3) the sustainable use of plant genetic resources (reflecting Global Plan of Action priority activities 9, 10, and 11). See the Compilation Booklet for the “Funding Strategy for the Implementation of the International Treaty on Plant Genetic Resources for Food and Agriculture”, Annex 1: Priorities for the Use of Resources Under the Funding Strategy, available at ftp://ftp.fao.org/ag/agn/planttreaty/publi/funding_strategy_compilation_en.pdf

⁷⁹² For an explanation, see below Section 4.5 the MLS Article 12.

the MLS,⁷⁹³ it necessarily reinforces the international recognition (not to say supremacy) of IPRs to the detriment of FRs. This point raises the question of the “mutual supportiveness” of the MLS and FRs. A careful reading of other Treaty provisions mentioning farmers refers to clear obligations, which indirectly promote FRs.⁷⁹⁴ These other very specific (and therefore more easily implemented) obligations may function as a vehicle for promoting FRs.⁷⁹⁵

The justification for this imbalance in rights’ recognition can be questioned.⁷⁹⁶ Both farmers and breeders need seeds to work. Both stakeholders select varieties, improve and conserve them. They both need access to a diversity of genetic material (although not necessarily the same type of material). But farmer communities are the ones who, through the ancestral practice to save, use and exchange PGRFA, developed all existing PGRFA which breeders use daily (with the exception of crop wild relatives). Why should this not be formally recognized and enforced at the international level (i.e. in the MLS)? And above all, why should these traditional practices, of which breeders benefit every day, be abolished? I believe it is contrary to mankind’s interests, including breeders’ long-term interests.

§ 2 Implementing Farmers’ Rights

A. A poor national implementation of Farmers’ Rights

It is undeniable that FRs are very poorly implemented in national legislations.⁷⁹⁷ According to the “Farmers’ Rights Legislation & Policy Database”, only ten countries in the World have enacted a legislation dealing with the matter (out of which eight are Asian countries).⁷⁹⁸ The purpose here is not to examine these legislations in detail,⁷⁹⁹ but rather to

⁷⁹³ Even though up to now, money has come from contributions from Member States and not from financial return from the MLS.

⁷⁹⁴ For example, Article 13.3 states that farmers are entitled to receive benefits from the MLS, and Article 18.5 devotes funding to plans and programs for farmers in developing countries who conserve and sustainably use seeds.

⁷⁹⁵ R. ANDERSEN, “*Governing Agrobiodiversity : Plant Genetics and Developing Countries*”, *op. cit.* at p. 111.

⁷⁹⁶ M. WALLØE TVEDT, 2015 *op.cit.* at p. 16. See also H. M. HAUGEN, “The Right to Food, Farmers’ Rights and Intellectual Property Rights: Can Competing Law Be Reconciled?”, *op. cit.*

⁷⁹⁷ Although attention is growing on the need to help countries in designing FRs policies and legislations, few capacity-building material exist to promote such realisation. See Carlos Correa (2000) “Options for the Implementation of Farmers’ Rights at the National Level”, South Centre: Working Paper 8, December 2000. See also R. ANDERSEN *et al.*, 2009, “*The Plant Treaty and Farmers’ Rights : Implementation Issues for South Asia*”, Kathmandu, South Asia Watch on Trade, Economics & Environment.

⁷⁹⁸ For example, an “African Model Legislation for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources” was designed in 2000 where several provisions deal with the matter. However, according to the “Farmers’ Rights Legislation & Policy Database”, in Africa only Ethiopia has adopted a legislation dealing with FRs. According to this database, one African country, eight Asian countries, one country in the Americas (Costa Rica), and no countries in Oceania or Europe have adopted legislations dealing with FRs. Available at <http://www.farmersrights.org/database/index.html> (Accessed on December 23, 2015).

show that leaving the recognition of FRs subject to national laws has not permitted to enforce these rights (and further increased the imbalance with IPRs).

(1) The legally binding nature of Treaty Article 9

Andersen states that the measures proposed by Article 9 are not legally binding, because FRs are subject to national laws and because they are very poorly implemented.⁸⁰⁰ Thereby, she flags the fact that these obligations are not enforced. However, with regards to public international law, this statement is incorrect. Indeed, a legal international convention is formally legally binding upon those States which have consented to it through “ratification, acceptance, approval or accession”.⁸⁰¹ This is the language of articles 26 and 27 of the ITPGRFA. For this reason, the Plant Treaty is legally binding under international law and all its provisions impose obligations to its Contracting Parties, at least formally. Besides the clear legally binding status of all obligations deriving from the Plant Treaty, the interesting question might rather be whether the Treaty is legally binding “in substance”. Legally binding “in substance” means 1) whether the Treaty requests Parties to undertake a clear conduct or to achieve a clear outcome; and 2) whether there is a framework, along with concrete tools and mechanisms, to allow for and verify that the conduct is undertaken or the outcome achieved. The point Andersen wanted to raise is precisely this problem of “substance”. Indeed, the fact that very few Contracting Parties have adopted a legislation dealing with FRs shows that Article 9 expresses this reality. Due to strong opposition of a few countries during the negotiations of the Treaty, the language of Article 9 is vague and weak. For this reason, the text does not provide for a uniform clear conduct nor for a clear outcome, as it leaves wide flexibility to States in taking whatever measure they deem appropriate, including no measures at all.

⁷⁹⁹ Some literature exist, notably on the Indian Protection of Plant Varieties and Farmers' Rights Act, 2001 as India was among the first countries in the world to have passed legislation granting Farmers' Rights. See A. RAMANNA, "India's Plant Variety and Farmers' Rights Legislation: Potential Impact on Stakeholder Access to Genetic Resources", 2003 Another interesting article analyses the FRs development in South Asia from the perspective of intellectual property enforcement: A. P. SINGH, P. MANCHIKANTI, AND H. S. CHAWLA, 2011, "Sui Generis Ipr Laws Vis-À-Vis Farmers' Rights in Some Asian Countries: Implications under the Wto", *Journal of Intellectual Property Rights*, Vol. 16.

⁸⁰⁰ R. ANDERSEN, "Governing Agrobiodiversity : Plant Genetics and Developing Countries", *op. cit.* at p. 111.

⁸⁰¹ 1969 Vienna Convention, Article 14 and 15.

(2) What enforceability for these rights?

Added to the difficulty of agreeing on the substance of these rights, there is also an issue with their enforceability within national legislations. Even in the case where Farmers' Rights are recognized as constituting Human Rights, which should be enforceable; it is another challenge to make sure that there is an effective judicial protection accompanying these rights and that people can access this judicial protection. Alston and Weiler confirm that “[j]udicial protection at the instance of individuals is an important, even foundational, dimension of an effective human rights regime. But while it is necessary, it is not sufficient. Effective access to justice requires a variety of policies that would empower individuals to vindicate the judicially enforceable rights given to them. Ignorance, lack of resources, ineffective representation, inadequate legal standing and deficient remedies all have the capacity to render judicially enforceable rights illusory.”⁸⁰²

(3) No common framework for implementation

Additionally, Article 9 does not provide for a specific framework or mechanism in order to help Contracting Parties implement the requested conduct and reach the outcome, nor does it establish a mechanism allowing to verify whether the obligations are implemented. The problem is therefore not about Article 9's status of “obligation under international law”, but rather related to the fact that 1) the obligations are not specific enough for Contracting Parties to “really” be bound by them, i.e. to take concrete steps to implement FRs; and 2) that there is no enforcement mechanism encouraging States to implement their obligations.

B. Governing Body Resolutions to promote the realization of Farmers' Rights

(1) Governing Body resolutions as a means to generate exponential interest

Against this background and to mitigate this weakness, Contracting Parties have systematically included Farmers' Rights on the agenda of the Governing Body, since its Second Session, and five Resolutions were adopted.⁸⁰³ After Governing Body 1,⁸⁰⁴ where no discussion

⁸⁰² P. ALSTON AND J. H. WEILER, 1998, "An 'Ever Closer Union' in Need of a Human Rights Policy", *European Journal of International Law*, Vol. 9, (4), at p. 668.

⁸⁰³ Plant Treaty Resolutions: 2/2007; 6/2009; 6/2011; 8/2013; 5/2015. This systematic inclusion of the matter in the Governing Body agenda and in resolutions clearly shows the intentions of a majority of Contracting Parties to the Treaty to render FRs effective and up-grade it to a wider recognition at the international level.

on the subject took place, developing countries and Norway “woke up” with the fear that the “empty” recognition of rights under Article 9 would remain voided. Since Governing Body 2,⁸⁰⁵ they maintained quite some pressure to include the item high in the agenda of the following Sessions, and to progress on the promotion and implementation of these rights at the national level. This is being achieved through the adoption of systematic Resolutions and the establishment of capacity-building projects through the Benefit-sharing Fund. Andersen confirms that “Resolution 2/2007 represents a clear step by the [Governing Body] towards taking on international responsibility for promoting the realization of [FRs] at the national level”.⁸⁰⁶ Indeed, Resolution 2/2007 *inter alia* requests the Secretary to collect views and experiences from Contracting Parties and other relevant organizations on the implementation of FRs, for consideration by the Governing Body at its Third Session, as a means to promote the realization of FRs at the national level. Up to date, very few documents were collected.⁸⁰⁷

(2) Regional Workshops on Farmers’ Rights

In order to enhance implementation, Governing Body⁸⁰⁸ adopted a new Resolution 6/2009 at its Third Session, requesting the Secretariat to convene regional workshops on FRs aiming at discussing national experiences on the implementation of FRs.⁸⁰⁹ The request for sending views and experiences by States and stakeholders was reiterated. Following this Resolution a *Global Consultations on Farmers’ Rights* was organized in 2010 via two channels. An e-mail based consultation process took place from July to September 2010 and a conference was held in Addis Ababa in November 2010.⁸¹⁰ The results were presented at the Forth Session of the GB.⁸¹¹ The report of this global consultation includes recommendations made region by region for every sub-provision of Article 9 (Articles 9.2 a, b, and c; and 9.3), as

⁸⁰⁴ Governing Body 1 took place in Madrid, Spain, from 12-16 June 2006.

⁸⁰⁵ Governing Body 2 took place in Rome, Italy, from 29 October – 2 November 2007.

⁸⁰⁶ R. ANDERSEN, “*Governing Agrobiodiversity : Plant Genetics and Developing Countries*”, *op. cit.* At p. 112, footnote 49.

⁸⁰⁷ On December 2015, views from Norway (two reports), Poland and Madagascar were sent to the Secretary. As for other relevant organizations, twelve views were sent by civil society organizations, and one by the European Seed Association. Available at <http://www.planttreaty.org/content/farmers-rights-submissions>

⁸⁰⁸ Governing Body 3 took place in Tunis, Tunisia, from 1-5 June 2009.

⁸⁰⁹ Plant Treaty Resolution 6/2009, point 3.

⁸¹⁰ The consultations were organized with regional components as a response to Governing Body resolution 6/2009, which called for regional workshops on Farmers’ Rights. In the two phases of the consultations, a total of 177 experts and stakeholders participated, from 46 countries in Africa, Asia, the Near East, Latin America and the Caribbean, North America and Europe, and from farmer organizations, government institutions, the seed industry, NGOs, IGOs, research and other relevant groups. Most of them participated in their personal capacities, whereas 45 participants in the e-mail consultations responded on behalf of their organizations.

⁸¹¹ Agenda Item 13 “Input paper submitted by Ethiopia based on Global Consultations on Farmers’ Rights in 2010”, available at <http://www.planttreaty.org/sites/default/files/gb4c01e.pdf>

well as joint recommendations from the Global Consultation Conference on Farmers' Rights. Notably these joint recommendations focus *inter alia* on 1) the promotion and capacity-building for FRs legislations at the national level; 2) the further study of options for provisions in national seed legislations in order to allow for a balanced regulation for all types of seeds; 3) the suggestion to copy the reform of the UN FAO Committee on World Food Security (CFS) for the Governing Body to ensure the full participation of all stakeholder groups; 4) investigating the question of gender in relation to FRs; and 5) establishing an ad hoc working group to develop voluntary guidelines on the national implementation of Article 9.

(3) Highlight on capacity-building and raising awareness

Resolution 6/2011 adopted at the Fourth Session of the Governing Body⁸¹² continued to insist on the importance to collect and exchange views and experiences on FRs as a capacity-building and awareness raising means to promote FRs' implementation. This strategy remains important, as it is only through capacity-building and the involvement of all stakeholders, and particularly farmers' organizations, that Article 9.2 (c) on the "right to participate in making decisions" can be fully implemented. A new and interesting direction⁸¹³ was also taken by highlighting the narrow link between the implementation of Article 9 and the implementation of other Treaty Articles, in particular Articles 5.1 (c and d), and 6.2 (c, d, e, f, and g). This was a smart move that could eventually encourage States to really start thinking about FRs at their national levels. Indeed, forcing countries to realize that conservation and sustainable use obligations can be fully implemented only by taking into account FRs constitutes an indirect means to start implementing FRs in very concrete aspects.

(4) Resolution 8/2013: progress towards FRs' implementation

This trend was further pushed at the Fifth Session of the Governing Body,⁸¹⁴ with the adoption of Resolution 8/2013, where interesting progress was made in several areas. Resolution 8/2013 (Point 1) requests the Secretary to present at the following Governing Body Session a document stating clear options (derived from the previous views, experiences and Global Consultation on FRs) for national implementation of Article 9, in a systematic way. Resolution 8/2013 (Point 2) requests the Secretary to develop further links with other FAO

⁸¹² Governing Body 4 took place in Bali, Indonesia, from 14-18 March 2011.

⁸¹³ Resolution 6/2011, points 6, 8, 9, and 10.

⁸¹⁴ Governing Body 5 took place in Muscat, Oman from 24-28 September 2013.

fora including the CFS. An important step was also made with (Point 3) the request formulated to the Secretary to invite UPOV and WIPO to jointly identify possible areas of interrelations among their respective instruments,⁸¹⁵ with FRs. Resolution 8/2013 (Point 5) invites Contracting Parties to consider developing national action plans for the implementation of Article 9 (similarly to what exists for conservation). The usual other points are made (sending views and experiences,⁸¹⁶ requesting financial support and capacity-building activities, promoting participation of farmers' organizations in the Governing Body work, etc.) to back-up the advances made.

(5) Need for an explicit recognition of farmers' direct access to MLS seeds

Notably, (Point 7) Contracting Parties have for the first time explicitly written in a Treaty Resolution the fact that farmers, local and indigenous communities should have direct access to MLS seeds.⁸¹⁷ This might seem logical. However, the fact is that during the first Governing Body Sessions, the direct access to MLS material by farmers was not such a clear right to all. Indeed, there is no definition in the Treaty or the SMTA of who is considered as a “recipient” of PGRFA. Rather, the Treaty and the SMTA have first been designed by and for breeders, as the scope of the MLS and the terms in the SMTA show.⁸¹⁸ Recognizing the right for farmers to directly access MLS seeds (even in “soft” terms such as “invites Contracting Parties to promote access (...) by farmers”) constitutes another further step, which consolidates the link between Article 9 and the MLS.⁸¹⁹

⁸¹⁵ During the second meeting of the ACSU, which took place on 2-3 March 2015, in Rome, Italy, the Committee examined the interrelation of FRs with UPOV and WIPO and “noted that the different instruments recognize and promote different forms of innovation in the use of PGRFA by farmers and breeders, including formal and informal systems.” IT/ACSU-2/15/Report p. 4.

⁸¹⁶ In-depth and very serious reports have been sent by several stakeholders at Governing Body 6, *inter alia* T. GREIBER *et al.*, “Conservation with Justice: A Rights-Based Approach”, 2015 IUCN; S. SHASHIKANT AND F. MEIENBERG, 2015; LA VIA CAMPESINA AND GRAIN, 2015 One declaration was also made by the European Seed Association. All mentioned reports are accessible at <http://www.planttreaty.org/content/farmers-rights-submissions>

⁸¹⁷ Resolution 8/2013, point 7 “[i]nvites Contracting Parties to promote access to genetic resources under the Multilateral System by local and indigenous communities and farmers”.

⁸¹⁸ The MLS facilitates seed exchanges solely for the purpose of research, training and breeding (Treaty Article 12.3 (a)) with no mention of direct use by farmers, while the SMTA has a clear focus on commercialization of improved seeds, and defines what a “product” is, a PGRFA “under development” and what is understood under the terms “sales” and “commercialization” (SMTA Article 2). These terms are far away from what constitute the daily lives of millions of farmers feeding a majority of poor population around the world.

⁸¹⁹ As mentioned earlier, the fact that Article 9 is not part of the MLS has created an imbalance of rights, which may be partly mitigated by reinforcing the mutual supportiveness of both obligations through their common implementation.

(6) Limited capacity-building initiatives organized by the Treaty

Despite this positive evolution, farmers' organizations felt that their urgent call to implement Article 9 has not been answered.⁸²⁰ At the Fourth and Fifth Sessions of the Governing Body, there was a sort of momentum with the progresses made through the adoption of Resolutions 6/2011 and 8/2013. However, many stakeholders were disappointed at the Sixth Session of the Governing Body⁸²¹ regarding the slow pace of national implementation. Initiatives such as regional workshops and capacity-building actions,⁸²² which were requested to be undertaken by the Secretary,⁸²³ subject to funding availability, have not been carried out, or else by other institutions (under the guidance and incentives of NGOs). Frustration has grown bigger, with the attempts made by the Governing Body – through the Benefit-sharing Fund calls for projects⁸²⁴ – to promote the implementation of the Treaty including its Articles 5, 6 and 9. Indeed, the high demand for funding and low number of projects funded through the first⁸²⁵ and second⁸²⁶ calls for proposals of the Benefit-sharing Fund testify of the immense need and limited funding opportunities.⁸²⁷ Although farmers are clearly the primary direct beneficiaries of these activities,⁸²⁸ and although money devoted to

⁸²⁰ "Message from the Semences Paysannes (Farmers' seeds) networks to member governments of the Governing Body of the ITPGRFA", Meeting in Rome 5-9 October 2015. Available at <http://www.foodsovereignty.org/message-from-the-farmers-seeds-networks-to-member-governments-of-the-governing-body-of-the-international-treaty-on-plant-genetic-resources-itpgrfa-meeting-in-rome-5-9-october-2015-2/>

⁸²¹ IT/GB-3/09/Report Appendix A, page 41.

⁸²² Capacity-building is one of the four benefit-sharing actions mentioned in Treaty Article 13, together with the exchange of information, access to and transfer of technology, as well as the sharing of monetary and other benefits of commercialization.

⁸²³ Terms of reference for the second and third meetings of the capacity building coordination mechanism – Background. "The capacity building coordination mechanism (CBCM) is a platform of providers of capacity building. This platform serves organizations and institutions involved in capacity building activities For the implementation of the treaty as a central point for information exchange and coordination on capacity building initiatives." IT/GB-3/09/Report Appendix A, page 41.

⁸²³ Since 2008, three calls for proposal under the Benefit-sharing Fund took place. The fourth call is under preparation by the Bureau of the Governing Body.

⁸²⁴ Since 2008, three calls for proposal under the Benefit-sharing Fund took place. The fourth call is under preparation by the Bureau of the Governing Body.

⁸²⁵ During the first call for proposals of the Benefit-sharing Fund (2008-2009), more than 400 applications were filed within two months after the launch of the call, out of which only 11 projects were selected and funded for a total amount of US\$ 543.004,00. See the "Report on the First Round of the Project Cycle of the Benefit-sharing Fund", at pp. 8-10 available at http://www.planttreaty.org/sites/default/files/gb5i11_Report_first_round_projects_e.pdf

⁸²⁶ During the second call for proposals of the Benefit-sharing Fund (2010-2011), 444 pre-proposals were submitted, out of which 28 projects were selected and funded for a total amount of US\$ 5.497.773,00. See the "Progress Report on the Implementation of the Second Round of the Project Cycle", available at [http://www.planttreaty.org/sites/default/files/GB_5_13_Inf%2012%20\(2\)final%20version.pdf](http://www.planttreaty.org/sites/default/files/GB_5_13_Inf%2012%20(2)final%20version.pdf)

⁸²⁷ A third call for proposals of the Benefit-sharing Fund was opened by the Bureau of the Governing Body on 7 March 2014 for an amount of US\$ 10.078.580,00. More than 394 pre-proposals were submitted, out of which 22 projects were selected for funding. See the "Report on the Execution of the Project Cycle of the Benefit-Sharing Fund since the Fifth Session of the Governing Body", available at <http://www.planttreaty.org/sites/default/files/gb6i04e.pdf>

⁸²⁸ See the scheme on "Direct beneficiaries disaggregated by stakeholder groups" in the "Progress Report on the Implementation of the Second Round of the Project Cycle", at p. 14, document IT/GB-5/13/Inf.12, published during Governing Body 4, available at [http://www.planttreaty.org/sites/default/files/GB_5_13_Inf%2012%20\(2\)final%20version.pdf](http://www.planttreaty.org/sites/default/files/GB_5_13_Inf%2012%20(2)final%20version.pdf)

invest in these projects has undeniably increased,⁸²⁹ it is far from reaching many stakeholders expectations in terms of scope and financial investments.⁸³⁰

(7) The Joint Capacity Building Programme led by GFAR

Besides the clear craze for the Benefit-sharing Fund round calls, stakeholders also manifest their interest in the question of FRs implementation by other means. Indeed, while very few countries have responded to the Governing Body's call to submit views and experiences on the question of FRs,⁸³¹ at the last meeting of the Governing Body⁸³² ten civil society organizations have submitted thorough information reports on FRs' implementation.⁸³³ On the contrary, little has been done from the "state-level" side to effectively promote FRs' implementation, and farmers' organizations have strongly expressed their disappointment.⁸³⁴ To mitigate this need, a Joint Capacity Building Programme⁸³⁵ was set up between the Plant Treaty, the Global Forum on Agricultural Research (GFAR)⁸³⁶ and other organizations including Bioversity International to respond to the limited capacity of governments to implement FRs. The collaboration with GFAR was reinforced at the Sixth Session of the Governing Body,⁸³⁷ and will hopefully (depending on funding) led to a stable and

⁸²⁹ Thanks to donations from developed countries, the first call amounted to US\$ 543.004,00. This amount was significantly increased for the second and third calls and US\$ 10.078.580,00 were capitalized for the third call.

⁸³⁰ Indeed, the Strategic Plan, adopted at Governing Body 3 in Resolution 3/2009 had established a target of US\$ 116 million over a five year period which began in July 2009 and concluded in December 2014. Following difficulties in reaching the target, the Governing Body downgraded the amount of the initial target to a "working objective" of US\$ 50 million, which has not been reached neither. See the Strategic Plan for the Implementation of the Benefit-sharing Fund of the Funding Strategy, available at http://www.planttreaty.org/sites/default/files/PS_inglese_web.pdf.

⁸³¹ Plant Treaty Resolutions 2/2007, 6/2009, and 8/2013.

⁸³² Governing Body 6 took place in Rome, Italy, from October 5-9 2015. The report and Resolutions were published on January 18, 2016. See IT/GB-6/15/Report.

⁸³³ All submissions are available on the Treaty website at <http://www.planttreaty.org/content/farmers-rights-submissions>

⁸³⁴ See for example the "Message from the Semences Paysannes (Farmers' seeds) networks to member governments of the Governing Body of the ITPGRFA", speaking in the name of 107 farmers' organization worldwide, with the support of 57 national, international, governmental and non-governmental institutions. Available at <http://www.foodsovereignty.org/message-from-the-farmers-seeds-networks-to-member-governments-of-the-governing-body-of-the-international-treaty-on-plant-genetic-resources-itpgrfa-meeting-in-rome-5-9-october-2015-2/>

⁸³⁵ The Joint Programme facilitates multi-stakeholder dialogue and networking to support the role of smallholder farmers as custodians of PGRFAs and innovators of food crops relevant for food security in addition to increasing awareness, and supporting the development of policies and legal measures implementing FRs. See *inter alia* information on the Treaty website at <http://www.planttreaty.org/sites/default/files/gb6i11e.pdf>

⁸³⁶ GFAR was established as a multi-stakeholder mechanism enabling all those around the world concerned with the generation, access and use of agricultural knowledge and innovation to joint efforts and address key global challenges. At Governing Body 4, Resolution 7/2011 launched collaboration with GFAR, which was further strengthened at Governing Body 5 through Resolutions 6/2013 and 7/2013. Since 2012, the Joint Programme supports developing countries, upon request, in their awareness, capacity and legal and policy development frameworks to improve the realization of FRs under the International Treaty at national and local levels. See <http://blog.gfara.net/2015/11/09/international-community-approves-joint-capacity-building-programme-on-farmers-rights/>

⁸³⁷ See Resolution 5/2015 at point 10.

systematic capacity-building programme similar to the one set by the UNEP-GEF for the implementation of the Biosafety Protocol⁸³⁸ in more than 100 developing countries.

(8) Interrelationship between Farmers' Rights and UPOV/WIPO

A further comment is made regarding the interrelationship between FRs and WIPO/UPOV.⁸³⁹ As the above analysis in Chapter 3 has demonstrated, international and national formal instruments promoting breeders' rights and dealing with seed release and commercialization (negatively) impact the informal seed networks and the maintenance of the common practice of farmers to save, exchange and use farm-saved seeds.⁸⁴⁰ The Governing Body has acknowledged the need to further understand the relationship between the Treaty MLS and UPOV / WIPO international instruments.⁸⁴¹ However, none of these two institutions have meaningfully taken the subject into their agendas.

(9) The importance of informal (farmers' seed) networks

Studies have shown the importance – including for the formal seed sector – of the informal seed networks in the conservation, sustainable use of and access to PGRFA.⁸⁴² Therefore, if countries want to conserve and sustainably use seeds to increase their resilience to climate change and reach food security, States will need to recognize and implement some

⁸³⁸ The UNEP-GEF collaborated on a worldwide capacity-building project to help more than 100 developing countries develop their national laws and policies regarding the management of genetically modified organisms (GMOs), and implement their policies at the national level. For a comprehensive summary of the project, see the UNEP-GEF study "Building Biosafety Capacity in Developing Countries: Experiences of the UNEP-GEF Project on Development of National Biosafety Frameworks" available at <http://www.unep.org/Biosafety/files/UNEPGEFstudyVersion170605.pdf> For other technical details on the project, funding and schedules to the programme, see <http://www.unep.org/biosafety/Documents/UNEP%20-%20GEF%20Global%20Project%20on%20Development%20of%20100%20National%20Biosafety%20Frameworks.pdf> I had the honour to participate in this project by advising 15 African countries in the development of their national laws and policies on GMOs. For an evaluation of this experience, see C. FRISON AND T. JOIE, 2006, "Elaboration D'une Reglementation De Biosecurite Par Certains Pays En Developpement: Experiences Dans La Mise En Oeuvre Du Protocole De Cartagena En Afrique De L'ouest", *op.cit.*; and C. FRISON AND T. JOIE, "Expériences Sur L'élaboration De Nouvelles Lois De Développement De La Biosécurité Et De La Biotechnologie: Perspectives De Réformes Légales En Afrique De L'ouest", *op. cit.*

⁸³⁹ When talking with WIPO representative and UPOV representative at Governing Body 6, the official statement was to say that there is no contradictions between the Treaty and the other international instruments. However, it was hard to obtain more information and reactions on concrete issues raised by lawyers on the difficult and possibly contradictory joint-implementation of the Treaty FRs obligations with WIPO/UPOV rules. A side note is made on the very close link, not to say collusion, between both institutions. Indeed, the WIPO Director General also holds the position of UPOV Secretary General, and the UPOV offices are hosted in the WIPO premises.

⁸⁴⁰ L. S. ANVAR, "Semences Et Droit. L'emprise D'un Modèle Économique Dominant Sur Une Règlementation Sectorielle,"; A. CHRISTINCK AND M. WALLOE TVEDT, 2015, ; N. LOUWAARS, "Seeds of Confusion. The Impact of Policies on Seed Systems,"; N. LOUWAARS, R. TRIPP, AND D. EATON, 2006, "Intellectual Property Rights in the Breeding Industry: Farmers' Interests", *Agricultural and rural development*, Vol., (14).

⁸⁴¹ See Resolution 10/2015, IT/GB-6/15/Res 10.

⁸⁴² S. MCGUIRE AND L. SPERLING, 2016 *op.cit.*; N. P. LOUWAARS AND W. S. DE BOEF, 2012, "Integrated Seed Sector Development in Africa: A Conceptual Framework for Creating Coherence between Practices, Programs, and Policies", *Journal of Crop Improvement*, Vol. 26, (1); C. J. ALMEKINDERS AND N. P. LOUWAARS, 2002 *op.cit.*; O. T. COOMES *et al.*, 2015 *op.cit.*

form of FRs to protect informal seed networks, from which farmers access more than 90 percent of the seeds they use.⁸⁴³ Much flexibility will be needed in maintaining the diversity of existing seed systems in order to create a mutually supportive framework,⁸⁴⁴ rather than the current international framework largely favoring breeders' rights and strict, formal variety release and seed certification legislations.

(10) Formal IPRs and seed legislations as impediments to seed conservation and sustainable use

According to Andersen, IPRs and seed legislations constitute “a serious hurdle to on-farm conservation and sustainable use of crop genetic diversity. To overcome this hurdle, shared norms should be developed on how seed laws can be designed so as to ensure adequate legal space for farmers in this regard. (...) It is necessary to find ways and means to ensure that farmers do not need to fear misappropriation. One challenge is to identify efficient measures to establish prior art for landraces and farmers' varieties, in order to ensure that these cannot be made subject to intellectual property rights. Another challenge is to include provisions in laws on intellectual property rights to ensure that no misappropriation takes place. Norms and rules in this regard need consideration.”⁸⁴⁵ In order to progress on this important matter, the Governing Body has requested Parties and other relevant stakeholders to submit studies on the interrelations of FRs with WIPO and UPOV. Eight submissions were handed to the Secretariat for the Sixth session of the Governing Body regarding this matter.⁸⁴⁶ Most submissions highlight the difficult cohabitation of both systems,⁸⁴⁷ and call for further

⁸⁴³ See S. MCGUIRE AND L. SPERLING, 2016 *op.cit.*

⁸⁴⁴ This could be done by implementing a diversity of rights under the concept of FRs to respond to the various needs and definitions of these rights by a diversity of stakeholders. Doing so would allow turning an impediment (the vague concept of FRs) into an advantage (the vagueness of the concept allows for creativity and flexibility in the necessary diverse recognition and implementation of FRs).

⁸⁴⁵ Input paper for the Second Meeting Ad Hoc Technical Committee on Sustainable Use of Plant Genetic Resources for Food and Agriculture Rome, Italy, 02/03/2015 - 03/03/2015 “Some Considerations On The Relation Between Farmers' Rights, Plant Breeders Rights And Legislation On Variety Release And Seed Distribution” Based on informal international consultations and research carried out within the framework of the Farmers' Rights Project of the Fridtjof Nansen Institute, Norway. Regine Andersen, p. 5-6. Available at <http://www.planttreaty.org/sites/default/files/Appendix13.pdf>

⁸⁴⁶ Submissions of information on interrelations with UPOV and WIPO have been presented at Governing Body 6 by seven civil society organisations and one by the European Seed Association. Available at <http://www.planttreaty.org/content/farmers-rights-submissions>

⁸⁴⁷ With the notable exception of the only submission handed by an international organization, which was sent by the European Seed Association (ESA) on 27.01.2015, and which identifies no actual or potential difficulties in implementing both the Treaty's FRs and UPOV obligations. The ESA submission states that “[w]ith regard to Article 9, the UPOV Convention clearly should not be scrutinized on how it supports the various elements of Farmers' Rights (such as for example protection of traditional knowledge or the participation of farmers in decision-making on matters concerning the conservation and sustainable use of PGRFA) for the simple reason that it is not a task for UPOV to deliver on such goals; the joint exercise should nevertheless reflect on areas where there are some clear interrelations.” Confirming the rather laconic response made by UPOV representative to my question on this matter during Governing Body 6 (see above note 837 in text point (9)), the

collaborative work to be done in order to promote a truly mutually supportive global system of FRs and breeders' rights. This is clearly not an easy task. It will need to overcome the almost thirty years of competition on the primacy of either concepts of breeder's rights or FRs.⁸⁴⁸ However, such a mutually supportive system is a desirable and feasible option, as Bertacchini has already envisaged in his PhD thesis,⁸⁴⁹ and as Correa has further examined regarding the *sui generis* option for plant variety protection in developing countries.⁸⁵⁰ What is missing now is that States need to effectively embrace the matter, which is mainly a political decision.

To conclude on the analysis of the implementation of Farmers' Rights, it is clear that the lack of formal recognition of these rights at the international level – in contrast with the strong recognition of IPRs – create an imbalance of rights which prevents the Treaty from functioning effectively. By denying a formal recognition of rights protecting the present role of farmers (in breeding innovation and in producing the planet's food) at the same level of IPRs, the effectiveness of the Treaty is imperiled. However, throughout every Governing Body Resolution on FRs, the subject has been dug further and further down to concrete matters⁸⁵¹ in order to render the abstract and vague obligations under Article 9 more tangible. Every step taken by Contracting Parties individually, or collectively through the Governing Body, and by other institutions and stakeholders upon the Governing Body's request, contributes to clarifying States' conduct in implementing FRs and the outcome to be reached. *De facto*, FRs become more substantial, more specific, and therefore more easily implementable, even though there is no agreement on one definition as to what is covered under the concept of

arguments presented by the other seven submissions are simply ignored by UPOV and WIPO. Moreover, maintaining this issue as a question to be dealt with at the national level, denotes a clear will to avoid any in-depth collaborative work on the subject at the international level, denying the clear international aspects of the recognition and implementation of both rights systems. Available at http://www.planttreaty.org/sites/default/files/ESA_15.0015.1.pdf

⁸⁴⁸ M. HALEWOOD, 2014, "International Efforts to Pool and Conserve Crop Genetic Resources in Times of Radical Legal Change", *Intellectual Property Rights: Legal and Economic Challenges for Development*, Oxford University press, UK, Vol. at p. 300.

⁸⁴⁹ Bertacchini has analysed the encroachment of IPRs and FRs from an economic perspective. He proposes the promotion of a system where seeds are managed as a "semicommons" in order to answer the needs of both formal and informal seed systems. See E. E. BERTACCHINI, "Property Rights and Plant Genetic Resources for Food and Agriculture," *supra*. Other studies have examined potential ways forward for a mutually supportive implementation of the Treaty with current seed and IPRs legislations. See *inter alia* R. BOCCI *et al.*, *op. cit.*; C. CHIAROLLA AND S. JUNG CURT, "Outsanding Issues on Access and Benefit Sharing under the Multilateral System of the International Treaty on Plant Genetic Resources for Food and Agriculture", 2011. For a concrete example of how

⁸⁵⁰ C. M. CORREA, "Plant Variety Protection in Developing Countries: A Tool for Designing a Sui Generis Plant Variety Protection System: An Alternative to UPOV 1991,"

⁸⁵¹ Indeed, Contracting Parties have *inter alia* linked the implementation of Article 9 with the implementation of Article 5 and 6, which are very specific and concrete measures. Furthermore, the establishment of a collaboration with UPOV and WIPO to identify possible areas of interrelations with FRs also clarifies the matter and contributes to rendering the conduct and outcome of states much more specific and clear.

FRs.⁸⁵² Once this stage is reached by a majority of Member States, and only thereafter, will Contracting Parties be able to move on to the enforcement phase by implementing a framework, along with concrete tools and mechanisms, to verify that the “clear conduct” is undertaken and that the “clear outcome” is achieved to fully implement FRs. Let us see what the next steps will be, and in particular where the outcomes of the forthcoming farmers’ consultation will lead to.⁸⁵³

Section 4. Facilitated access to PGRFA

The fourth theme addressed in the Treaty analysis is the facilitated access to PGRFA, set up by the Multilateral System of access and benefit-sharing (MLS). In Section 1, it was shown that using seeds sustainably was a crucial element for their conservation and for reaching food security. The compulsory prior step to this process is accessing the necessary genetic material. Access to Annex I list of crops and forages is facilitated for a range of specific uses, and is not dependent on property or ownership issues. Several Treaty provisions deal with the facilitated access concept: Articles 1, 10, 12, 13.1 and 15 and the obligations deriving from the Standard Material Transfer Agreement (SMTA). In this section, a general presentation of the facilitated access concept (§1) will be followed by an assessment of its implementation (§2).

§ 1 Defining the Multilateral System of access and benefit-sharing

The MLS functions as a virtual common pool of PGRFA, for which access is facilitated, and which triggers benefit-sharing obligations upon their use.⁸⁵⁴ The Treaty (Article 10-13), complemented by the provisions of the SMTA, establish the rules regarding the material included in the MLS, the terms and conditions of its access and use, and how (monetary and non-monetary) benefits shall be shared. Managing access and benefit-sharing in a multilateral

⁸⁵² As explained above note 842, the vagueness of the concept of FRs could become an advantage in that it clearly allows for the recognition and implementation of a diversity of rights thereby responding to the various needs of a diversity of stakeholders.

⁸⁵³ As requested by the Governing Body, to follow up the implementation of Resolution 5/2015, the Secretariat has prepared an electronic survey which is aimed to gather views, perceptions, options and approaches and possible strategies and options for the implementation of Farmers’ Rights. The survey is also aimed to gather inputs for the preparation of a study on lessons learned. The results and outcomes of the electronic survey will be presented at the Global Consultation of Farmers’ Rights in September 2016, hosted and organized by the Governments of Indonesia and Norway.

⁸⁵⁴ For an explanation of the MLS see D. MANZELLA, "The Design and Mechanics of the Multilateral System of Access and Benefit Sharing", in M. HALEWOOD, I.L. NORIEGA, AND S. LOUAFI (eds), *Crop Genetic Resources as a Global Commons*, Oxon, earthscan by Routledge - Bioversity International, 2013, at pp. 150-163; for a complementary analysis see C. STANNARD, "The Multilateral System of Access and Benefit Sharing: Could It Have Been Constructed Another Way?", *ibid.*(eds), Earthscan by Routledge - Bioversity International, , at pp. 243-264.

way and providing for a facilitated access to many important crops is considered as a major benefit in itself (Article 13.1). Under the MLS, access is free (or under limited processing and shipping fees) and facilitated through the use of the SMTA.⁸⁵⁵ The fact that no contract needs to be negotiated between providers and recipients puts every party on an equal footing, and constitutes a major achievement in the exchange of genetic resources. For now, the CGIAR has been the most important provider of material on the basis of the SMTA, mainly to developing countries.

A. States' sovereign rights over PGRFA

Rather than the "Multilateral System of Access and Benefit-sharing", Article 10 should be entitled "National Sovereignty over PGRFA", as State's sovereign rights over their own PGRFA is the real subject matter of this provision. Following the adoption of the CBD, access to genetic resources has been hooked on to States sovereign rights to control the use of "their" genetic resources. Article 10 reads as follow:

"10.1 In their relationships with other States, the Contracting Parties recognize the *sovereign rights of States over their own plant genetic resources for food and agriculture*, including that *the authority to determine access to those resources rests with national governments and is subject to national legislation*.

10.2 *In the exercise of their sovereign rights, the Contracting Parties agree to establish a multilateral system, which is efficient, effective, and transparent, both to facilitate access to plant genetic resources for food and agriculture, and to share, in a fair and equitable way, the benefits arising from the utilization of these resources, on a complementary and mutually reinforcing basis.*" (Emphasis added)

(1) States' sovereign rights as a prerequisite for access?

With these provisions, we are far from the "heritage of mankind" principle and the "unrestricted availability of germplasm" promoted in the IU.⁸⁵⁶ Rather, the concept of

⁸⁵⁵ Although providing material to the recipient under prompt and free access conditions for all PGRFA might sometimes be dependent on duplication costs and time efforts in the gene bank.

⁸⁵⁶ See for example IU Articles 1 and 5; FAO Conference Resolution 8/83; FAO Conference Report 1985 § 294; FAO Conference Report 1989 § 105. Halewood traces the evolution of this concept in a historical analysis of the IU: M. HALEWOOD, "International Efforts to Pool and Conserve Crop Genetic Resources in Times of Radical Legal Change", *op. cit.* at pp. 301-307.

sovereignty over genetic resources prevails and is clearly reaffirmed.⁸⁵⁷ Indeed, this Article derives directly from the CBD, which confirmed States rights to exploit their genetic resources,⁸⁵⁸ along the lines of the *Rio Declaration on Environment and Development*⁸⁵⁹ and the *Stockholm Declaration on the Human Environment*.⁸⁶⁰ Thereby, States control the access to the genetic resources under their jurisdiction. Correa confirms this view when stating that this “principle means that a state has the power and jurisdiction to establish the manner in which the resources will be shared and used as well as whether they are the object of property rights (private or public) and the conditions under which this may occur.”⁸⁶¹

In order to match the primacy of the sovereign rights⁸⁶² principle with the idea of creating a common pool of seeds (to be accessed without any systematic prior informed consent⁸⁶³ by Contracting Parties), negotiators proposed to “twist” the principle. Correa explains that “the recognition of sovereign rights of Contracting Parties over their (PGRFA) (...) expresses deference in favour of the decisions that the party may adopt, even relating to access to these resources, as provided for in Article 10.1 of the Treaty.”⁸⁶⁴ By stating in Article 10.2 that the MLS is established through the exercise of States’ sovereign rights, Contracting Parties turned around the necessity to obtain prior informed consent for each request to access genetic resources on a State’s territory (which is the rule under CBD obligations). By

⁸⁵⁷ Nonetheless, Halewood insists that the “paradigm shift from “PGRFA as heritage of Mankind” to “PGRFA as subject to national sovereignty and intellectual property rights” in the context of the Commission’s implementation of the International Undertaking did not deter efforts within the Commission to create policy to support the collective pooling, conservation and sharing of genetic resources on an international scale. The Parties continued their efforts in this regard, despite the sea-change in the underlying legal status of PGRFA.” M. HALEWOOD, “International Efforts to Pool and Conserve Crop Genetic Resources in Times of Radical Legal Change”, *op. cit.* at p. 305.

⁸⁵⁸ CBD Article 3.

⁸⁵⁹ Principle 2 affirms that “States have, in accordance with the Charter of the United Nations and the principles of international law, the *sovereign right to exploit their own resources* pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.” (Emphasis added) *Rio Declaration on Environment and Development*, adopted in Rio de Janeiro on 14 June 1992, Report of the United Nations Conference on Environment and Development, UN Doc. A/CONF.151/6/Rev.1 (1992), 31 ILM 874 (1992).

⁸⁶⁰ Principle 21, Stockholm Declaration on the Human Environment, adopted in Stockholm on 16 June 1972, Report of the United Nations Conference on Environment and Development UN Doc. A/CONF.48/14, 11 ILM 1461 (1972).

⁸⁶¹ C. M. CORREA, “Plant Genetic Resources under the Management and Control of the Contracting Parties and in the Public Domain”, *op. cit.* at p. 182.

⁸⁶² For an enlightening examination of the general concept of sovereignty in relation to international law and politics, see T. E. AALBERTS, 2012, “*Constructing Sovereignty between Politics and Law*”, Routledge For a more specific study on the various definitions of the concept see W. P. NAGAN AND C. HAMMER, 2004, “The Changing Character of Sovereignty in International Law and International Relations”, *Columbia Journal of Transnational Law*, Vol. 43, (1) at pp. 141-187.

⁸⁶³ Prior informed consent (PIC) is an obligation deriving from Article 15.5 of the Convention on Biological Diversity which states that “[a]ccess to genetic resources shall be subject to prior informed consent of the Contracting Party providing such resources, unless otherwise determined by that Party.”

⁸⁶⁴ C. M. CORREA, “Plant Genetic Resources under the Management and Control of the Contracting Parties and in the Public Domain”, *op. cit.* at p. 182.

doing so, unrestricted availability of germplasm was ambioned without renouncing to the primacy of national sovereignty.⁸⁶⁵

(2) A contradiction with the intrinsic logic of PGRFA conservation and use?

However creative this solution might have been, it has only built around the difficulties that the sovereign rights principle entails on access to genetic resources, i.e. enclosure due to appropriation. Furthermore, it has not explicitly acknowledged the necessity to creating a mechanism where common management adapted to the resource would prevail. Although clearly reflecting a majority of the Contracting Parties' intention, this strong formal recognition of sovereign rights as a founding principle of the MLS is, in essence, contradictory with the intrinsic logic of PGRFA conservation and sustainable use and with the founding principle of unrestricted availability of seeds under the IU. I believe that this constitutes a fundamental mistake, which might explain why the Treaty does not function well and why the Contracting Parties have difficulties in implementing the MLS obligations.

B. The facilitated access to PGRFA in the MLS

Articles 12 and 13 constitute the core of the MLS. They define the major obligations Contracting Parties have to fulfil in order to create an effective MLS. These provisions contain two types of obligations. Some provisions are rather self-standing obligations (e.g. Article 12.3(a) access shall be provided only for research, breeding and research for food and agriculture activities), easy to address immediately and which do not require specific actions to be taken by Contracting Parties. On the contrary, other provisions will require Contracting Parties to develop further operationalizing tools and instruments to be effective. The latter provisions necessarily require further decisions by the Governing Body and actions to be taken by Contracting Parties in order to be implemented (i.e. the creation of a specific mechanism, such as the SMTA, the Third Party Beneficiary, the compliance mechanism or the online reporting system).

This “waterfall” construction process entails that the Treaty was not yet fully operational when it entered into force in June 2004, at least from the viewpoint of its final users (the

⁸⁶⁵ For a detailed account of the evolution of these concepts within the FAO Commission on Plant Genetic Resources throughout the IU and Treaty negotiation, see M. HALEWOOD, 2014, "International Efforts to Pool and Conserve Crop Genetic Resources in Times of Radical Legal Change", *op.cit.* at pp. 301-307.

providers and recipients of PGRFA). The Treaty undeniably entered into force in June 2004, according to international law rules. From the institutional point of view, the Treaty has been implemented since that date quite effectively, with the convening of regular meetings of the Governing Body,⁸⁶⁶ where numerous decisions have been taken in order to operationalize the Treaty implementation. However, it is argued that the Treaty only really became operational for its end-users once all its major tools were designed, adopted and functioning; and this did not happen before the years 2011-2013 in my view.⁸⁶⁷

(1) The SMTA: core tool of the MLS

The Governing Body of the Treaty has adopted a specific contract, i.e. Standard Material Transfer Agreement, in order to facilitate the exchange of PGRFA material through its MLS. The SMTA was designed in three steps. First, an “Expert Group on the Terms of the SMTA” chaired by Lim Eng Siam met in Brussels in October 2004. The Expert Group listed possible options and elements for the SMTA, to be presented at the Interim Committee of the Treaty (i.e. the FAO CGRFA). Then, a Contact Group was created in November 2004, where parties to the CGRFA refined the first draft text.⁸⁶⁸ The third step occurred when this draft was further negotiated and adopted at the first Governing Body of the Treaty in June 2006.⁸⁶⁹

The SMTA is a contract between two parties (a provider and a recipient) defining the terms and conditions for the transfer to take place. As a contract, the SMTA operates at the level of private contract law, rather than international law (even if one of the parties, or both, are public entities). On this basis, the SMTA imposes rights and obligations only to its parties. However, there is a major difference between the SMTA and a “normal” material transfer agreement: the origin of the material transferred is the MLS and the destination of the benefits is the MLS (through the BSF) rather than the provider of the material. There is therefore a tripartite relation between the usual provider and recipient and the MLS as third virtual “entity”. In order to recognize this third virtual entity, the SMTA has created the “Third Party Beneficiary” (3PB), as formal representative of the MLS. The 3PB is explained in a section below.⁸⁷⁰

⁸⁶⁶ Not to mention all the meetings of all sub-organs (working groups, ad hoc working groups, contact groups, experts groups, etc.) designated by the Governing Body to exercise specific tasks during the Governing Body inter-sessional periods.

⁸⁶⁷ See below §2 of the current section.

⁸⁶⁸ CGRFA/IC/CG-SMTA-1/05/2; CGRFA/IC/CG-SMTA-1/05/REP; CGRFA/IC/CG-SMTA-2/06/REP.

⁸⁶⁹ Resolution 2/2006; IT/GB-1/06/Report.

⁸⁷⁰ See Section 7 below.

(2) Facilitated access to Annex I PGRFA

This SMTA is used by all providers and recipients willing to exchange material under the scope of the MLS. This scheme is applicable for PGRFA covered by the MLS, that is to say material listed in the Annex I of the Treaty⁸⁷¹ and all PGRFA held in trust by the CGIAR, but also in the case where the contracting parties (i.e. providers and recipients) agree to use the SMTA for non-Annex I PGRFA, or if a member state decides to impose at the national level the use of the SMTA for all PGRFA under his control and management.⁸⁷² The purpose of the access must remain for research, breeding, and training for food and agriculture (Article 6.1 SMTA). When PGRFA are accessed under the MLS (including after being developed further), they are to be made available by the recipients for further accesses under the terms of the SMTA.⁸⁷³ The following table lists the rights and obligations of providers and recipients relating to facilitated access.

Facilitated Access	Rights and obligations of	
	Provider SMTA art. 5	Recipient SMTA art. 6
Only for purposes of research, breeding, training for F&A		x
Rapid, free of charge/ not exceeding minimal costs	X	
No tracking of individual accessions (no PIC, MAT)	X	
Access to products under development and material protected by IPRs	X	
No IPRs which limit facilitated access to the PGRFA, or its genetic parts or components, “in the form received”		x
Third party transfers under conditions of SMTA		x
Information obligations: MTAs entered into, notification of subsequent transfers	X	x

Table 4.2: Facilitated access rights and obligations of SMTA contracting parties⁸⁷⁴

⁸⁷¹ See Appendix 1 of the online PDF file of this thesis, for the list of PGRFA, available on my ResearchGate profile.

⁸⁷² Germany and The Netherland have done so.

⁸⁷³ SMTA, Article 6.4.

⁸⁷⁴ This table is inspired from a presentation by Franziska Wolff from the Öko-Institut e.V for the “European Regional Meeting on an Internationally Recognized Certificate of Origin/ Source/ Legal Provenance” which took place on the Isle of Vilm, Germany, 26 October 2006.

(a) Annex I material transfers for other purposes

A note is made regarding transfers of Annex I material which purpose is not facilitated access for research, breeding, training for food and agriculture. In the case of transfer of material for purposes such as black-box safety duplication, or for strict testing situations, the use of the SMTA is not necessary. In these cases, a much simpler MTA may be used and the Contracting Parties are free to determine the legal framework applicable to this transfer. The SMTA can also not be used for transfers of material for chemical, pharmaceutical and/or other non-food/feed industrial uses as specified in the SMTA article 6.1. For these uses, facilitated access is not ensured and the general rules of the CBD, and where applicable, the Nagoya protocol, should be applied.⁸⁷⁵

(b) Facilitated access triggers benefit-sharing

When a product that incorporates material accessed from the MLS is commercialized, the recipient of the material originating from the MLS, must pay an equitable share of the commercial benefits to the Benefit-sharing Fund under the control of the Treaty's Governing Body.⁸⁷⁶ This obligation is only triggered if further access to the material commercialized is restricted by the recipient, for instance through IPRs. Payment is otherwise voluntary.

(c) Exchanges with non-Contracting Parties

Finally, the exchange of material between Contracting Parties and non-Contracting Parties can be assimilated to transactions under the Treaty MLS. Indeed, if a recipient from a non-member country wants to access material from the MLS for research, breeding, training for food and agriculture, he has to agree to the SMTA. MLS material can only be transferred with the SMTA for these purposes (Article 6.4 SMTA), therefore the contract is submitted to the Treaty provisions whether the recipient of the MTA is from a member country or not.

On the other hand, if a provider from a non-member country provides access to PGRFA to a recipient in a Treaty Contracting Party, then he is free to transfer the material under whatever contract he chooses (submitted to its national legislation), even if the material is a duplicate from material covered by the MLS. It is so, as long as the material does not originate

⁸⁷⁵ CBD Article 15 and Nagoya Protocol Article 6.

⁸⁷⁶ Treaty Article 13.2d(ii).

from the MLS. This is the major means for a recipient (i.e. the seed industry) to avoid using MLS material in order to avoid the benefit-sharing related obligations.

C. Intellectual property rights and the Multilateral System

Article 12.3(d) – one of the most sensitive provision of the MLS – requires that recipients shall not claim IPRs that would limit facilitated access to the PGRFA or “their genetic parts and components, in the form received from the Multilateral System.”⁸⁷⁷ Besides, Article 12.3 (f) recognises existing IPRs.⁸⁷⁸ These provisions can be interpreted in very different manners. Some parties fear that recipients will patent their products and keep them outside the MLS.⁸⁷⁹ In order for IPRs to support the Treaty’s objectives, IPRs should not limit the facilitated access to PGRFA in the MLS and IPRs should be a means to capture value from the development and commercialization resulting from the facilitated access to crops in the MLS. The Treaty specifies that Annex I materials that are “under the management and control of the Contracting Parties and in the public domain” are included in the MLS. If, as a result of IPRs on PGRFA, the latter is not in the public domain, then one of the conditions for being automatically included in the MLS is not satisfied. That is not to say that IPRs owners could not elect to place their materials in the MLS; they could. Further, if a public research organization elected to seek patent protection for a new PGRFA, it would not be automatically included in the Multilateral System. In this way, IPRs can function to limit what goes into the MLS.

(1) IPRs and materials received from the Multilateral System

The Treaty states that “[r]ecipients shall not claim any intellectual property or other rights that limit the facilitated access to the plant genetic resources for food and agriculture, or their genetic parts or components, in the form received from the Multilateral System.”⁸⁸⁰ The

⁸⁷⁷ Plant Treaty Article 12.3(d). (d) “Recipients shall not claim any intellectual property or other rights that limit the facilitated access to the plant genetic resources for food and agriculture, or their genetic parts or components, in the form received from the Multilateral System.” The vagueness of the phrase “genetic parts and components, in the form received...” provides a major definitional challenge for the parties. Clarification of this and other terms are, however, some of the priority issues to be dealt with by the Governing Body of the Treaty during its initial meetings.

⁸⁷⁸ “Access to plant genetic resources for food and agriculture protected by intellectual and other property rights shall be consistent with relevant international agreements, and with relevant national laws.”

⁸⁷⁹ This is addressed below in point 3. See also L. R. HEFLER, “Using Intellectual Property Rights to Preserve the Global Genetic Commons: The Itppgrfa”, (eds),

⁸⁸⁰ Plant Treaty Article 12.3(d). The SMTA reproduces similar but not exact terminology in its art. 6.2 “The Recipient shall not claim any intellectual property or other rights that limit the facilitated access to the Material provided under this Agreement, or its genetic parts or components, in the form received from the Multilateral System”. These terms may be interpreted in different ways and have not been clearly defined yet by the Governing Body of the Treaty nor by a settlement of dispute decision. See Helfer, L.R., (2005) “Using IPRs to preserve the global genetic commons: The International Treaty on Plant Genetic

definition of “their genetic parts and components” has been the topic of difficult discussions and did not come to an agreed conclusion.⁸⁸¹ The term was therefore left vague and undefined. In order to clarify their position on the interpretation of these terms, several countries added declarations made upon their ratification / accession / approval to the Treaty. These declarations state that they interpret “Article 12.3.d of the [Treaty] as recognising that [PGRFA] or their genetic parts or components which have undergone innovation may be the subject of [IPRs] provided that the criteria relating to such rights are met.”⁸⁸²

It is clear that a recipient cannot take IPRs that prevent others from obtaining, from the MLS, a PGRFA in the same form that it was originally sent to the first recipient, for example, as a seed or a cutting (art. 6.2 SMTA). It is still not clear however, if a recipient can seek IPRs over isolated parts and components of those seeds or cuttings from materials within the MLS, such as genes. In any case and importantly, independently of the outcome of this debate, such property rights must not prevent future recipients from obtaining the same seeds or cuttings.⁸⁸³ In the future, a Governing Body decision or a dispute settlement decision might provide a common interpretation on the terms “parts and components, in the form received”. For now, it is considered that IPRs do not hinder too much the facilitated exchange of PGRFA, although voices heard from developing countries in particular put forth that IPRs limit the efficient implementation of the MLS.⁸⁸⁴

(2) IPRs and mandatory financial benefit sharing

The Treaty does not prevent recipients from seeking IPRs over improved products that incorporates materials received from the multilateral system. However, when a protected

Resources for Food and Agriculture”, in *International Public Goods and Transfer of Technology Under a Globalized Intellectual Property Regime*, eds. K.E. Maskus and J. H. Reichman, CUP, pp. 217-224.

⁸⁸¹ Japan had initially refused to sign the Treaty because of this clause. Eventually Japan accessed the Treaty in 2013.

⁸⁸² Austria, Belgium, Denmark, the European Union, Finland, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Poland, Spain, Sweden and the United Kingdom made such declaration. See the official list of Contracting Parties elaborated by the Legal Office of FAO (last update 17 February 2016), available at http://www.fao.org/fileadmin/user_upload/legal/docs/033s-e.pdf

⁸⁸³ For a detailed analysis, see Halewood, M. and K. Nnadozie (2008) “Giving priority to the Commons: the international Treaty on Plant genetic Resources for Food and Agriculture”, in *The Future Control of Food*, eds. Tansey, G. and T. Rajotte, Earthscan, London pp. 115-140. See in particular, M. Halewood, Box 6.4 page 129.

⁸⁸⁴ C. FRISON, F. LÓPEZ, AND J. T. ESQUINAS-ALCÁZAR, “General Conclusions: Summary of Stakeholders’ Views and Suggestions to Cope with the Challenges in the Implementation of the International Treaty on Plant Genetic Resources for Food and Agriculture”, in C. FRISON, F. LÓPEZ, AND J.T. ESQUINAS-ALCÁZAR (eds), *Plant Genetic Resources and Food Security. Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*, Oxon, Earthscan and Bioversity International, 2011; see also G. MWILA, “From Negotiations to Implementation: Global Review of Achievements, Bottlenecks and Opportunities for the Treaty in General and for the Multilateral System in Particular”, in M. HALEWOOD, I. LÓPEZ NORIEGA, AND S. LOUAFI (eds), *Crop Genetic Resources as a Global Commons: Challenges in International Law and Governance*, Oxon, Routledge and Bioversity International, 2013.

product is sold for direct commercialization it is no longer subject to the obligation to provide facilitated access for research and breeding. If the material is restricted or protected in a way that does not allow the recipient to use it for further breeding and research, the recipient has the obligation to share a percentage of the commercial benefits back to the MLS (see below). The restriction may be technological or legal, such as for example, with a patent.⁸⁸⁵ The IPR provision of the SMTA was designed for the MLS to receive funds in order to be able to implement its plans and programmes under the Treaty (Article 18.4(a)).

Given that UPOV-compliant Plant Breeders Rights (PBRs) allow third parties to use protected materials for further research and breeding (to the extent that this provision is transposed in national laws), they would not trigger the Treaty's mandatory benefit-sharing provision. On the other hand, it is generally understood that patents would trigger the benefit-sharing clause. Although the Treaty is silent about this distinction, it has been an important element of the negotiation regarding benefit-sharing. Indeed, there has been a strong pressure by the seed industry to make that distinction. One could consider it as a compensation for the unavailability for further research, breeding and training for food and agriculture of the new product developed with MLS material, which access is restricted through some forms of IPRs and/or technological means. Or one could consider it as a means of indirectly supporting or endorsing UPOV-compliant PBRs rather than patents, given the negotiators' appreciation of the long tradition of keeping PGRFA available for research and breeding.

(3) SMTA viral clause applicable to transfers of material protected with IPRs

It should also be noted that, when a recipient develops a product based on material originating from the MLS for which IPRs are granted, and when he wants to assign these IPRs to a third party, this material remains in the MLS as he has the obligation to transfer the benefit-sharing obligation to this third party through the use of an SMTA (Article 6.10 SMTA).

⁸⁸⁵ In the SMTA Article 2, a product is considered to be available without restriction to others for further research and breeding when it is available for research and breeding without any legal or contractual obligations, or technological restrictions that would preclude using it in the manner specified in the Treaty.

(4) Can material be taken out of the MLS?

Patents may limit what enters the MLS but not alter the material already included in the system as long as it is in the system. However, material may be taken out of the MLS in two different ways. First, anyone can simply decide to stop conserving an accession that is in the MLS. There is no obligation under the Treaty to continue to conserve PGRFA material. If they happen to be the only organization or country holding that accession, then the material will be definitely out of the MLS, unless someone else takes over the responsibility of conserving that accession. In this case, the material would not be available for patenting as it would no longer physically exist. Second, a member State may step out of the Treaty.⁸⁸⁶ In this case, material from that country that was in the MLS and which has not been transferred to another country would also leave the MLS, and would then be available for patenting.

§ 2 Implementing the facilitated access to the Multilateral System

The implementation of the MLS has certainly concentrated most of Contracting Parties' attention since the entry into force of the Treaty (together with the Funding Strategy). Since June 2004, Contracting Parties have been busy creating all the necessary mechanisms to operationalize the Treaty, and implementing all self-standing obligations from the Treaty. To facilitate the understanding of this process, the analysis is divided into two phases. Phase one focuses on the period 2004-2013, where Contracting Parties designed and adopted the various tools and instruments necessary to operationalize the implementation of the Treaty obligations. At the end of this phase, Contracting Parties came to the observation that the MLS was not fulfilling their expectations in terms of facilitated access and in terms of financial outcomes for benefit-sharing activities.⁸⁸⁷ As a reaction to this conclusion, Contracting Parties initiated a review/modification process of the operationalizing tools in order to “increase user-based payments and contributions to the [BSF]”, and “enhance the functioning of the [MLS]”.⁸⁸⁸ This is covered under Phase Two, from 2013 to nowadays.

⁸⁸⁶ Plant Treaty Article 32 stating that Contracting Parties may withdraw from the Treaty under specific (administrative) conditions. However, this situation seems unlikely to occur.

⁸⁸⁷ Research Study 9 “Twenty five years of international exchanges of plant genetic resources facilitated by the CGIAR genebanks: a case study on international interdependence” Authors: Gea Galluzzi, Michael Halewood, Isabel Lopez Noriega and Ronnie Vernooij, p. 5.

⁸⁸⁸ Treaty Resolution 1/2015, § 2 and Point 4.

A. Implementation Phase One 2004-2013

During the first period, Contracting Parties devoted their efforts to building an efficient MLS. Through numerous Governing Body Resolutions,⁸⁸⁹ they adopted the necessary tools and instruments, such as the SMTA,⁸⁹⁰ the Third Party Beneficiary entity,⁸⁹¹ the mechanism to promote compliance and address issues of non-compliance,⁸⁹² as well as the Funding Strategy⁸⁹³ and the Benefit-sharing Fund, etc. to fulfil their obligations. This busy process was facilitated by the work of the secretariat of the Treaty and its Secretary, who organized six Governing Body meetings and numerous inter-sessional meetings of various working groups/contact groups/*ad hoc* working groups, experts groups, etc. In the following subsection, various aspects of this implementation process will be analysed, where a clear contrast will appear between the very efficient institutional functioning of the Treaty (1), and the actual (much more difficult) implementation of the MLS obligations by Contracting Parties. The assessment of the MLS implementation will also cover an evaluation of the collections and accessions in the MLS (2), as well as data on the use of SMTAs and flows of PGRFA (3)

(1) The institutional functioning of the Treaty

As of 29 June 2004, 50 states were bound by the Treaty obligations. By the end of 2006, the number of Contracting Parties reached 106. Since 2007, approximately three countries become party to the Treaty every year. This has raised the number of members to 140 on 30 June 2016, confirming the universal dimension of the Treaty. Since the First Governing Body in 2006, Contracting Parties have been very active in crafting the legal and technical apparatus to apply MLS obligations. This dynamism transpires from the many convenings that took place in order to allow members to first identify and discuss their needs, and then to negotiate and adopt the resulting instruments and mechanisms.

The Secretariat of the Treaty and its Secretary, Shakeel Bhatti, have played a crucial role in the efficiency of the administrative process. Governing Body meetings have systematically been held within the two-year schedule (Article 19.9), and numerous inter-sessional meetings were organized (upon availability of funds) in order to provide negotiators with the necessary

⁸⁸⁹ The list of all Governing Body Resolutions and other documents can be found in the bibliography of this thesis.

⁸⁹⁰ Resolution 2/2006.

⁸⁹¹ Resolutions 5/2009; 5/2011; and 9/2013.

⁸⁹² Resolutions 3/2006; 1/2007; 2/2009; 2/2011; 9/2013; and 6/2015.

⁸⁹³ Resolutions 1/2006; 3/2009; 3/2011; 2/2013; and 2/2015.

time and space to address the issues under discussion and be ready to negotiate and adopt measures during the Governing Body meetings. While negotiations have not necessarily always been easy, the negotiating “mood” has most of the time remained positive and constructive.

Notwithstanding this rather effective institutional strategy and encouraging atmosphere, the implementation of Treaty obligations has been more difficult than initially hoped for. The following sub-sections identify several aspects of this challenging process.

(2) Collections and accessions in the MLS

The scope of the Treaty’s MLS – i.e. material listed in Annex I for the uses prescribed by the Treaty – is a reflection of the political climate during which the Treaty was negotiated, and which, in many ways, prevails until the present day. It is clear from the history of the negotiations, and the way in which the list of materials included in the MLS fluctuated over the negotiations,⁸⁹⁴ that the Treaty might never have been finalised if some delegations insisted on the MLS covering *all* PGRFA for *all* purposes.⁸⁹⁵ This being said, one should not underestimate the theoretical breadth of what is included in Annex I. As a matter of fact, all PGRFA, from the moment they are part of the Annex I list and under the management and control of the Contracting Parties, and in the public domain, are “automatically” included in the MLS without any declaration or notification. It is clear that the Treaty provisions impose no specific procedure to include material in the MLS. This is what happens in theory. In reality however, “actual use of material depends on information being made public about what materials are available and where they may be accessed, along with related non-confidential information.”⁸⁹⁶ Although no specific procedure is explicitly requested by the Treaty,⁸⁹⁷ the concrete need to know what accession is part of the MLS constitutes a logical prerequisite for users to be able to identify potential material to be accessed.

To this end, the Treaty Secretariat has made available specific tools to help Contracting Parties in this process of identification. First, a “Letter of Notification of Inclusion of Material in

⁸⁹⁴ E. Lim and M. Halewood, (2008) “A Short History of the Annex I List”, in G. Tansey and T. Rajotte (eds), *The Future Control of Food* (London: Earthscan, 2008), Annex 3, at p. 249.

⁸⁹⁵ C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., “*Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*”, .

⁸⁹⁶ IT/AC-SMTA-MLS 1/10/Report, p. 11; IT/AC-SMTA-2 MLS 2/10/Report point 12, p. 2; IT/AC-SMTA-MLS 3/12/Report points 12 and 15; IT/AC-SMTA-MLS 4/12/Report point 9.

⁸⁹⁷ On the contrary, it is made explicit that the procedure should be as simple as possible, with not tracking obligation. See Treaty Article 12.3(b) and SMTA 5(a).

the Multilateral System” can be downloaded on the Treaty website.⁸⁹⁸ “Notification to the Secretary, or an equivalent public statement, creates a legitimate expectation on the part of potential recipients that the materials in question will be made available under an SMTA, on request.”⁸⁹⁹ The Treaty Secretariat also established a website to publish the notifications of material included in the MLS. In some cases, these notifications contain a link to web portals where the samples are documented or where the material can be ordered on-line. Following a recommendation of the Ad Hoc Advisory Committee on the SMTA and the MLS⁹⁰⁰, a “Handbook to the Implementation of the Multilateral System of the International Treaty on Plant Genetic Resources for Food and Agriculture”⁹⁰¹ was drafted in order to help countries implement their obligations, including that of including PGRFA in the MLS. The Advisory Committee also drafted a “Business Plan of the Governing Body”,⁹⁰² which Target 1 is “Operating and Developing the Multilateral System.” The very first goal of Target 1 is “[c]ompleting the establishment of the core systems and processes of the Multilateral System” by progressing on the “Identification, Inclusion of, and facilitation of access to Material in the Multilateral System, including through the development of relevant information technology tools.”⁹⁰³

In the present sub-section, an assessment of what PGRFA is concretely included in the MLS is made. This covers the accessions designated by Contracting Parties, by the CGIAR Centres and other international organisations, by other natural and legal persons, as well as the material resulting from BSF projects and included in the MLS.

(a) Inclusion by Contracting Parties

One of the first things Contracting Parties were invited to do is to “designate” to the Treaty Secretariat the PGRFA held under their management and control and in the public domain, in order for them to be effectively “automatically” part of the MLS.⁹⁰⁴ The *Ad Hoc* Advisory Committee on the SMTA and the MLS established at the Third Session of the Governing Body,⁹⁰⁵ consisting of representatives from Contracting Parties and experts, made

⁸⁹⁸ <http://www.planttreaty.org/inclusions>

⁸⁹⁹ IT/AC-SMTA-MLS 2/10/Report at p. 5.

⁹⁰⁰ IT/AC-SMTA-MLS 2/10/Report at p. 9, and in particular point 65.

⁹⁰¹ IT/AC-SMTA-MLS 3/12/Inf.22/Inf.2.

⁹⁰² IT/AC-SMTA-MLS 2/10/Report, Appendix 8, pp. 35-47.

⁹⁰³ IT/AC-SMTA-MLS 2/10/Report at p. 35

⁹⁰⁴ IT/GB-2/07/Report at point 65. See also “Progress in the inclusion of plant genetic resources for food and agriculture in the Multilateral System”, document IT/GB-2/07/11.

⁹⁰⁵ Resolution 4/2009; IT/GB-3/09/Report at §§ 37-40.

recommendations to clarify the status of the material.⁹⁰⁶ Treaty members need to identify the list of collections and specific accessions which fulfil the said criteria (Article 11.2), and make this information publicly available. To date,⁹⁰⁷ 37 Contracting Parties have provided the names of the identified collections and the lists and numbers of accessions fulfilling the Article 11.2 criteria. One can objectively say that 37 states out of 140 members constitute limited participation. This clearly shows that the “automatic” inclusion of material in the MLS is not such an easy and straightforward process. Indeed, it requires that national repositories maintain updated and complete list of the material with all the necessary information (passport data, etc.). This is clearly not the case for many countries.⁹⁰⁸ Furthermore, the fact that the negotiation of the Annex I list of PGRFA impose on Contracting Parties to distinguish what seeds are covered and what seeds are not covered by the MLS creates a significant administrative burden on member states, and in particular for developing countries. Indeed, many Contracting Parties need more support to operate this technical identification of the material covered by Annex I, in the form of capacity building.

Since the Third Session of the Governing Body, every Resolution on the MLS contains specific language recalling to Contracting Parties their obligation to report on their PGRFA that are in the MLS, thereby stressing the importance of the participation of all its members in the virtual common seed pool.⁹⁰⁹ Language has been increasingly firm, and culminated at the Fourth Session of the Governing Body with Resolution 1/2013, where it is expressly mentioned that delays in rendering PGRFAs available through the MLS hinders plant breeding and may have long-term effect on the amount of user-based income into the Benefit-sharing Fund.⁹¹⁰

There is no doubt that the system would be much easier if all PGRFA were covered by the MLS and Contracting Parties would only have to provide access to their national databases of collections, without the need to investigate, almost accession by accession, whether the content of their collections enters the MLS or not. Some countries have adopted this philosophy by developing a wide national policy where they decide to provide access to all the PGRFA under their control and management using the SMTA. The Netherlands and

⁹⁰⁶ IT/AC-SMTA-MLS 2/10/Report, §§ 30-35 and Appendix 6; and document IT/AC-SMTA-MLS 2/10/2.

⁹⁰⁷ As of June 2016.

⁹⁰⁸ The fact that Contracting Parties insist on the capacity building needs on this issue confirms this statement; see inter alia IT/AC-SMTA-36 MLS 2/10/Report at p. 36; see also “Assessment of Progress in the Inclusion in the Multilateral System of Plant Genetic Resources for Food and Agriculture held by Natural or Legal Persons” document IT/GB-3/09/12.

⁹⁰⁹ Resolution 4/2009, point 4; Resolution 4/2011, point 1 and 2; Resolution 1/2013, points 10-13, 18-19, and 28-31; Resolution 1/2015 point 10.

⁹¹⁰ Resolution 1/2013 point 11.

Germany⁹¹¹ decided to do so and already effectively use the SMTA for all the crops and forages under their management and control, thereby *de facto* widening the MLS.

(b) Inclusion of PGRFA by the CGIAR and other international organizations

In accordance with Treaty Articles 11.5 and 15, the CGIAR centres have included their PGRFA in the MLS. This was done on 16 October 2006, through a letter of agreement signed between each of the eleven IARCS of the CGIAR and FAO, as legal entity representing the Governing Body, agreement whereby each centre has included their PGRFA in the MLS.⁹¹² This collaboration is the logical continuation of the previously International Network of *Ex Situ* Collections under the Auspices of FAO⁹¹³ held in trust for the international community. Other international research centres were also part of this Network and have signed such agreement with the Treaty.⁹¹⁴

In furtherance of the CGIAR policy of widest diffusion of PGRFA and upon the proposal of the CGIAR centres,⁹¹⁵ Contracting Parties adopted at the Second Governing Body Session a decision whereby the CGIAR centres commit to use the SMTA for the transfer of all material held by CGIAR collections, not only Annex I material. This aimed at simplifying the exchange procedures for the distribution of germplasm by avoiding to use different MTAs and hence reduce costs. This decision applies to PGRFA that were held by IARCs other than those listed on Annex I of the Treaty and collected before its entry into force, in conformity with Treaty Article 15.1(b). To this end, transfers of material are made with the same SMTA, complemented by an interpretative footnote⁹¹⁶ which clarifies that the SMTA provisions should not be interpreted as precluding the use of the SMTA for transfers of non-Annex I material, collected before the entry into force of the Treaty.⁹¹⁷

⁹¹¹ C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., "*Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*", at Chapter 5.

⁹¹² "Agreement between the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture and the International Agricultural Research Centres and Other Relevant International Institutions", Article 2; available at appendix K of the first Governing Body Report, document IT/GB-1/06/Report.

⁹¹³ The Network was established by the CGRFA in 1994.

⁹¹⁴ See below in the present sub-section.

⁹¹⁵ Report Governing Body 2, §§ 66-68, document IT/GB-2/07/Report.

⁹¹⁶ The interpretative footnote or footnotes should not be seen as amendments to the SMTA, so much as clarifications of its meaning. They would be included in all versions of the SMTA used by the IARCs under Article 15.1(b), and thus avoid the need for two versions of the SMTA.

⁹¹⁷ See Treaty document para 9 of IT/GB/2/07/13 rev.1.

Following this new enlargement of the material covered under the MLS, material originating from the CGIAR constitutes the majority of the accessions made available under the MLS, with more than 665,684 accessions notified to the Treaty Secretariat.

In accordance with Treaty Article 15.5, other international organisations have agreed to include their collections in the system: the Tropical Agricultural Research and Higher Education Centre (CATIE),⁹¹⁸ the International Coconut Genebank for Africa and Indian Ocean,⁹¹⁹ the International Coconut Genebank for the South Pacific,⁹²⁰ the Mutant Germplasm Repository of the FAO/IAEA Joint Division,⁹²¹ the International Cocoa Genebank,⁹²² and the Centre for Pacific Crops and Trees – SPC Community.⁹²³

(c) Inclusion by other natural and legal persons within the jurisdiction of Contracting Parties

Treaty Article 11.3 imposes on Contracting Parties to encourage natural and legal persons within their jurisdiction who hold PGRFA listed in Annex I to include such PGRFA in the MLS. The *Ad Hoc* Advisory Committee on the SMTA and the MLS has addressed this issue in several documents.⁹²⁴ This provision is linked to a further obligation for Contracting Parties to assess every two years the progress made in including PGRFA in the MLS by natural and legal persons. Depending on the results of the assessment, the Governing Body may decide whether access shall continue to be facilitated for those natural and legal persons who have not included their PGRFA in the system (Treaty Article 11.4).

Similarly to the notifications by Contracting Parties, very few natural and legal persons have included their collections in the MLS. According to the Treaty website between March 2009 and today, only six natural or legal persons have done so. These institutions are: 1) the Association pour l'Etude et l'Amélioration du Maïs (Pro-Maïs) and the National Institute for Agricultural Research of France (INRA); 2) the Association Française des Semences de céréales à paille et autres espèces Autogames (AFSA) and the National Institute for Agricultural Research of France (INRA); 3) the Association of Communities in the Potato Park; 4) the

⁹¹⁸ Notified to the Treaty Secretariat on 16 October 2006.

⁹¹⁹ Notified to the Treaty Secretariat on 5 February 2007.

⁹²⁰ Notified to the Treaty Secretariat on 9 February 2007.

⁹²¹ Notified to the Treaty Secretariat on 18 July 2007.

⁹²² Notified to the Treaty Secretariat on 1 June 2009.

⁹²³ Notified to the Treaty Secretariat on 1 June 2009.

⁹²⁴ IT/AC-SMTA-MLS 1/10/Report, §§ 15-16 and Appendixes 4 and 5; IT/AC-SMTA-MLS 1/10/5; IT/AC-SMTA-MLS 1/10/6; IT/AC-SMTA-MLS 2/10/Report; IT/AC-SMTA-MLS 2/10/2.

Universidad de Costa Rica; 5) the Maseno University; and 6) the Peermade Development Society.

Besides, the review process under Article 11.4 is systematically postponed (or even ignored), from one Governing Body Session to the following;⁹²⁵ Contracting Parties focusing their attention on the promotion of the inclusion of material in the MLS by natural and legal persons. Again, while this shows a “breach” of a Treaty obligation, when one thinks in a pragmatic manner, the assessment requested by Article 11.4 can logically only be made once information has been transmitted to the Treaty Secretariat.

(d) Accessions included in Annex I following the first two project cycles of the Benefit-sharing Fund

Finally, one last option exists to include more PGRFA in the MLS: that is to incorporate in the system material resulting from the activities of the round of projects under the calls of the Benefit-sharing Fund.⁹²⁶ Under the first call for proposals under the Benefit-sharing Fund, 1776 accessions were integrated to the MLS.⁹²⁷ This includes PGRFA from Peru, Morocco and Costa Rica. The Treaty website further indicates that seven out of the 22 Benefit-sharing Fund projects under the second call for proposals have notified 1149 accessions to the Treaty Secretariat, specifying that the other projects “will include the material resulting from the implementation of the project activities within one year after the conclusion of the projects.”⁹²⁸ Discussions are underway with other projects on the modalities for inclusion, including the option of depositing the relevant material in national genebanks.

While there is no such obligation stated in the Treaty or in its operationalizing instruments documents,⁹²⁹ including material resulting from BSF funded projects follow the intentions of Contracting Parties to have as wide an MLS as possible, and further enhances the SMTA obligation to maintain material in the system once the originating PGRFA comes from the MLS (Treaty Article 12.3(g)). It is reasonable to interpret this fact as an implicit strong encouragement to implement the voluntary contribution of material to the MLS (Treaty Articles 11.3, 11.5, 15; SMTA Article 6.9).

⁹²⁵ IT/GB-1/06/Report, points 28-29; IT/GB-2/07/Report at point 65; IT/GB-3/09/Report, points 7-11 and in particular point 11; Resolution 4/2011, points 3-5; Resolution 1/2013 points 14-16.

⁹²⁶ IT/AC-SMTA-MLS 4/12/Report point 9.

⁹²⁷ Report on the First Round of the Project Cycle of the Benefit-sharing Fund, at p. 15.

⁹²⁸ <http://www.planttreaty.org/content/call-proposals-2010-2011>

⁹²⁹ I suspect such provision is stated in the contracts signed between the institution selected by the BSF call and the Treaty Secretariat, although I have had no access to such document.

At every Governing Body Session and in inter-sessional meetings,⁹³⁰ Contracting Parties have tackled the issue of the inclusion of PGRFA in the MLS and have integrated it in Resolutions related to the implementation of the MLS.⁹³¹ By doing so, states recalled the importance of the “availability of plant genetic resources for facilitated access [as] the foundation of the Multilateral System,”⁹³² thereby insisting upon inclusion being a primary precondition for the system to be effective.

(3) Numbers of SMTAs signed and data on germplasm flow

The adoption of the text of the SMTA at the first meeting of the Governing Body⁹³³ enabled Contracting Parties to start implementing the facilitated access obligation, starting from January 1st, 2007. After an enthusiastic beginning where figures (from the CGIAR) rapidly showed that SMTAs were used to exchange PGRFA all around the world,⁹³⁴ the enthusiasm lowered down after a few years. Indeed, SMTAs are signed by recipients and providers to exchange seeds under the Treaty, but these users seem to be those very same users accessing PGRFA through the previously existing CGIAR collections. And indeed, the figures made available come from the CGIAR and only reflect the flows of germplasm for the “usual” CGIAR activities. A report showed that from “1 January 2007 to 31 December 2009, the Centres distributed a total of 1.15 million samples of PGRFA. Approximately 84 percent of the samples were sent to developing countries or countries with economies in transition, 9.5 percent to developed countries and 6.5 percent to CGIAR Centres. 18 percent were sent by the Centres’ genebanks, and 82 percent from the breeding programmes”.⁹³⁵

Few other data were available before 2013,⁹³⁶ i.e. on the number of SMTAs signed (other than those with CGIAR centres) or on the type of providers and recipients, or on the type of material exchanged. A study provided some data at the Fourth Session of the

⁹³⁰ IT/AC-SMTA-MLS 1/10/Report, point 10 p. 3, and pp. 12-13.

⁹³¹ Resolution 4/2009 points 7-11; Resolution 4/2011 points 3-5; Resolution 1/2013 points 14-17; Resolution 1/2015 point 11.

⁹³² IT/AC-SMTA-36 MLS 2/10/Report at p. 36.

⁹³³ Resolution 2/2006, IT/GB-1/06/Report, point 12-14, Appendix G.

⁹³⁴ A note is made on the fact that the CGIAR provided access to both Annex 1 and non-Annex 1 material using the SMTA.

⁹³⁵ IT/GB-4/11/Inf. 5 “CGIAR Centres’ experience with the implementation of their Agreements with the Treaty’s Governing Body, with particular reference to the use of the SMTA for Annex 1 and non-Annex 1 materials.” at p. 2. It should be noted that this report covers acquisitions and distribution of germplasm by both Centres’ genebanks and breeding programmes for Annex 1 and non-Annex 1 material during the period 1 August 2008 through 31 December 2009.

⁹³⁶ It is only on *10 March 2015* that the Secretariat of the International Treaty made available online the statistics on the Multilateral System in order to increase the understanding of germplasm flows, as part of the Global Information System on plant genetic resources for food and agriculture.

Governing Body, stating that by the end of June 2013, there were 261 users⁹³⁷ registered in the Treaty Data Store.⁹³⁸ This fact might demonstrate that few other users access PGRFA from the MLS using an SMTA, and in particular that those users (i.e. the most important companies from the Seed Industry)⁹³⁹ that the system wants to attract in order to obtain benefit-sharing from them tend to avoid accessing seeds using the SMTA.⁹⁴⁰

The administrative burden related to the SMTA might also explain the reluctance in using the SMTA to access PGRFA. Although the initial aim was to render access as simple as possible, the fact that a contract (even a standard one) has to be filled in with specific information (notably on the pedigree of the material), signed, handled, and information about which needs to be transmitted to the Third Party Beneficiary, creates quite some administrative burden on the hands of providers and recipients.⁹⁴¹ Issues about traceability and control of transfers are also regularly mentioned by Treaty stakeholders.⁹⁴² Even for the CGIAR Centres', which have significant means, resources and experience in acquiring and distributing PGRFA, using the SMTA for all there material exchanges (including non-Annex I material) is a challenge. Indeed, SMTA Article 6.5(b) requests the provider to identify the Material received from the MLS and specify that the transferred PUD derives from that Material. This obligation poses a problem to the CGIAR, because all improved material are transferred with an SMTA, thereby creating enormous tracking obligations with most of the material exchanged.⁹⁴³

To enhance the use of the SMTA, the Treaty Secretariat created the “Easy-SMTA” online tool, which aims at facilitating the signature and handling of SMTAs. However, this does not seem to have dramatically increased its use and Contracting Parties came to the conclusion

⁹³⁷ On September 2014, this number had raised to 450.

⁹³⁸ The Treaty Data Store contains SMTAs reported by genebanks of Contracting Parties and of five International institutions related to the Treaty through its Article 15 (CIMMYT, IRRI, Bioversity International, CIP and ICARDA). The Data Store functions since 2012. To date, 965 users are registered. There are 38 registered providers and 6238 recipients. Available at <https://mls.planttreaty.org/itt/index.php>

⁹³⁹ A note is made on the fact that the European Seed Industry uses the SMTA.

⁹⁴⁰ Since then, a latter study provided some more data on the numbers of SMTAs, the type of PGRFA accessed, etc. See “The current Status of the Multilateral System of Access and Benefit-sharing”, document presented at the Second Meeting of the *Ad Hoc* Open-ended Working Group to Enhance the Functioning of the Multilateral System, Geneva, Switzerland, 14-16 May 2014.

⁹⁴¹ Reporting obligations have been examined in several documents: IT/AC-SMTA-MLS 2/10/Report, §§ 21-29 and Appendixes 4 and 5; IT/AC-SMTA-MLS 2/10/3.

⁹⁴² See below Chapter 5 for the stakeholders’ analysis of the treaty implementation.

⁹⁴³ This issue has been highlighted at the sixth session of the Governing Body and will hopefully be resolved at Governing Body 7. See Resolution 1/2015 §§ 22-25.

that the SMTA had to be reviewed in order to “increase[e] user-based payments and contributions to the [BSF]”, and “enhance[e] the functioning of the [MLS]”.⁹⁴⁴

B. Implementation Phase Two 2013-Nowadays

Since 2013, Contracting Parties are in a “review mode” especially concerning the MLS. The realization that the system, as it stands today, does not allow Contracting Parties to implement their obligations and does not allow users of PGRFA to effectively benefit from the MLS, has functioned as a wake-up call which was clearly expressed during the Fifth Session of the Governing Body. This has been translated into an official review process within the Governing Body framework through the establishment of the Open-ended Working Group on the MLS and the Advisory Committee on the Funding Strategy.

In this section, the purpose will not be to analyse paragraph by paragraph the work conducted by the above mentioned working group and advisory committee. Rather, a brief explanation of the main solutions sought for the enhancement of the MLS by Contracting Parties will be provided and commented upon. Funding issues are definitely crucial to the functioning of the system, however they are not legal instruments *per se*. Taking into account that fact that the present work is a legal analysis of the major legal instruments created by the Treaty, funding issues will therefore only be addressed when they link closely to the work of the Open-ended Working Group on the MLS.⁹⁴⁵

(1) The mandate of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the MLS

The mandate of the Open-ended Working Group on the MLS focuses on two streams: (a) increase user-based payments and contributions to the BSF in a sustainable and predictable long-term manner, and (b) enhance the functioning of the MLS by additional measures.⁹⁴⁶ As for the *Ad Hoc* Advisory Committee on the Funding Strategy, its mandate for the biennium 2016-2017 is to review the Treaty’s Funding Strategy and in particular identify possible innovative approaches to mobilizing resources for the BSF.⁹⁴⁷ To fulfil its mission following

⁹⁴⁴ Treaty Resolution 1/2015, § 2 and Point 4.

⁹⁴⁵ Indeed, the purpose of the present work is to provide an analysis of the legal aspects of the Treaty. Financial issues are recognized as being vital to the Treaty but they fall out of the legal scope of this analysis.

⁹⁴⁶ Resolution 2/2013 point 23.

⁹⁴⁷ Resolution 2/2015.

Governing Body Resolution 1/2013, the Open-ended Working Group on the MLS met four times during the biennium 2014-2015. It focused on six ways to enhance the functioning of the MLS. These are:

- I. Increase the availability of [PGRFA] through the [MLS];
- II. Strengthen non-monetary benefit-sharing mechanisms, such as capacity-building, technology transfer and information exchange;
- III. Develop a Subscription Model/System for users of [PGRFA] under the Treaty;
- IV. Other improvements to the SMTA to increase user-based payments and make it more user-friendly;
- V. Other ways to enhance income to the [BSF] in a sustainable and predictable long-term manner; and,
- VI. Expand the access and benefit-sharing provisions of the Treaty.”⁹⁴⁸

In order to progress on this prospective research approach on ways to enhance the functioning of the MLS, and according to the mandate of the Open-ended Working Group on the MLS, the Treaty Secretariat initiated the realization of four study-topics, for which background studies,⁹⁴⁹ synoptic studies⁹⁵⁰ and research studies⁹⁵¹ were outsourced. These documents allowed the negotiators to progress on the matter, but not sufficiently to adopt

⁹⁴⁸ IT/OWG-EFMLS-3/15/Report, at p. 2.

⁹⁴⁹ Background Study 1 “*Estimating income to be expected from possible changes in the provisions governing the functioning of the Multilateral System*” by Nina Isabella Moeller and Clive Stannard; Background Study 4 “An in-depth analysis of the factors that influence the willingness of stakeholder groups to make contributions to the benefit-sharing fund and to access plant genetic resources for food and agriculture from the multilateral system” by Maryline Guiramand; Background Study 5 “Plant genetic resources and genomics: mainstreaming agricultural research through genomics” by Norman Warthmann.

⁹⁵⁰ Synoptic Study 1: “Estimating Income to be Expected from Possible Changes in the Provisions Governing the Functioning of the Multilateral System”, IT/OWG-EFMLS-2/14/3; Synoptic Study 2: “Policy and Legal Study on the Feasibility and Effects of Changes to the Multilateral System”, IT/OWG-EFMLS-2/14/4; Synoptic Study 3: “An Analysis on How to Enhance Mechanisms for Capacity-Building, Technology-Transfer and Information-Exchange”, IT/OWG-EFMLS-2/14/5; Synoptic Study 4: “Consultation with Stakeholder Groups”, IT/OWG-EFMLS-2/14/6.

⁹⁵¹ Research Study 1 “*Dynamic analysis of possible changes in the provisions governing the functioning of the Multilateral System, and possible income*” Authors: Clive Stannard, Francesco Caracciolo, Peter Hillery; Research Study 2 “*Innovative approaches for enhancing the flow of funds into the Benefit Sharing Fund of the International Treaty on Plant Genetic Resources for Food and Agriculture an evaluation of options*” Author: C.S. Srinivasan; Research Study 3 “*Analysis of the transaction costs occurring for the user, under the under the SMTA of the International Treaty on Plant Genetic Resources for Food and Agriculture, and the EU Regulation on Implementation of the Nagoya Protocol*” Author: Petra Engel; Research Study 4 “*Investigation of the preferences and behavior of users of the SMTA, when making decisions to use the alternative payment options of Articles 6.7 and 6.11 of the SMTA*” Authors: Klaus Möller, Felix Isbruch and Tobias Flinspach; Research Study 5 “*Experience involving technology transfer, capacity building, and information exchange for the International Treaty on Plant Genetic Resources for Agriculture*” Author: Thomas F. McInerney; Research Study 6 “*Non-monetary benefit sharing mechanisms within the projects funded by the Benefit Sharing Fund*” Authors: Gea Galluzzi, Isabel López Noriega and Michael Halewood; Research Study 7 “*Summary of user opinions, following interviews with members of the seed industry*” Author: Nina Isabella Moeller; Research Paper 8 “*A new estimation on countries’ interdependence*” Authors: Colin K. Houry, Harold A. Achicanoy, Anne D. Bjorkman, Carlos Navarro-Racines, Luigi Guarino, Ximena Flores-Palacios, Johannes M.M. Engels, John H. Wiersema, Hannes Dempewolf, Julian Ramírez-Villegas, Nora P. Castañeda-Álvarez, Cary Fowler, Andy Jarvis, Loren H. Rieseberg, and Paul C. Struik; Research Study 9 “*Twenty five years of international exchanges of plant genetic resources facilitated by the CGIAR genebanks: a case study on international interdependence*” Authors: Gea Galluzzi, Michael Halewood, Isabel Lopez Noriega and Ronnie Vernooij.

firm proposals during last Governing Body session in October 2015.⁹⁵² In the following paragraphs, a selection of specific issues will be addressed.

(2) Revision of the SMTA focusing on the development of a subscription system through a revision of Article 6.11

Contracting Parties came to the conclusion that one option to enhance the functioning of the MLS was to revise the financial benefit-sharing mechanism included in the SMTA (mainly Articles 6.7 and 6.11)⁹⁵³ to render the SMTA more attractive. One of the solutions⁹⁵⁴ explored is to modify Article 6.11 and create a “subscription payment” mechanism,⁹⁵⁵ which would become a real alternative to the Articles 6.7/6.8 standard benefit-sharing mechanism. The rationale behind this proposal, is the same as the one behind SMTA Article 6.11, but enhanced with the recognition that both payment options are closely inter-related, and that both options should be equivalent in terms of costs and benefits for the users, for them to be able to actually make a choice between using one or the other (and therefore be encouraged to use the SMTA rather than acquiring material by other means).

(a) The current potential of SMTA Article 6.11

Article 6.11 functions as an upfront payment scheme. This option is called the “crop-based alternative payment scheme” because benefit-sharing is triggered by the sales of products belonging to one specifically identified crop or related products (other products that are PGRFA belonging to the same crop). This alternative payment scheme is rarely chosen by SMTA users.⁹⁵⁶ As mentioned above,⁹⁵⁷ the payments are to be made whether the product is under restricted access or not. The rate is of 0.5 percent of the sales of the product or related products during a ten year period of time. The seed industry has repeatedly highlighted that

⁹⁵² Therefore the mandates of both WG-MLS and Advisory Committee on FS were renewed for the biennium 2016-2017. See Resolution 1/2015 and 2/2015.

⁹⁵³ There has also been discussion on modifying Article 6.8 dealing with voluntary payments.

⁹⁵⁴ The *Ad Hoc* Advisory Committee on the Funding Strategy has proposed six innovative approaches to funding. See IT/OWG-EFMLS-1/14/4.

⁹⁵⁵ IT/OWG-EFMLS-4/15/4; IT/GB-6/15/06 Rev 2; IT/OWG-EFMLS-3/15/Inf.5.

⁹⁵⁶ This alternative payment scheme was already encouraged as a means to increase funding of the BSF. See C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., “*Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*”, at p. 273; for a detailed explanation of this option see C. M. CORREA, “An Innovative Option for Benefit-Sharing Payment under the International Treaty on Plant Genetic Resources for Food and Agriculture - Implementing Article 6.11 Crop-Related Modality of the Standard Material Transfer Agreement”, in C. FRISON, F. LÓPEZ, AND J.T. ESQUINAS-ALCAZAR (eds), *Plant Genetic Resources and Food Security: Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*, Washington, DC, Earthscan, FAO and Bioversity International, 2011, at pp. 249-256.

⁹⁵⁷ See §1 in the current section.

this rate was too high.⁹⁵⁸ Furthermore, it is not clear what happens once the ten year period is exhausted: Do parties fall back on the 6.7 regime? And if so, would this mean that tracking obligation would need to be complied with since the signing of the SMTA? Reviewing this alternative payment scheme (by decreasing its rate and clarifying the tracking issue) might indeed encourage some stakeholders to access material using the SMTA. The question remains open as to proposing this scheme as the only monetary benefit-sharing option of the SMTA (i.e. suppressing the Article 6.7 option and thereby simplifying the whole process) or as to positioning it as a true second option (on the same level as the Articles 6.7/6.8 regime), keeping in mind that doing so would require a modification of the Article 6.7 rate and scheme too.⁹⁵⁹

(b) A subscription payment adapted to product categories

To better adapt to the needs of the variety of stakeholders involved in accessing PGRFA (which *de facto* are interested in different types of material), discussions are underway regarding the possibility to adapt the payment rates to the type product categories⁹⁶⁰ (which could vary according to the category of stakeholder accessing the material), and/or to the type of restrictions that would be related to the final commercialized product. Complex projections for both options (Articles 6.7 and 6.11) were made to adapt the payment rates as to whether the material is protected by a patent, a PVP, or other means.⁹⁶¹

(c) Missing the enhancement objective by getting lost in technical complexities?

While it is undeniable that a review is needed, the way in which negotiators have tackled this issue sounds unproductive to me. The highly technical studies, projections and scenarios proposed in the numerous studies on which negotiators have based their discussions can be seen as adding confusion rather than simplifying the whole mechanism. It remains to be seen

⁹⁵⁸ M. GUIRAMAND, N. I. MOELLER, AND M. MARINO, "Plant Breeding and the Use of the Standard Material Transfer Agreement: Consultation with Plant Breeding Experts", in N.I. MOELLER AND C. STANNARD (eds), *Identifying Benefit Flows. Studies on the Potential Monetary and Non-Monetary Benefits Arising from the International Treaty on Plant Genetic Resources for Food and Agriculture*, Rome, FAO-Treaty Secretariat, 2012.

⁹⁵⁹ IT/OWG-EFMLS-4/15/3; IT/OWG-EFMLS-6/15/6 Rev.2.

⁹⁶⁰ C. S. SRINIVASAN, "Assessing the Potential for Monetary Payments from the Exchange of Plant Genetic Resources under the Multilateral System of the International Treaty on Plant Genetic Resources for Food and Agriculture", in N.I. MOELLER AND C. STANNARD (eds), *Identifying Benefit Flows. Studies on the Potential Monetary and Non-Monetary Benefits Arising from the International Treaty on Plant Genetic Resources for Food and Agriculture*, Rome, FAO-Treaty Secretariat, 2012; C. STANNARD, F. CARACCILO, AND P. HILLERY, "Modelling Payments to the Benefit-Sharing Fund, Resulting from the Standard Material Transfer Agreement", *ibid.*(eds), ; N. I. MOELLER AND C. STANNARD, 2013.

⁹⁶¹ IT/OWG-EFMLS-2/14/4.

what will come out of this review process, hopefully at the Seventh Session of the Governing Body in 2017; however, one can remain sceptical as to the direction taken. In my view, solutions proposed might create even more complexity and burdens, thereby leading to the opposite result. Negotiators might take advantage of this opportunity to try to devise a simpler (and perhaps more modest) mechanism and focus on creating a payment scheme which would not imply a heavy administrative burden. It is certain that this option would necessitate 1) to accept a lower payment rate, 2) to couple this funding mechanism with other alternative funding mechanisms, 3) as well as to have strong political will from governments (to impose these decisions at their national levels). However, this would have the advantage of producing immediate funding for the implementation of the monetary benefit-sharing Treaty obligation.

(3) Adapting the coverage of the MLS (based on different scenarios and income projections)

While the issue of adapting the coverage of the MLS remained “taboo” until the 2011-2013 biennium, Contracting Parties are now much more open on discussing this option. This is definitely a good thing in my view. Indeed, in an ideal world, if the MLS covered all PGRFA everywhere, for all food and agriculture purposes, and if the payment scheme would be of an upfront payment type, users would have no other choice than acquiring material through the system. The system would be unique, uniform and simple. There would be no tracking obligation, and potentially not even any contractual (formal) agreement. Of course we are far from this utopia, however, there are voices expressing their will to move in that direction.⁹⁶²

Discussions on the expansion of the scope of the MLS have been closely linked to the exploration of the payment scheme review.⁹⁶³ Therefore, a similar note is made as above for Article 6.11: keeping the negotiation of the expansion of Annex I so closely linked to complex scenarios and income projections related to the types of products / rates / rights-based protections, might not be the easiest way forward. While it is undeniable that taking into account the needs and constraints of PGRFA users in the review of the MLS and Funding Strategy in order to incite them to access material using the SMTA, it should be kept in mind that creating an even more complex system might not lead to the hoped-for outcome. Besides, as long as stakeholders can acquire material outside the MLS, even if the scope is

⁹⁶² C. STANNARD, *op. cit.*.

⁹⁶³ N. I. MOELLER AND C. STANNARD, 2013; C. S. SRINIVASAN, *op. cit.*; C. STANNARD, F. CARACCILO, AND P. HILLERY, "Modelling Payments to the Benefit-Sharing Fund, Resulting from the Standard Material Transfer Agreement", *ibid.*(eds),

expanded, potentially to all PGRFA, as long as the system is not universal, stakeholders who can opt for acquiring material outside the MLS and avoid paying benefit-sharing will likely do so.

In this section, the purpose was to understand what covers the facilitated access to Annex I PGRFA obligation and to evaluate its implementation. While the relationship between the facilitated access to seeds and the use of PGRFA for sustainable agriculture and food security purposes seems self-evident, it might not always be so clear when analysing the MLS provisions related to facilitated access. The analysis above shows that accessing seed by all PGRFA beneficiaries is not straightforward; that there remains a misunderstanding regarding the belief that facilitating access to seed equates to handing over property rights over seeds and control of those PGRFA; and that working on reviewing the existing system will necessitate to leave some space to all stakeholders to participate in the process.

Section 5. Benefit-sharing, the Benefit-sharing Fund and the touchy issue of money

The negotiations on the benefit-sharing provisions (Article 13) of the MLS were closely related to those on facilitated access (Article 12) and on the Treaty's Funding Strategy (Article 18). After having set the PGRFA conservation and sustainable use obligations for Contracting Parties (Treaty Part II – General Provisions), recognized Farmers' Rights (Treaty Part III), designed the MLS (Treaty Part IV), and established the Treaty's supporting relationship with existing tools and instruments for the conservation and sustainable use of PGRFA (Treaty Part V – Supporting Components), Treaty Part VI addresses the touchy issue of money, indispensable to fund the mentioned activities and allow Contracting Parties to fulfil their obligations, in particular those related to benefit-sharing. Notwithstanding the undeniably crucial importance of this issue (and the enormous amount of Treaty documents on the subject), the facts can be summarized very simply: there is no (sufficient) money. For this reason and because of the limits of the scope of the present work, financial resources for the Treaty will be addressed very concisely, and only when it directly relates to the concept of benefit-sharing. On the contrary, more details are provided to explain what benefit-sharing obligations cover and how they are implemented.

§ 1 Defining benefit-sharing

The Treaty provides that benefits should be fairly and equitably shared by way of the exchange of information (Article 13.2(a)), access to and transfer of technology (13.2(b)), capacity-building (13.2(c)), and the sharing of monetary and other benefits of commercialization (13.2(d)). Therefore, benefits to be shared by Contracting Parties take two forms: monetary and non-monetary benefits. It is recalled that the very primary benefit of the MLS is the facilitated access to the material in itself (Article 13.1). To uncover major issues related to benefit-sharing, three points will be dealt with: the Funding Strategy and financial resources of the Treaty (A); monetary and non-monetary benefit-sharing obligations (B); and the Benefit-sharing Fund (C).

A. Financial resources of the Treaty under the Funding Strategy

Funding is needed for two kinds of expenditures to sustain the Treaty. First, money is needed to allow for the functioning of the Treaty's Governing Body, Secretariat and other bodies. This is called the Core Administrative Budget. Second, funds are needed to implement the Treaty obligations, which include the Special Fund for Agreed Purposes, the Benefit-sharing Fund and the Fund to support the Participation of Developing Countries to Treaty meetings.

Article 18 provides for the adoption by the Governing Body⁹⁶⁴ of a funding strategy for the implementation of the Treaty. This agreed-upon strategy aims at mobilizing funding from multilateral, bilateral, and voluntary sources.⁹⁶⁵ First, it should be noted that the funding strategy is not a fund or a financial mechanism per se (contrary to the Global Environmental Facility which was assigned as the permanent financial mechanism of the CBD).⁹⁶⁶ Rather, it

⁹⁶⁴ Plant Treaty Article 19.3(c). The Governing Body composed of all Contracting Parties oversees the implementation of the Treaty. Decisions of the Governing Body are to be taken by consensus, which means that every Contracting Party, however small, has an equal say in the decisions of the Governing Body and the power of veto. See, *Adoption of the International Treaty on Plant Genetic Resources for Food and Agriculture and Interim Arrangements for its Implementation*, FAO Conference Resolution 3/2001, online: www.fao.org/docrep/MEETING/004/Y2650e/Y2650e01.htm#3

⁹⁶⁵ The Global Crop Diversity Trust is an essential element of the funding strategy. It is an endowment fund being set up by FAO and IPGRI under the policy guidance of the Governing Body of the Treaty to provide funds in perpetuity for *ex situ* collections of PGRFA.

⁹⁶⁶ CBD Articles 20 and 21. CBD-COP Decision III/8. The GEF also serves as financial mechanism for other international environmental conventions; see <https://www.thegef.org/gef/whatisgef>. GEF could potentially also provide funding to the Treaty, as agricultural biodiversity is identified in two of its programming strategies. "Securing Agriculture's Future: Sustainable Use of Plant and Animal Genetic Resource" is identified as the seventh biodiversity strategy program; see "GEF-6 Programming Directions" document (which contains the details of the programs and activities from July 1, 2014 to June 30, 2018) at p. 30-31. Available at

constitutes “an agreed strategy for mobilizing funds primarily from existing channels, though it will also cover financial resources provided for in the Treaty itself, such as the mandatory and voluntary payments to be made under Article 13.2(d)(ii).”⁹⁶⁷ We are far from the initial “International Fund” imaged under the International Undertaking in the 1980s.⁹⁶⁸

Article 18 provides the “skeleton” of the funding strategy,⁹⁶⁹ which includes “the decision for its establishment, a general objective, a list of possible funding sources and some basic priorities”.⁹⁷⁰ Paragraph 18.2 stresses the importance of the availability, transparency, efficiency and effectiveness of the provision of financial resources to implement Treaty obligations. In doing so, it highlights that the Governing Body should take its financial decisions in a transparent and accountable manner, and that the provision of funds should be efficient and effective. An explicit link is made with the Global Plan of Action⁹⁷¹ under paragraph 18.3 which requires the Governing Body to establish funding targets, to be reviewed periodically and to allow for the mobilization of funding for the Treaty’s priority activities, plans and programmes. It is understood that the latter activities, plans and programmes are to be defined taking into account the GPA. This reference provides scientific and technical weight to the adoption of decisions regarding financial provisions. Article 18.4 specifies a list of possible funding sources and some basic priorities. Finally Article 18.5 insists that priority will be given to “*funding activities that target farmers who conserve and sustainably use PGRFA, especially in developing countries*” (emphasis added).

The Funding Strategy is therefore a tool to finance Treaty activities and obligations, including those related to benefit-sharing, whether monetary or non-monetary. Indeed, implementing non-monetary benefit-sharing provisions also requires financial resources.

https://www.thegef.org/gef/sites/thegef.org/files/webpage_attached/GEF6_programming_directions_final_0.pdf

Additionally, “Agriculture and Food Security” is identified as the first thematic programming priorities in GEF’s Adaptation Program document; see the new [GEF Programming Strategy on Adaptation to Climate Change](#) (which forms the basis for programming resources under the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF) from July 1, 2014 to June 30, 2018) at pp. 13-15, available at <https://www.thegef.org/gef/GEF6-Programming-Directions>. The Treaty Secretariat and GEF are in contact to evaluate this potential financial relationship.

⁹⁶⁷ G. MOORE AND W. TYMOWSKI, 2005, at p. 139.

⁹⁶⁸ International Undertaking on Plant Genetic Resources.

⁹⁶⁹ This skeleton was designed by the CGRFA acting as Interim Committee for the Treaty (between 2004 and 2006).

⁹⁷⁰ TREATY SECRETARIAT, “The Funding Strategy of the International Treaty”, 2013, at p. 9.

⁹⁷¹ Article 14.

B. Monetary and non-monetary benefits

While Article 18 provides the general rules guiding the establishment and functioning of the funding strategy, Treaty Article 13 and the provisions of the SMTA⁹⁷² define the procedures to collect and share the monetary and non-monetary benefits. The following table summarizes the rights and obligations of the SMTA relating to benefit-sharing.

Benefit-sharing	Rights and obligations of the	
	Provider SMTA Art. 5	Recipient SMTA Art. 6
Monetary Benefit-sharing		X
a) mandatory, when recipient <i>commercialises</i> a product incorporating MLS material, and the product is <i>not available without restriction</i> to others for further research & breeding → BS rate: 1,1% of sales, minus 30% → 0,77% net		X
b) voluntary, when product remains available without such restriction (Art. 6.8)		X
c) alternative payment scheme if benefits are shared for all material commercialized from the same crop → BS rate: 0,5% of sale		X
Non-monetary Benefit-sharing		X
Transfer of BS obligations if IPRs assigned to third party		X

Table 4.3: Benefit-sharing rights and obligations of SMTA contracting parties⁹⁷³

(1) Monetary benefits

Monetary benefits provisions in the Treaty and the SMTA mainly deal with the question of how to obtain money from the use of PGRFA in order to implement the fair and equitable sharing obligations of the MLS.

According to Treaty Article 13.2(d), a recipient of Annex I who commercializes a PGRFA product that incorporates material accessed from the MLS must pay to the BSF an equitable

⁹⁷² The text of the SMTA is available in Appendix 2 of the online PDF file of this thesis, available on my ResearchGate profile.

⁹⁷³ This table is inspired from a presentation by Franziska Wolff from the Öko-Institut e.V for the "European Regional Meeting on an Internationally Recognized Certificate of Origin/ Source/ Legal Provenance" which took place on the Isle of Vilm, Germany, 26 October 2006.

share of the benefits arising from such commercialization. This obligation is mandatory only if further access to the material or resultant product is restricted by the recipient, for instance through IPRs; otherwise payment is voluntary. The terms and conditions of the MLS, including details on the type and level of payments to be made, are set up in the SMTA.⁹⁷⁴

(a) The SMTA Article 6.7 payment scheme

The recipient is the only SMTA contracting party who bears monetary benefit-sharing obligations. Under article 6.7 of the SMTA, whenever the recipient commercialises a product derived from material originating from the MLS, which availability is restricted to others for further research and breeding, he/she has to pay 1.1 percent of the gross sales of the product, minus 30 percent (i.e. 0,77 percent of the gross sales) for the period equivalent to the duration of such restriction (20 years for IPR-based restrictions). The 30 percent is a lump sum that includes the administrative costs, taxes, shipping costs, etc. that would probably be subtracted from the gross income anyway (i.e. the difference between gross sales and net sales).

Monetary benefit-sharing are also referred to in other Treaty Articles: Article 15.1(b)(iii) in relation to the CGIAR; and Article 18.4(e) on Financial Resources. Financial benefits are directed to the Treaty Trust Account (Article 19.3(f)): i.e. the Benefit-sharing Fund.⁹⁷⁵

(b) The STMA Article 6.11 alternative payment scheme

Article 6.11 of the SMTA provides for an alternative payment scheme. This alternative scheme was proposed by the African Group as a reaction to the “disappointingly low”⁹⁷⁶ rate under Article 6.7, and in the hope to guarantee a faster monetary flow back to the BSF. According to SMTA Article 6.11 and its Annex 4, the recipient may opt for a payment scheme where he/she would pay 0.5 percent on the sales of all PGRFA products of the same crop accessed (regardless of whether the products include material obtained from the MLS or not). This payment is made “regardless of the restrictions for further research and breeding on the product, and for a period of ten years, which is renewable.”⁹⁷⁷ Furthermore the recipient may

⁹⁷⁴ Article 12.4 ; see also Resolution 2006/1 adopted in Madrid during the first meeting of the Governing Body of the Treaty in May 2006.

⁹⁷⁵ See below C. on the BSF.

⁹⁷⁶ C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., “*Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*”, at p. 53.

⁹⁷⁷ D. MANZELLA, *op. cit.* at p. 156.

access more material of the same crop using other SMTAs, but will not have to pay the share twice. Manzella argues it is so “in return for this greater payment obligation”.⁹⁷⁸

(2) Non-monetary benefits

Non-monetary benefit-sharing are of two types. This first non-monetary benefit-sharing is the facilitated access to PGRFA itself covered by Article 13.1. The second type of benefits are defined in Article 13.2 as the exchange of information and results of technical, scientific, and socio-economic research on PGRFA (Article 13.2 (a)); the access to and transfer of technology (Article 13.2 (b)); and capacity-building (Article 13.2 (c)). Here again, the realization of the second type of benefits is not possible without the realization of the first, as transfer of technology related to a specific improved material for example is useless if the recipient has no access to the improved material first.

C. The Benefit-sharing Fund

The Benefit-sharing Fund is the main Treaty instruments implementing ABS obligations. The BSF was established following Resolution 1/2006,⁹⁷⁹ when the Funding Strategy of the Treaty was adopted. In paragraph 14 of the latter Governing Body decision, Contracting Parties decided to create the Trust Account (i.e. the BSF) in order to administer the financial resources over which the Governing Body has direct control. The BSF has three priorities, the first of which is the information exchange, technology transfer and capacity building (i.e. non-monetary benefits).⁹⁸⁰ The other two priorities are on-farm (*in situ*) management and conservation of PGRFA; and sustainable use of PGRFA. The BSF is therefore the most important tool through which Contracting Parties implement their benefit-sharing obligations. The BSF is the recipient of the financial benefit-sharing originating from Contracting Parties, and the main administrative instrument distributing the benefits for the implementation of plans and programmes under this Treaty (priority beneficiaries being “farmers in developing countries, especially in least developed countries, and in countries with economies in transition, who conserve and sustainably utilize PGRFA”, Article 18.5). The BSF may be (and up

⁹⁷⁸ D. MANZELLA, *op. cit.*

⁹⁷⁹ For a more detailed account of the history of the BSF, see ITPGRFA Secretariat (2013) “The Funding Strategy of the International Treaty”, at pp. 42-45.

⁹⁸⁰ See Annex I of the Funding Strategy adopted at the First session of the Governing Body, Resolution 1/2006. The BSF will fund activities which fulfil these three priority areas, when assessing what project is eligible for the call for proposals to its projects portfolio. Up to date, three calls have taken place, and the fourth call is ongoing. See ITPGRFA Secretariat (2013) “The Funding Strategy of the International Treaty”.

to now has been mainly) financed by voluntary payments from Contracting Parties or international organisations.⁹⁸¹ These voluntary contributions are the result of innovative approaches to provide money to the Funding Strategy. As an example, Norway has linked its contributions to the BSF to the volume of its seed market: it contributes 0.1 percent of the annual value of all seed sold within its territory.⁹⁸²

§ 2 Implementing benefit-sharing obligations in the MLS with an empty purse

In 2005 already, when the Treaty was still at a very early stage of implementation, Brush had anticipated that “[t]he weakness of that [T]reaty, however, is that it does not give proper emphasis to the obligations of industrial countries and developing countries alike to support conservation of crop resources *beyond funds raised in connection to commercializing improved crop varieties*” (emphasis added).⁹⁸³ Indeed, the SMTA mechanism was created primarily around the hope that financial returns would flow back to the system upon access, use and commercialization of Annex I material. Following this scenario though, benefits would only arise five to twenty years after initial facilitated accesses were granted (this covers the long research and development period prior to the commercialization of a new product).⁹⁸⁴ Shortly after the adoption of the SMTA, countries, especially developing Contracting Parties, started to claim that the breeding development cycle was too long in order for the Benefit-sharing Fund to receive enough income within a reasonable period of time. Additionally, Contracting Parties might have not sufficiently anticipated the slow pace of implementation of the MLS (i.e. slow inclusion of material in the MLS, and the resulting limited SMTA exchange, which itself implies limited benefit-sharing returns), and the consecutive serious financial problems the Treaty has been faced with.⁹⁸⁵ In the following sub-sections, the implementation processes of the

⁹⁸¹ In October 2013, the Secretariat issued a figure identifying the main donors of the BSF. These are: Norway, the European Commission, Italy, Spain, IFAD (International Food and Agriculture Programme), Australia, Ireland, Germany, and others.

⁹⁸² Plant Treaty Secretariat (2013) “The Funding Strategy of the International Treaty”, at p. 17.

⁹⁸³ S. B. BRUSH, 2005, “Protecting Traditional Agricultural Knowledge”, *op.cit.* At pp. 108-109.

⁹⁸⁴ A. DRUCKER AND F. CARACCILO, “The Economic Value of Plant Genetic Resources for Food and Agriculture”, in N.I. MOELLER AND C. STANNARD (eds), *Identifying Benefit Flows. Studies on the Potential Monetary and Non-Monetary Benefits Arising from the International Treaty on Plant Genetic Resources for Food and Agriculture*, Rome, FAO-Treaty Secretariat, 2012, at p. 57. In this study, the authors attempted to identify the components of the global commercial seed sales that could be attributed to product innovations incorporating SMTA-PGR for three major food crops – wheat, rice and maize. Furthermore, the total value of the commercial seed market of Annex I crops is estimated at US\$19.4 billion. Cereals account for the dominant share of this value (71 percent), while other significant contributors are vegetable (12 percent) and fruit seeds (7 percent), at p. 79.

⁹⁸⁵ N. I. MOELLER AND C. STANNARD, 2013; see also C. STANNARD, F. CARACCILO, AND P. HILLERY, *op. cit.*; and C. S. SRINIVASAN, “Assessing the Potential for Monetary Payments from the Exchange of Plant Genetic Resources under the Multilateral System of the International Treaty on Plant Genetic Resources for Food and Agriculture”, *ibid.*(eds), ; and finally M. GUIRAMAND, N. I. MOELLER, AND M. MARINO, “Plant Breeding and the Use of the Standard Material Transfer Agreement: Consultation with Plant Breeding Experts”, *ibid.*(eds), .

funding strategy (A), of non-monetary benefit-sharing obligations (B), and of the Benefit-sharing Fund (C) will be detailed.

A. Implementation of the financial resources provisions

Contracting parties have designed the Funding Strategy between 2006 and 2009. With Resolution 1/2006, they adopted the Funding Strategy developed by the CGRFA acting as Interim Committee for the Treaty before the First Session of the Governing Body took place. The negotiation of the funding strategy was part of the mandate of the Open-ended Working Group on the Rules of Procedure and Financial Rules of the Governing Body, Compliance, and the Funding Strategy.⁹⁸⁶ In the same Resolution, a notable aspect of the strategy was the recognition of the Global Crop Diversity Trust (GCDDT)⁹⁸⁷ as an essential element for *ex situ* conservation and availability.⁹⁸⁸ The GCDDT is an endowment fund, which provides funds in perpetuity to support long-term conservation of PGRFA and ensure conservation and availability of PGRFA which are most relevant for food security and sustainable agriculture. Although the GCDDT is an independent institution, separate from the International Treaty, it operates within the framework of the Treaty as it receives policy guidance from the Governing Body. However, it should be reminded that its focus is limited to *ex situ* conservation activities. Therefore, Contracting Parties and the Treaty Secretariat should continue to enhance direct efforts for the implementation of the benefit-sharing and other conservation and use provisions.

In order for Contracting Parties to effectively implement the strategy, further tools and instruments needed to be developed. To this end, the Governing Body established the *Ad Hoc* Advisory Committee on the Funding Strategy,⁹⁸⁹ whose mandate was to define the priorities, eligibility criteria and operational procedures for spending the resources under the direct control of the Governing Body. These three aspects were adopted at the Second Session of the Governing Body as Annexes 1, 2 and 3 of the funding strategy.⁹⁹⁰ The Committee was also to design the information and reporting requirements under the strategy. This aspect was

⁹⁸⁶ First Meeting of the Open-Ended Working Group on the Rules of Procedure and the Financial Rules of the Governing Body, Compliance, and the Funding Strategy, Rome, Italy, 14-17 December 2005, Doc. CGRFA/IC/OWG-1/05/REP. <http://planttreaty.org/sites/default/files/ico1repe.pdf>

⁹⁸⁷ <https://www.croptrust.org/>

⁹⁸⁸ The Relationship Agreement between the Governing Body and the GCDDT was approved at the First Session of the Governing Body, in Madrid in June 2006 - IT/GB-1/06/Report §35-40.

⁹⁸⁹ The *Ad Hoc* Advisory Committee on the Funding Strategy met seven times up to Governing Body 6. Its reports are the following documents:

⁹⁹⁰ IT/GB-2/07/Report §§ 44-53.

finalized at the Third Session of the Governing Body and adopted as Annex 4 to the strategy.⁹⁹¹ These annexes allowed the Secretariat to establish the “trust account”⁹⁹² to receive and disburse the financial resources of the Treaty. It was called the Benefit-sharing Fund.

Ten years after Brush’s prediction, it is only fair to admit that indeed, there is a clear financial problem with the implementation of the Treaty. At that crucial stage, the need to explore other sources of income within the Funding Strategy became clear, in particular the need for additional voluntary contributions not derived from SMTA-related monetary benefit-sharing. Several attempts were made to improve this state of affairs. First, some Contracting Parties made voluntary contributions⁹⁹³ to the BSF for it to be able to start an effective (even though limited) sharing of benefits with “farmers in all countries, especially in developing countries, and countries with economies in transition, who conserve and sustainably utilize [PGRFA]” (Treaty Article 13.3).

Then, Contracting Parties committed to raise US\$ 116 million between July 2009 and December 2014 through the “Strategic Plan for the Implementation of the [BSF] of the Funding Strategy” adopted in Resolution 3/2009. The plan was to secure cumulative targets over a five year period in order to launch the calls for project cycles under the BSF. To date (February 2016), the target has still not been reached.⁹⁹⁴ At its Fifth Session, the Governing Body noted “with concern that a large shortfall of funding has accumulated in relation to the targets established in the *Strategic Plan for the Implementation of the Benefit-sharing Fund*”.⁹⁹⁵ This shortage has slowed down the pace of the calls for project cycles under the BSF.⁹⁹⁶

B. Implementation of non-monetary benefit-sharing obligations

Non-monetary benefits were not at the centre of Contracting Parties’ attention during the early implementation of the Treaty, which rather focused on the design of the SMTA, Funding Strategy, and Compliance Mechanism. However, their rapid implementation

⁹⁹¹ Resolution 3/2009, IT/GB-3/09/Report §§ 26-30 and Appendix A.3.

⁹⁹² Article 19.3(f).

⁹⁹³ In October 2013, the main donors of the BSF were: Norway, the European Commission, Italy, Spain, IFAD, Australia, Ireland, Germany, and others.

⁹⁹⁴ In a Treaty Secretariat study, a model shows that with the current membership and availability in the MLS, it will be 38 years before the current fund-raising target is reached. See C. STANNARD, F. CARACCILO, AND P. HILLERY, *op. cit.*, at p. 156.

⁹⁹⁵ Resolution 2/2013, point 1.

⁹⁹⁶ By Governing Body 5, more than UD\$ 20 million had been provided to directly help 340,000 farmers in 55 countries through the BSF.

constitutes, in my view, an essential element to facilitate the smooth and effective application of most obligations of the ITPGRFA. Indeed, some parties, especially from developing countries, do not consider access to PGRFA as a major benefit of the MLS, particularly because they have limited financial and technological capacity to utilize PGRFA, either conserved in their own gene banks or accessed elsewhere. What these parties consider more important is to ensure that benefits derived from the use of genetic resources reach those who need them most and that capacity-building and transfer of technology and information is effectively implemented as a benefit-sharing instrument. It is commonly acknowledged that the exchange of information and results of technical, scientific, and socio-economic research on PGRFA constitute important benefits which should be shared.⁹⁹⁷ The same can be said for the access to and transfer of technology related to PGRFA. Indeed, non-monetary benefit obligations are explicitly expressed in other Articles throughout the Treaty: Articles 7 and 8 on international cooperation and technical assistance; Article 9.2(b) on FRs; Article 14 on the Global Plan of Action; Article 17 on the Global Information System on PGRFA; Article 18 on Financial Resources through the design of the Funding Strategy.

Besides, collaborations with other international organisations were set up in order to implement specific capacity building activities as part of the non-monetary benefit-sharing obligations.⁹⁹⁸ Few examples of technology transfer and capacity building projects outside the BSF activities exist. As an illustration, the Brazilian Agricultural Research Corporation (EMBRAPA) and the Indonesian Agency for Agricultural Research and Development (IAARD)⁹⁹⁹ hosted a workshop in Brasilia, Brazil (June 2012) and a second workshop in Bandung (July 2013), with a number of stakeholders to discuss the establishment of the Platform for the Co-Development and Transfer of Technologies developed as a major capacity-building instrument. These developments were welcomed by the Governing Body at its Fifth Session and, as a result, the platform was considered a supporting activity to the Programme of Work on Sustainable Use (Resolution 7/2013).

Notwithstanding these initiatives, non-monetary benefit-sharing under the Treaty remains limited. Since the first Governing Body meeting, Contracting Parties,¹⁰⁰⁰ in particular those from Latin America and the African Region, have pointed out that one of the main

⁹⁹⁷ See below Section 6 on information and knowledge.

⁹⁹⁸ See Resolution 2/2013 point 15; and Resolution 10/2015.

⁹⁹⁹ IT/ACSU-2/15 /Inf.2.

¹⁰⁰⁰ C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., "*Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*", at Chapter 3.

worries after the approval of the Treaty was how to realize benefit-sharing.¹⁰⁰¹ This worry has grown wider at every Governing Body meeting, resulting a numerous Governing Body Resolutions on the subject,¹⁰⁰² and widening to the (non-)implementation of other Treaty obligations. As reported above, difficulties are observed with the inclusion of PGRFA in the MLS (revealing the limited implementation of Article 11), with the additional burden of the SMTA-related tracking and handling (which are contrary to Treaty Article 12.3(b) for instance), and with the monetary and non-monetary benefit-sharing obligations¹⁰⁰³ (which show a certain degree of non-compliance with Article 13). All of these illustrate and confirm that a number of important Treaty obligations are not complied with. While some contracting parties have requested, since the beginning, a better implementation of the MLS, mainly of its benefit-sharing components, in the biennium 2011-2013 all Contracting Parties had to recognize that the MLS did not produce the expected outcomes. Following very serious, in-depth and comprehensive studies, the “*Ad Hoc* Advisory Technical Committee on the Standard Material Transfer Agreement and the Multilateral System of the Treaty” has analysed a wide variety of questions¹⁰⁰⁴ in order to understand in very concrete terms what is and what is not easily implemented in the MLS.

At the Fifth Session of the Governing Body, Contracting Parties from developing countries increased the pressure to act seriously to remedy this state of affairs, in order to counter the growing frustration related to the major obstacle in the overall implementation of the ITPGRFA. This shift of perception on the efficiency of the MLS occurred during the Biennium 2011-2013 and was formalized through a series of High-level Roundtables on the International Treaty¹⁰⁰⁵ where the importance of the Treaty was recognized by Ministers and

¹⁰⁰¹ G. MWILA, *op. cit.*

¹⁰⁰² Resolution 4/2009, Resolution 4/2011, and Resolution 1/2013 for aspects related to the implementation of the benefit-sharing obligations in the MLS; Resolution 1/2006, Resolution 3/2009, Resolution 3/2011 and Resolution 2/2013 for aspects related to the financial issues in the Funding Strategy.

¹⁰⁰³ N. I. MOELLER AND C. STANNARD, 2013.

¹⁰⁰⁴ Inter alia, the Advisory Technical Committee studied the following issues: Non-food/non-feed uses of PGRFA; transfer and use of PGRFA under the MLS: transfer to farmers for direct use for cultivation; updating of the SMTA in the context of reporting obligations of parties ; creating legal space for the International Treaty in the context of access and benefit-sharing regimes; commercialization of a product under the Multilateral System in the context of not-for-profit projects under Article 13 of the International Treaty; availability without restriction for further research and breeding under the Multilateral System: geographical extent of the restriction; commercialization of a product under the Multilateral System: calculation of benefit-sharing payments; availability without restriction for further research and breeding under the Multilateral System: sale of hybrids; transfer of PGRFA to affiliate companies and SMTA concluded on behalf of affiliate companies; the Policy and Principles on the Management of Intellectual Assets of the Consultative Group on International Agricultural Research; options for reflecting clarifications to the SMTA; creating legal space for the Treaty in the context of access and benefit-sharing regimes; the collection, conservation and distribution through the SMTA of samples of plant varieties protected by plant breeder's rights, etc. I refer to the reports of the four meetings of the Advisory Technical Committee for details on those issues.

¹⁰⁰⁵ Four meetings were held between December 2010 and September 2014: First High-level Round Table on the International Treaty, *Rome, Italy, 07/12/2010*; Second High-level Round Table (Rio de Janeiro, 21 June 2012); Third High-level Policy Dialogue

vice-Ministers of all member states present, and where the need to “sustain and further raise the high-level engagement with the Treaty and the enhancement of its systems and funds”¹⁰⁰⁶ were expressed. Thanks *inter alia* to the work of the Advisory Technical Committee, Contracting Parties adopted Resolutions 1/2013 and 2/2013, where it is explicitly recognized that the MLS is not functioning as it should and that Contracting Parties have difficulties in complying with all MLS obligations in general. Language is included showing that financial issues are important but that the implementation of the MLS can only be tackled taking into account an overall view of the MLS implementation issues.¹⁰⁰⁷ With the view to unblock the situation, the Governing Body decided to establish the “*Ad Hoc* Open-ended Working Group to Enhance the Functioning of the Multilateral System of Access and Benefit-sharing”¹⁰⁰⁸ and to reconvene the “*Ad Hoc* Advisory Committee on the Funding Strategy”¹⁰⁰⁹ (ACFS) in identifying possible innovative approaches to mobilizing resources for the Benefit-sharing Fund.¹⁰¹⁰ This process is analysed in the following sub-section.

C. Implementation of the Benefit-sharing Fund

In 2008 the BSF became operative with voluntary contributions from Contracting Parties.¹⁰¹¹ The first contributions from Spain, Italy, Norway and Switzerland enabled the opening of the first project cycle. At the Third Session of the Governing Body, Contracting Parties welcomed the Strategic Plan for the implementation of the BSF. To speed up the fund raising, Norway pledged to implement a national policy where 0.1 percent of all seed sales are to be transferred to the fund. Notwithstanding this positive initiative, financial resources have not flowed easily and abundantly to the fund. Since the entry into force of the Treaty, many Parties have pointed to the lack of sufficient funds to support programmes to conserve and utilise PGRFA in a sustainable way at the regional, national and local community level. At the Third meeting of the Governing Body, a Strategic Plan of Implementation of the Funding

on the International Treaty and High-level Roundtable on the International Treaty *Bandung, Indonesia, 01-02/07/2013*; Forth High-Level Round Table on International Plant Treaty, *24 September 2014*, convened during the 69th United Nations General Assembly and issued the “New York Communiqué: The International Treaty, Food Crops and Food Security in a Changing Climate”.

¹⁰⁰⁶ “New York Communiqué: The International Treaty, Food Crops and Food Security in a Changing Climate”, Forth High-Level Round Table on International Plant Treaty, *24 September 2014*, convened during the 69th United Nations General Assembly.

¹⁰⁰⁷ Resolution 1/2013 states in its §1 that the Governing Body is “[c]onvinced of the urgency of bringing all elements of the Multilateral System of Access and Benefit-sharing into full and effective operation, and the need to address all the elements of the Multilateral System as an integrated whole (...).”

¹⁰⁰⁸ Resolution 2/2013 point. 1 to 17 all cover monetary benefit-sharing issues.

¹⁰⁰⁹ Since the First Governing Body, the *Ad Hoc* Advisory Committee on the Funding Strategy has met seven times.

¹⁰¹⁰ Resolution 1/2013, point 22.

¹⁰¹¹ For more information on the BSF see above at §1, C.

Strategy (prepared by the *Ad Hoc* Committee) was adopted.¹⁰¹² Although the Strategic Plan had set a funding target of US\$ 116 million to be raised within the next five years, part of these funds were still not available in 2015.

At its Fourth Session, the Governing Body adopted the *Interim* Procedures for Reporting, Monitoring and Evaluation and the Draft *Interim* Disbursement Procedures,¹⁰¹³ to allow for the second round of BSF projects to be approved and funded. At the Fifth Governing Body meeting, a third call for BSF projects was launched. Even though the budget (US\$ 10 million) has significantly increased compared to the first two project cycles, the total amount remained far below the US\$ 116 million target set in 2009. Realizing that the Treaty was functioning with difficulty, Contracting Parties decided to launch a review process of the MLS, including financial aspects.

The mandate of the *Ad Hoc* Open-ended Working Group to Enhance the Functioning of the MLS established in 2013, is *inter alia* to increase user-based payments and contributions to the BSF in a sustainable and predictable long-term way.¹⁰¹⁴ At its Sixth Session, the Governing Body renewed the mandate of the *Ad Hoc* Open-ended Working¹⁰¹⁵ as well as that of the *Ad Hoc* Advisory Committee on the Funding Strategy,¹⁰¹⁶ in order to speed up the review process and accelerate the resource mobilization. With Resolution 2/2015, Contracting Parties emphasise that “an effective Funding Strategy is critical to the implementation of the Treaty, so it should be regularly reviewed by the Governing Body; [and] [a]grees that, at its Seventh Session, it will undertake a review of the Funding Strategy with a view to enhance its functioning, and, in order to provide a basis for this review, decides to reconvene the Ad Hoc Advisory Committee on the Funding Strategy in the 2016–2017 biennium (...).”¹⁰¹⁷ Moreover, the Governing Body “[u]rgently calls on members of national, regional and international private sector associations, NGOs, as well as Contracting Parties and other donors, to make *contributions on an exceptional basis, to allow the launch of the fourth project cycle of the Benefit-sharing Fund* for at least US\$ 10 million, which was the funding level of the third

¹⁰¹² Resolution 3/2009; IT/GB-3/09/Report § 26-30.

¹⁰¹³ Resolution 3/2011; IT/GB-4/11/Report §§ 21-23 and Appendix A.3.

¹⁰¹⁴ Resolution 2/2013; IT/GB-5/13/Report §§ 22-26 and Appendix A.2.

¹⁰¹⁵ Resolution 1/2015, point 2.

¹⁰¹⁶ Resolution 2/2015, point 3.

¹⁰¹⁷ IT/GB-6/15/Report, Appendix A.2

project cycle, as it will contribute to keeping the momentum in the enhancement of the Multilateral System” (emphasis added).¹⁰¹⁸

Although Contracting Parties have welcomed the financial contributions made by Indonesia, Italy, Austria, Norway and Sweden during the 2014-2015 biennium in support of the fourth round of the BSF project cycle as well as the contribution made by the European Seed Association at Governing Body 6 as the first collective contribution from actors of the European seed sector,¹⁰¹⁹ the financial crisis in which the Treaty is stuck remains critical. Major efforts will have to be made in order to comply with Treaty Article 18.2 on the importance of the availability, transparency, efficiency and effectiveness of the provision of financial resources. Transparency does not seem to be a major obstacle, but compliance with the obligations of efficiency, effectiveness and above all availability of funds is clearly not met.

Section 6. Information and knowledge related to PGRFA

The supporting components¹⁰²⁰ (Part V of the Treaty) play an important role in facilitating the implementation of the Treaty by its Contracting Parties. These four interdependent components are: the Global Plan of Action (Article 14), the *ex situ* Collections of the IARCs and other International Institutions (Article 15), the International Plant Genetic Resources Networks (Article 16), and the Global Information System (GLIS) on PGRFA (Article 17). Deep technical analyses, spreading beyond the boundaries of the Treaty, would be required in order to provide a comprehensive assessment of the implementation of the Treaty as a whole. However, taking into account the limits (in scope, time and length) of the present dissertation, these aspects will not be addressed here, except from Article 17 on the Global Information System. Indeed, information and knowledge are crucial elements inseparable from the PGRFA material and enabling its use. Moreover, the GLIS has received increased attention over the last few years within the Treaty forum. This highlights the strategic

¹⁰¹⁸ Ibidem.

¹⁰¹⁹ Resolution 2/2015.

¹⁰²⁰ Part V of the Treaty is dedicated to existing PGRFA management tools and mechanisms which are part of the FAO Global System on Plant Genetic Resources, initiated by the establishment of the Commission on Plant Genetic Resources (the former CGRFA) back in 1983, and still covered by the mandate of the CGRFA. By explicitly integrating these mechanisms within the core of the Treaty, Contracting Parties clearly expressed their will to conversely integrate the Treaty within the existing Global System on PGR. The idea was to build on the existing frame, to take advantage of long-standing collaborations between FAO and other international institutions related to food and agriculture as well as to make use of States’ experience in the implementation of these tools to facilitate the implementation of the Treaty. Doing so would also avoid duplicating activities, while even perhaps enhancing the functioning of the said-tools.

importance of designing and implementing a PGRFA information and knowledge policy. In the present section, an explanation of the concept is first provided (§1), followed by an assessment of the implementation process of Article 17 (§2).

§ 1 Defining the Global Information System on PGRFA

Article 17 states that Contracting Parties shall cooperate to develop and strengthen a GLIS to facilitate the exchange of information, based on existing information systems, on scientific, technical and environmental matters related to PGRFA. In this section, the GLIS will be briefly outlined (A) and the diversity of existing information systems will be highlighted (B). A final note is made regarding traditional knowledge (C).

A. Enhanced cooperation for the exchange of PGRFA related information

The GLIS is aimed at enhancing the documentation of PGRFA, including crop wild relatives, on-farm and *in situ* material, as well as promoting its distribution in particular among developing countries. Article 17.1 highlights the necessary cooperation with the up and running CBD Clearing House Mechanism.¹⁰²¹ Article 17.2 stresses the role of the information system in early warning about hazards threatening PGRFA. Article 17.3 focuses on the role of the GLIS in the periodic reassessment of the state of the World's PGRFA and in updating the rolling GPA.¹⁰²²

B. A diversity of information systems

Several types of information systems are of relevance for the development of the GLIS. Information can relate to *inter alia* 1) the accession itself (passport and characterization data); 2) the existence, location and access conditions of material in national, regional or international collections or networks; 3) related technology, tools or research results; 4) publicly available genomic data; etc. The galaxy of existing information systems makes it difficult to have a clear vision of the current situation. The diversity among these systems

¹⁰²¹ The Clearing House Mechanism (Article 18.3 of the CBD) is coordinated by the Executive Secretary, and aims at the promotion and facilitation of technical and scientific cooperation; of information exchange among Parties, other Governments and stakeholders; and creating a fully operational mechanism with the participation of all CBD Parties and an expanded network of partners. <http://www.cbd.int/convention/articles.shtml?a=cbd-18>

¹⁰²² IT/GB-2/07/Inf.7 at §§ 22-26; IT/GB-3/09/Inf. 7 at §§ 15-20.

makes it difficult to coordinate them together (with the view *inter alia* to avoiding too much duplication).

Examples of this variety of information systems and related initiatives are provided. 1) The World Information and Early Warning System on Plant Genetic Resources for Food and Agriculture (WIEWS)¹⁰²³ in FAO is the monitoring approach of the GPA adopted since 2004, which establishes National Information Sharing Mechanisms (NISM).¹⁰²⁴ 2) The System-wide Information Network for Genetic Resources (SINGER)¹⁰²⁵ of the CGIAR. 3) The American Germplasm Resources Information Network (GRIN) supports the national PGRFA collections, collectively called the National Genetic Resources Program (NGRP).¹⁰²⁶ 4) The European Plant Genetic Resources Search Catalogue (EURISCO).¹⁰²⁷ 5) Genesys¹⁰²⁸ is a plant genetic resources portal that gives breeders and researchers a single access point to information of about a third of the world's genebank accessions. 6) The Global Biodiversity Information Facility (GBIF)¹⁰²⁹ is a multilateral initiative aiming at making the world's biodiversity data freely and universally available via the Internet.¹⁰³⁰ 7) The DivSeek initiative aims to characterize crop diversity and develop a unified, coordinated and cohesive information management platform to provide easy access to genotypic and phenotypic data associated with genebank germplasm.¹⁰³¹ 8) The Global Open Genome Sequence Data Framework¹⁰³² proposes to establish a "public license for genomic information on crop germplasm" as the first mechanism to ensure that "such data will be systematically treated as a public good for the benefits of mankind."¹⁰³³ 9) The Multi-Crop Passport Descriptors (MCPD V.2.1)¹⁰³⁴ is the globally adopted international standard for passport data of *ex situ* genebank accessions. It is compatible with WIEWS and Genesys. 10)

¹⁰²³ IT/GB-3/09/Inf. 7 at § 16; IT/GB-4/11/19 §§ 22-30.

¹⁰²⁴ <http://www.fao.org/wiews-archive/wiews.jsp>

¹⁰²⁵ IT/GB-4/11/19, §§ 31-37. <http://singer.cgiar.org>

¹⁰²⁶ <http://www.ars-grin.gov/npgs/>

¹⁰²⁷ <http://www.ecpgr.cgiar.org/resources/germplasm-databases/eurisco-catalogue/>; see also IT/GB-4/11/19, §§ 33-34.

¹⁰²⁸ Initiated by Bioversity International in partnership with the Secretariat of the Treaty, it functions with a financial support from the Global Crop Diversity Trust. <http://www.genesys-pgr.org/>

¹⁰²⁹ <http://www.gbif.org/>

¹⁰³⁰ Governing Body IF was established by inter-governmental agreement (initially 17 countries) and is based on a non-binding Memorandum of Understanding.

¹⁰³¹ See below §2. DivSeek, "Harnessing the power of crop diversity to feed the future". White Paper, available at <http://static1.squarespace.com/static/537207e3e4b0d4555960edfd/t/53b08ea6e4b0efba71ed6fbc/1404079782586/White+Paper+DivSeek.pdf>

¹⁰³² See below §2, B, (2).

¹⁰³³ N. WARTHMAN AND C. CHIAROLLA, 2015, "Thinking a Global Open Genome Sequence Data Framework for Sustainable Development", *Global Sustainable Development Report 2015 Brief*, Vol. at p. 2.

¹⁰³⁴ The updated version of the Multi-Crop Passport Descriptors (MCPD V.2.1) was just released by FAO and Bioversity International. [http://www.bioversityinternational.org/index.php?id=244&tx_news_pi1\[news\]=7639&cHash=090c1a8da6b07a47ff5399876137da9b](http://www.bioversityinternational.org/index.php?id=244&tx_news_pi1[news]=7639&cHash=090c1a8da6b07a47ff5399876137da9b)

Work on Digital Object Identifiers (DOIs) is undertaken to identify genetic material with permanent unique identifiers, also indicating whether the material is included in the MLS or not. “Once a DOI is assigned to the material, an accession can be referenced easily and unambiguously forever, even across organizations, with the advantage that users and modern information systems will be able to discover and access the information associated with the material and also to add value to it through automatized web links.”¹⁰³⁵ 11) The Capfitogen Programme¹⁰³⁶ and the Platform for the Co-development and Transfer of Technologies¹⁰³⁷ are initiatives to support national and regional programmes in the development and transfer of information technologies for, and data analysis of, PGRFA. Many countries also have national information systems on PGRFA.

C. Traditional knowledge

While there is not yet an accepted definition of traditional knowledge (TK)¹⁰³⁸ at the international level, within the WIPO fora, TK is presented as “knowledge, know-how, skills and practices that are developed, sustained and passed on from generation to generation within a community, often forming part of its cultural or spiritual identity.”¹⁰³⁹

For small-holder farmers, seeds (the material) and traditional knowledge (the related information to the material) are indissociably related. A seed without its associated traditional knowledge is of no value, of no use. Therefore, this type of information is crucial for the conservation and sustainable use of PGRFA. This is recognized in the Treaty, where Article 9.2 stipulates that “(...) each Contracting Party should, as appropriate, and subject to its national

¹⁰³⁵ <http://www.planttreaty.org/news/updated-version-multi-crop-passport-descriptors>

¹⁰³⁶ <http://www.fao.org/publications/card/fr/c/cc32dab2-ae8b-4738-86b5-54c781203059/>

¹⁰³⁷ In June 2012, the Second High-Level Roundtable on the Treaty adopted the Rio Six-point Action Plan, which recommended, as a priority, that stakeholders in the Treaty “establish a Platform for the Co-Development and Transfer of Technologies, within the context of non-monetary benefit-sharing under the Treaty”. See IT/ACSU-2/15 /Inf.2

¹⁰³⁸ There is a lot to say about traditional knowledge related to genetic resources. This specific issue falls outside the scope of this research, but would require further work. For information on the subject see S. VON LEWINSKI, 2008, *Indigenous Heritage and Intellectual Property: Genetic Resources, Traditional Knowledge, and Folklore*, Kluwer Law International; K. R. SRINIVAS, 2008 *op.cit.*; M. SARR AND T. SWANSON, 2006 *op.cit.*; D. POSEY AND G. DUTFIELD, “Plants, Patents and Traditional Knowledge: Ethical Concerns of Indigenous and Traditional Peoples”, in G. VAN OVERWALLE (eds), *Patent Law, Ethics and Biotechnology*, Brussel, Bruylant, 1998; S. R. MUNZER AND K. RAUSTIALA, 2009, “The Uneasy Case for Intellectual Property Rights in Traditional Knowledge”, *Cardozo Arts & Ent. LJ*, Vol. 27; E. C. KAMAU AND G. WINTER, “Genetic Resources, Traditional Knowledge and the Law. Solution for Access and Benefit Sharing”, ; G. DUTFIELD, “Intellectual Property, Biogenetic Resources and Traditional Knowledge”, .

¹⁰³⁹ See the webpage on Traditional Knowledge of the WIPO website: <http://www.wipo.int/tk/en/tk/> ; see also N. P. DE CARVALHO, 2005, “From the Shaman’s Hut to the Patent Office—in Search of Effective Protection for Traditional Knowledge”, *Washington University Journal of Law & Policy*, Vol. 17; S. VON LEWINSKI, *cit.*; G. VAN OVERWALLE, “Protection of Traditional Knowledge: A Critical Synthesis”, in W. GROSHIDE AND J. BRINKHOF (eds), *Articles on Cultural Expressions and Indigenous Knowledge*, Antwerp, Intersentia, 2002; D. POSEY AND G. DUTFIELD, *op. cit.*

legislation, take measures to protect and promote Farmers' Rights, including: a) protection of traditional knowledge relevant to plant genetic resources for food and agriculture; (...)"

Farmers' traditional knowledge is undeniably considered as "information" relating to PGRFA,¹⁰⁴⁰ which could be covered by the development of the GLIS. Addressing issues related to TK through the GLIS could be a way to limit misappropriation, which have enflamed polemics on cases of biopiracy.¹⁰⁴¹ Current negotiations on an international legal instrument to ensure the effective protection of TK, traditional cultural expressions and genetic resources are taking place within the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (WIPO-IGC).¹⁰⁴²

There are two ways of protecting TK through IPRs: defensive and positive protection.¹⁰⁴³ Defensive protection refers to "a set of strategies to ensure that third parties do not gain illegitimate or unfounded IP rights over TK. (...) Some countries and communities are also developing TK databases that may be used as evidence of prior art to defeat a claim to a patent on such TK."¹⁰⁴⁴ These databases could be integrated in the GLIS under the Treaty. Positive protection rather focuses on the protection of TK by IP rights through "preventing unauthorized use, and active exploitation of TK by the originating community itself."¹⁰⁴⁵

¹⁰⁴⁰ S. B. BRUSH, 2005, "Protecting Traditional Agricultural Knowledge", *op.cit.*; S. B. BRUSH, 2007, "Farmers' Rights and Protection of Traditional Agricultural Knowledge", *World Development*, Vol. 35, (9); S. BIBER-KLEMM AND T. COTTIER, "Rights to Plant Genetic Resources and Traditional Knowledge. Basic Issues and Perspectives", ; D. I. JARVIS *et al.*, 2011, "An Heuristic Framework for Identifying Multiple Ways of Supporting the Conservation and Use of Traditional Crop Varieties within the Agricultural Production System", *Critical Reviews in Plant Sciences*, Vol. 30, (1-2); C. B. ONWUEKWE, 2004, "The Commons Concept and Intellectual Property Rights Regime: Wither Plant Genetic Resources and Traditional Knowledge?", *Pierce Law Review*, Vol. 2, (1).

¹⁰⁴¹ On misappropriation and biopiracy, see above Chapter 2. See also I. MGBEOJI, 2001, "Patents and Traditional Knowledge of the Uses of Plants: Is a Communal Patent Regime Part of the Solution to the Scourge of Bio Piracy?", *Indiana Journal of Global Legal Studies*, Vol. 9, (1); and K. E. EBHOJIE, 2013, "Patently Waiting for Sui Generis Rights: Systemic Biopiracy and Nigerian Traditional Knowledge in *Vernonia Amygdalina*", Available at SSRN 2285684, Vol. .

¹⁰⁴² <http://www.wipo.int/tk/en/igc/>

¹⁰⁴³ W. B. WENDLAND, "Intellectual Property and the Protection of Cultural Expressions: The Work of the World Intellectual Property Organization (Wipo)", in W. GROSHIDE AND J. BRINKHOF (eds), *Articles on Cultural Expressions and Indigenous Knowledge*, Intersentia, Antwerp, 2002, at pp.101-138.

¹⁰⁴⁴ See <http://www.wipo.int/tk/en/tk/> "These measures include the amendment of WIPO-administered patent systems (the International Patent Classification system and the Patent Cooperation Treaty Minimum Documentation). (...) WIPO has developed a toolkit to provide practical assistance to TK holders on documenting TK." Defensive protection include means such as maintaining secrecy, or documenting TK. Positive protection are mechanisms such as patents, geographical indications, *sui generis* systems, ABS systems, or contracts. See G. VAN OVERWALLE, 2005, "Protecting and Sharing Biodiversity and Traditional Knowledge: Holder and User Tools", *op.cit.* at pp. 593-597; see also G. VAN OVERWALLE, "Protection of Traditional Knowledge: A Critical Synthesis", *op. cit.*.

¹⁰⁴⁵ *Ibid.*

§ 2 Implementing the Global Information System

Notwithstanding this diversity of systems, the Second Report of the State of the World on Plant Genetic Resources for Food and Agriculture highlighted a significant imbalance among regions and countries within regions in maintaining an integrated national information system on germplasm holdings.¹⁰⁴⁶ Therefore, at the Fourth Session of the Governing Body, Contracting Parties requested the Secretariat to develop a Vision paper which takes stock of existing information systems, outlines a process for the development of the GLIS,¹⁰⁴⁷ and identifies the gaps and needs for information of providers and users.¹⁰⁴⁸ At its Fifth Session, the Governing Body considered the Vision paper¹⁰⁴⁹ and adopted Resolution 10/2013,¹⁰⁵⁰ requesting the Secretariat to continue developing, in collaboration with relevant international organizations, the Vision paper for adoption at its Sixth Session.¹⁰⁵¹ The item was high on the agenda of the Sixth Session of the Governing Body, where Contracting Parties adopted Resolution 3/2015, officially setting up the first global data library of genetic data of food crop seeds.¹⁰⁵² The Resolution includes the Vision and the Programme of Work on the GLIS and establishes a Scientific Advisory Committee to provide scientific and technical guidance for its implementation during the inter-sessional periods.

A. Development of the Global Information System

The Vision paper state that the “development of a truly effective Global Information System as foreseen in the International Treaty involves, inter alia: strengthening existing systems and, where gaps remain, establishing new systems and initiatives; promoting inter-connectivity among systems; and providing overarching mechanisms to ensure ready access to the information and services provided.”¹⁰⁵³ This translates into the following objectives: 1) to create a web-based platform with use-oriented entry points to PGRFA information; 2) to provide a comprehensive overview and facilitate access to sources of PGRFA and associated

¹⁰⁴⁶ FAO, "Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture", 2010, at Chapter 3. Available at

<http://www.fao.org/docrep/013/i1500e/i1500e03.pdf>

¹⁰⁴⁷ Resolution 4/2011, at point 13.

¹⁰⁴⁸ IT/GB-4/11/19 at §§ 46-47; and IT/GB-4/11/Inf. 4 at §§ 20-22.

¹⁰⁴⁹ IT/GB-5/13/17.

¹⁰⁵⁰ IT/GB-5/13/Report, point 41.

¹⁰⁵¹ IT/GB-6/15/Report at §§ 30-32 and *Appendix A.3*; T/GB-6/15/7.

¹⁰⁵² The International Rice Research Institute (IRRI) has made the first contribution to the gateway by placing with it the genome sequences of more than 3,000 rice varieties. See <http://www.fao.org/news/story/en/item/335405/icode/>

¹⁰⁵³ IT/GB-6/15/Report, Appendix A, Resolution 3/2015, Annex “Vision for the Global Information System on PGRFA”.

information; 3) to promote and facilitate interoperability among existing systems by providing clear principles, technical standards and appropriate tools to support their operations in accordance to the principles and rules of the Treaty; 4) to promote transparency on the rights and obligations of users for accessing, sharing and using PGRFA associated information and to establish ways to exercise those rights and obligations within the Global Information System; 5) to create and enhance opportunities for communication and international and multidisciplinary collaboration to increase knowledge about and add value to PGRFA; 6) to provide capacity development and technology transfer opportunities for the conservation, management and use of PGRFA and associated information and knowledge paying special attention to the needs of developing countries; and 7) to create a mechanism to assess progress and monitor effectiveness of the Global Information System.¹⁰⁵⁴ Let us hope that the work to be undertaken by the Scientific advisory Committee will allow to reach these objectives, building on all existing information systems, thereby significantly enhancing the functioning of the MLS and contributing to the overall efficient implementation of the Treaty.

B. Other initiatives related to genetic information associated with MLS material

In order to attract more users to the MLS, it was sought to increase the visibility and accessibility of the type of material in the MLS, including by improving the access to technical information on genetic resources.¹⁰⁵⁵ Focus is therefore set on the type of material included in the MLS, on the related (genetic) information available, and on the means of making it available. Indeed, having a clearer view on what is part of the MLS can definitely incite stakeholders to use it. Below, two specific recent initiatives are highlighted, which contribute to progress on the work Contracting Parties are conducting on ways to enhance the availability and use of genetic information associated with MLS material: the DivSeek Initiative and the Global Open Genome Sequence Data Framework.

(1) The DivSeek initiative

On 9 January 2015 in San Diego,¹⁰⁵⁶ an International Panel of Experts was elected by almost 60 organizations from more than 20 countries to steer a global “big data” partnership

¹⁰⁵⁴ Ibidem.

¹⁰⁵⁵ Resolution 1/2013, points 20-25.

¹⁰⁵⁶ Plant and Animal Genome Conference, 9-14 January 2015 in San Diego, US.

to harness genetic resources for food security: the DivSeek.¹⁰⁵⁷ On the initiative's website,¹⁰⁵⁸ it is stated that "[t]he Diversity Seek initiative (DivSeek) will work with existing, emerging and future initiatives to characterize crop diversity and develop a unified, coordinated and cohesive information management platform to provide easy access to genotypic and phenotypic data associated with genebank germplasm."¹⁰⁵⁹ The objective of this community-driven initiative is to bridge the gap between the information requirements of genebank curators, plant breeders and more targeted upstream biological researchers, in order to support applied germplasm curation, forward-looking breeding programs and strategic research. The overall aim is to enhance the use of genebank materials, promote effective utilization of genetic variation in plant improvement, and better understand how components of genetic variation contribute to plant performance in diverse climatic environments. DivSeek wants to "unlock the potential of crop diversity stored in genebanks around the globe and make it available to all so that it can be utilized to enhance the productivity, sustainability and resilience of crops and agricultural systems".¹⁰⁶⁰

Partnering institutions¹⁰⁶¹ are genebanks, breeders, plant and crop scientists, universities, database and computational experts but also the Plant Treaty, the Global Crop Diversity Trust,¹⁰⁶² the CGIAR Consortium,¹⁰⁶³ and the Global Plant Council.¹⁰⁶⁴ It will function as an umbrella organization in "creating a well-coordinated, international effort, based on experience and knowledge of relevant stakeholders."¹⁰⁶⁵

The DivSeek Charter¹⁰⁶⁶ sets forth the governance framework of the initiative. Its framework consists of three organs. The *Partners' Assembly* is composed of representatives of partner organizations and a Chairperson. As decision-making body, it determines the strategic direction of DivSeek and approves its annual program of work. The *Steering Committee* elaborates the annual program of work in alignment with the DivSeek strategic

¹⁰⁵⁷ Editorial. Growing Access to Phenotype Data", February 2015, "Nature Genetics", Vol. 47, (2); see also J. PIOTROWSKI, "Divseek Project Aims to Uncover Crops' Hidden Genetic Data," *SciDevNet* 12 January 2015.

¹⁰⁵⁸ <http://www.divseek.org/>

¹⁰⁵⁹ DivSeek, "Harnessing the power of crop diversity to feed the future". White Paper, available at <http://static1.squarespace.com/static/537207e3e4b0d4555960edfd/t/53b08ea6e4b0efba71ed6fbc/1404079782586/White+Paper+DivSeek.pdf>

¹⁰⁶⁰ DivSeek, "Harnessing the power of crop diversity to feed the future". White Paper.

¹⁰⁶¹ Up to February 2016, there are 62 partners listed on the DivSeek website, available at <http://www.divseek.org/partners/>

¹⁰⁶² <https://www.croptrust.org/>

¹⁰⁶³ <http://www.cgiar.org/cgiar-consortium/>

¹⁰⁶⁴ <http://globalplantcouncil.org/>

¹⁰⁶⁵ Ibid.

¹⁰⁶⁶ The DivSeek Charter was adopted at the Partners' Assembly in January 2015 and is available at <http://static1.squarespace.com/static/537207e3e4b0d4555960edfd/t/5550ce29e4b07c654f9c37e9/1431359065296/DivSeek+Charter.pdf>

direction and oversees its implementation. Finally, the *Joint Facilitation Unit* operationalizes and facilitates the implementation of the program of work.

(2) The Global Open Genome Sequence Data Framework

In the 2015 Global Sustainable Development Report,¹⁰⁶⁷ researchers¹⁰⁶⁸ pledged for a “universal access to genome information, needing nothing more than a web browser” in order to “transform plant breeding (...) [and] spawn innovation around the world”.¹⁰⁶⁹ Answering the call for “a New Data Revolution” for sustainable development expressed by the UN Secretary-General’s High Level Panel on post-2015 development goals,¹⁰⁷⁰ the rationale behind this initiative is that “using genetic data can improve the speed and efficiency of plant breeding compared with classic trial-and-error practices.” According to Warthmann, “plant breeding must be a decentralized exercise, with breeders efficiently breeding local varieties of a plethora of crops.” Countries like India would be the perfect target user for such initiative, as India has the data processing capacities, but where access to commercial data set remains elusive.

Warthmann and Chiarolla propose to establish a “public license for genomic information on crop germplasm” as the first mechanism to ensure that “such data will be systematically treated as a public good for the benefits of mankind.”¹⁰⁷¹ This license would ensure that genome sequence information and related data remains free and is made available as a public good, as long as it originates from publicly funded repositories and other stakeholders. This means that anyone sequencing germplasm in the public domain should be able to render the resulting information publicly available as is, “without prior curation, and without being exposed to the risk of infringing someone else’s rights on the material and/or related information, including patents or copyright.”¹⁰⁷² Article five of the draft public license imposes

¹⁰⁶⁷ The Global Sustainable Development Report was launched in June 2015 during the 2015 session of the High Level Political Forum (HLPF) on Sustainable Development. See <https://sustainabledevelopment.un.org/globalsdreport/2015>

¹⁰⁶⁸ N. WARTHMAN AND C. CHIAROLLA, 2015 *op.cit.* available at <https://sustainabledevelopment.un.org/content/documents/5934Thinking%20a%20global%20open%20genome%20sequence%20data%20framework%20for%20sustainable%20development.pdf>

¹⁰⁶⁹ *Ibidem.*

¹⁰⁷⁰ UNITED NATIONS, "A New Global Partnership: Eradicate Poverty and Transform Economies through Sustainable Development. The Report of the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda", 2015, at p. 23. Available at <http://www.post2015hlp.org/wp-content/uploads/2013/05/UN-Report.pdf>

¹⁰⁷¹ N. WARTHMAN AND C. CHIAROLLA, 2015 *op.cit.* at p. 2.

¹⁰⁷² N. WARTHMAN AND C. CHIAROLLA, 2015 *op.cit.* at p. 3.

a reach-through obligation that is to say that “the genomic information of descendants of material subject to this license is again subject to the same terms and conditions.”¹⁰⁷³

Similarly to the DivSeek initiative, the Global Open Genome Sequence Data Framework is certainly to be welcomed and applauded. There is no doubt that promoting an open access to PGRFA-related genetic information is crucial to work around the increasing enclosure of seeds and allow public scientists and breeders to develop the new varieties to face our current and future needs.

C. Protection of traditional knowledge

A caveat is placed on the above-mentioned initiatives which mainly focus on one specific type of PGRFA user, i.e. the (high-tech) breeder, leaving aside the majority of seed users, i.e. the (small-holder) farmer. It is understood that the end-beneficiary of this type of initiative is to be the farmer, but it does not recognize the fact that the majority of the seeds used by smallholder farmers does not originate from commercial breeders but from informal seed exchange systems between farmers.

While Article 9.2a) stipulates that Traditional Knowledge is important and should be protected, the fact that this responsibility is recognized only “as appropriate, and subject to (...) national legislation[s]” has not promoted a general move towards TK protection at the international level. In some countries, *sui generis* legislation has been developed.¹⁰⁷⁴

However, after several years of negotiations, countries still have not come to an agreement and the debate does not seem to be close to an end. Relationships between the Treaty Secretariat and the WIPO-IGC seem rather distant, and there is no concrete collaboration foreseen in the coming agendas of both bodies as to common work on the protection of information and knowledge related to PGRFA.

Developing the GLIS is one way to enhance the implementation of the MLS, by rendering information available, visible and accessible. However, because of the type of information that is currently covered by the GLIS, one understands easily that it will be useful mainly for a specific type of users: professional plant breeders, and not for the end users: i.e. the farmers, reflecting also at this level the imbalance in the Treaty between breeders and farmers.

¹⁰⁷³ N. WARTHMAN AND C. CHIAROLLA, 2015 *op.cit.* at pp. 3-4.

¹⁰⁷⁴ According to the WIPO database, 17 countries have passed legislation to protect TK. These legislations can be found at <http://www.wipo.int/tk/en/databases/tklaws/>

Section 7. Legal rules and procedures supporting compliance with the Treaty

What rules and procedures support the functioning of the Treaty? What can be done when there is a situation of non-compliance? By whom? What happens in case of dispute regarding the SMTA or a Treaty obligation? What happens when Contracting Parties want to change or adapt a Treaty provision? Various rules and procedures are established by the Governing Body to answer these questions and allow for an efficient implementation of the Treaty.

These rules and procedures intervene at two levels: 1) at the level of the MLS and its SMTA, where PGRFA users may act; and 2) at the level of the Treaty, where Contracting Parties (i.e. States) are the major stakeholders at play. These procedures will each be described and assessed: the Third Party Beneficiary (§1), procedures and operational mechanisms to promote compliance (§2), dispute settlement (§3), and amendment to the Treaty (§4).

§ 1 The Third Party Beneficiary

The Third Party Beneficiary (3PB), has been created by Contracting Parties to address some issues related to the multilateral character of the system and the enforcement of the SMTA.¹⁰⁷⁵ This innovative concept bridges the gap between the private contractual law relationship between parties to the SMTA and the public international law setting where Contracting Parties (i.e. states) to the Treaty and its MLS is anchored.

A. Defining the concept of Third Party Beneficiary

The 3PB is the virtual entity representing the MLS, designed to assert its rights, and to allow for enforcement of the SMTAs. As a matter of fact, the SMTA creates a triangular relationship between providers, recipients and the MLS. Unlike in a classical MTA, benefits flow back to the MLS (and in particular the BSF) rather than to the provider of the material. Therefore, the provider has no incentive to ensure that the terms of the SMTA are respected by the recipient. As Moore explains “the MLS is the real beneficiary of the benefit-sharing provisions of the SMTA (...). The SMTA recognizes this fact by providing for the appointment of

¹⁰⁷⁵ For a detailed legal and historical study of the 3PB, see G. MOORE, "The Third Party Beneficiary", in M. HALEWOOD, I.L. NORIEGA, AND S. LOUAFI (eds), *Crop Genetic Resources as a Global Commons. Challenges in International Law and Governance*, Oxon, Earthscan by Routledge and Bioversity International, 2013, at pp. 164-176.

a third party beneficiary *to represent the rights of the MLS* and by giving this third party beneficiary the power *to initiate dispute settlement action*, including arbitration, in the event of a breach of the terms and conditions of the SMTA affecting those rights.”¹⁰⁷⁶ (Emphasis added).

(1) A triangular contractual relationship: provider-recipient-Third Party Beneficiary

While the concept of 3PB will be found nowhere in the Treaty text, I agree with Moore when he says that it is implicitly provided for in the Treaty,¹⁰⁷⁷ in particular in its Article 12.4 which establishes the triangular relationship between the provider, the recipient and the MLS. Moore further analyses the concept of 3PB rights in national law, and concludes that “the possibility for a contract to provide for enforceable third party beneficiary rights is expressly and unambiguously recognised in the Principles of the International Commercial Contracts, which were adopted by the International Institute for the Unification of Private Law (UNIDROIT)¹⁰⁷⁸ in 2004.”¹⁰⁷⁹ For this reason, the SMTA refers explicitly to the UNIDROIT principles when dealing with the choice of applicable law (SMTA Article 7).

In the SMTA, explicit mention to the 3PB is made in Articles 4.3, 4.4 and 8. Article 4.3 requests parties to the SMTA to recognize the 3PB as acting on behalf of the Governing Body and its MLS. Article 4.4 provides the 3PB with the right to request information as required by SMTA Articles 5e, 6.5c, 8.3, and annex 2§3, in particular where the provider or the recipient failed to provide these information to the Governing Body. Article 8 states that dispute settlement may be initiated by the provider, the recipient or the 3PB. Mechanisms for dispute settlement include amicable negotiation, mediation, and arbitration.¹⁰⁸⁰

(2) The absence of legal personality of the Third Party Beneficiary

Another difficulty was to be resolved with the concept of 3PB: the fact that the 3PB (in representing the Governing Body and its MLS) does not have the legal personality, necessary to act under international or national laws. Therefore, the entity which would embody the 3PB would necessarily need to have “its own legal personality and capacity to take legal action to

¹⁰⁷⁶ G. MOORE, *op. cit.* at p. 164.

¹⁰⁷⁷ G. MOORE, *op. cit.* at p. 167.

¹⁰⁷⁸ www.unidroit.org/

¹⁰⁷⁹ G. MOORE, *op. cit.*, at p. 168.

¹⁰⁸⁰ SMTA Article 8; Third Party Beneficiary Procedures Articles 5, 6, and 7.

protect [its] rights.”¹⁰⁸¹ In 2006, FAO has accepted to represent the 3PB, acting under the direction of the Governing Body.¹⁰⁸²

B. Implementing of the Third Party Beneficiary

(1) The procedures for the operation of the Third Party Beneficiary

The Procedures for the Operation of the Third Party Beneficiary were adopted by Resolution 5/2009 in its Annex I, following the work of the Ad Hoc Third Party Beneficiary Committee which met three times between 2006 and 2009. Resolution 5/2009 also established a Third Party Operational Reserve to finance its operations (to be funded with voluntary contributions), and a list of experts to serve as mediators and arbitrators.¹⁰⁸³ At the same meeting, FAO acting as the 3PB was endorsed by the Governing Body.¹⁰⁸⁴ At the Fourth Governing Body, Contracting Parties refined the functioning of the 3PB by adopting Resolution 5/2011 where the “Operation of the Third Party Beneficiary” is further developed in particular regarding the “Rules for Mediation of a Dispute in Relation to a Standard Material Transfer Agreement.” The mechanism of the 3PB described above¹⁰⁸⁵ highlights the great potential of this innovative tool in the management of disputes regarding an SMTA. Furthermore, Article 9 of the 3PB Procedures provides that the 3PB shall submit a report to the Governing Body at every Regular Sessions. Such report¹⁰⁸⁶ should contain information on a number of items regarding its operations¹⁰⁸⁷ in the biennium.¹⁰⁸⁸

¹⁰⁸¹ G. MOORE, *op. cit.* at p. 170.

¹⁰⁸² Circular Letter of 22 December 2006.

¹⁰⁸³ The list of experts can be found at http://www.planttreaty.org/mediation_experts

¹⁰⁸⁴ Resolution 5/2009 point 2.

¹⁰⁸⁵ See Section 7, §1.

¹⁰⁸⁶ By Resolution 5/2009 and Resolution 5/2011, the Governing Body requested the Secretary to provide such report in accordance with Article 9 of the 3PB Procedures.

¹⁰⁸⁷ Article 9 of the 3PB procedures states that the report should contain information on: “a) the number, and a summary, of cases where it received information regarding noncompliance with the terms and conditions of a Standard Material Transfer Agreement; b) the number, and a summary, of cases where it initiated dispute settlement; c) the number, and a summary, of disputes settled through amicable dispute settlement, mediation or arbitration; d) the number, and a summary, of pending disputes; e) any legal questions that appeared in the context of dispute settlement and that may require the attention of the Governing Body; f) the expenditure from the Third Party Beneficiary Operational Reserve; g) any estimate of the needs of the Third Party Beneficiary Operational Reserve in the forthcoming biennium; h) any other relevant non-confidential information.”

¹⁰⁸⁸ That is to say for the part of year 2011 that was not covered by the previous report to the Governing Body, and for the biennium 2012-2013.

(2) First alternative dispute resolution process by the Third Party Beneficiary

At its Fifth Session,¹⁰⁸⁹ the 3PB report transmitted to the Governing Body drew attention to a potential case for the 3PB, which related to two agreements signed by two CGIAR centres with private sector entities.¹⁰⁹⁰ These agreements “may have resulted in the transfer of barley germplasm without the required SMTA, and/or in violation of other Treaty provisions concerning the availability of germplasm.”¹⁰⁹¹ The case was denounced by the ETC Group (Action Group on Erosion, Technology and Concentration) in a Communiqué,¹⁰⁹² then through a letter to the Treaty Secretary.¹⁰⁹³ For the first time, FAO acting as the 3PB initiated the alternative dispute resolution process,¹⁰⁹⁴ and requested clarifying information to both centres during 2012-2013. Upon subsequent informal consultations, a number of clarifying and corrective actions have been initiated in order to comply with the Treaty obligations, particularly Article 15, including that new SMTAs covering retroactively all the transfers to the recipients were to be signed.¹⁰⁹⁵ To date, the 3PB expects to receive final information regarding this case.

Following this first case, Resolution 1/2015 dedicates significant space¹⁰⁹⁶ to the 3PB agenda item. In particular point 18 reiterates “the importance for the effective functioning of the Third Party Beneficiary, of Article 4.2 of the Third Party Beneficiary Procedures, according to which the Third Party Beneficiary may receive information on possible non-compliance with the obligations of the provider and recipient under a Standard Material Transfer Agreement from the parties under the Standard Material Transfer Agreement or any other natural or legal persons,” thereby encouraging further transfer of information. Indeed, in the biennium 2014-2015, the 3PB did not receive new information on possible cases of non-compliance with an SMTA, from any source.

Combined with the overall review mode in which the Governing Body is currently set, the fact that Contracting Parties have focussed significant attention on this mechanism might sound as an implicit threat to non-complying Contracting Parties, or at least as a recall of the

¹⁰⁸⁹ IT/GB-5/13/Report, points 42-43, and Resolution 11/2013.

¹⁰⁹⁰ IT/GB-5/13/19 and IT/GB-5/13/19 Add.1. The two CGIAR centres involved are CYMMIT and ICARDA.

¹⁰⁹¹ IT/GB-5/13/19, point 6.

¹⁰⁹² ETC Group, "The Greed Revolution. Mega Foundations, Agribusiness Muscle in on Public Goods", January/February 2012 , at pp. 6-7.

¹⁰⁹³ IT/GB-5/13/19 at point 5.

¹⁰⁹⁴ Following Article 5 “Amicable dispute settlement” under the Procedure for the Operation of the Third Party Beneficiary, and SMTA Article 8.

¹⁰⁹⁵ IT/GB-6/15/10, point 6.

¹⁰⁹⁶ Points 14 to 21 of Resolution 1/2015 are dedicated to the 3PB agenda item.

fact that “FAO [now has the right] to initiate legal action through dispute settlement procedures to protect the integrity of the [MLS]”.¹⁰⁹⁷ We shall see in the coming years whether this increased attention has encouraged Contracting Parties to “enhance the functioning of the MLS”.

§ 2 Compliance

Compliance procedures are distinct from dispute settlement (Article 22) and from the possibility to seek recourse under Article 12.5 regarding contractual disputes under the SMTA. They deal with general issues of compliance or non-compliance, are non-adversarial, and can be raised by any Contracting Party and the Governing Body.¹⁰⁹⁸

A Defining the notion

Article 21 on Compliance requires the Governing Body to approve compliance mechanisms at its First meeting. However, the negotiation on compliance has been long and difficult. Although a Compliance Committee¹⁰⁹⁹ was established by Resolution 3/2006, it is only at the Fourth Governing Body meeting that the “Procedures and Operational Mechanisms to Promote Compliance and Address Issues of Non-compliance” were adopted.¹¹⁰⁰

(1) A long deferred negotiation process

At the First Session of the Governing Body,¹¹⁰¹ the negotiations on the draft procedures and operational mechanisms to promote compliance and to address issues of non-compliance progressed slowly and a number of issues remained unresolved by the end of the meeting. Contracting Parties adopted Resolution 3/2006 where they decided nonetheless to establish the Compliance Committee¹¹⁰² and to address the outstanding issues during its second session. The Compliance Committee is to commence its work following the approval of cooperative and effective procedures and operational mechanisms on compliance. At the

¹⁰⁹⁷ G. MOORE, *op. cit.*, at p. 172.

¹⁰⁹⁸ Resolution 2/2011, Annex Procedures and operational mechanisms to promote compliance and address issues of non-compliance, Rule VI. 1.

¹⁰⁹⁹ The Compliance Committee is composed by maximum 14 members: two per FAO region.

¹¹⁰⁰ Resolution 2/2011.

¹¹⁰¹ IT/GB-1/06/Report at § 15 and Resolution 3/2006 Appendix I.

¹¹⁰² Pursuant to Treaty Articles 19.3e and 21.

Governing Body's Second meeting,¹¹⁰³ the same situation was repeated. Contracting Parties adopted Resolution 1/2007, which post-pones the approval of the draft procedures to its Third Session, but decides to put the issue of compliance high on the agenda of the next Governing Body Session and to "establish, as appropriate, a contact group at its next Session, which shall commence consideration of the procedures and operational mechanisms to promote compliance and address issues of non-compliance."¹¹⁰⁴ At the Third Governing Body meeting,¹¹⁰⁵ a Contact Group on Procedures and Mechanisms to Promote Compliance and to Address Issues of Non-Compliance was created during the Session to unlock negotiations. Resolution 2/2009 was adopted, establishing an *ad hoc* working group to negotiate and finalise the procedures and operational mechanisms, with a view to their approval at the Fourth Session of the Governing Body.¹¹⁰⁶

Eventually, at the Fourth Session of the Governing Body¹¹⁰⁷ Contracting Parties approved the procedures and operational mechanisms on compliance included in the Annex to Resolution 2/2011, after five years of frustrating negotiations, during which developed and developing countries had clearly opposing views on the priority to give to settling this issue.¹¹⁰⁸ Two other decisions were taken at that time. First, the Compliance Committee was requested to develop further rules of procedure relevant to its work, including rules on confidentiality, decision making, conflict of interest of Committee members, electronic decision making, replacement of Committee members and the format for submissions by the Governing Body, and submit them to the next Session of the Governing Body for its consideration and approval. Second, Contracting Parties requested the Committee to develop a succinct standard reporting format for approval by the Governing Body at its next Session.¹¹⁰⁹ This standard reporting format would allow Contracting Parties to assess where they stand with the implementation of the Treaty.

At its Fifth Session,¹¹¹⁰ the Governing Body approved the Rules of Procedure of the Compliance Committee included in Annex 1 to Resolution 9/2013 as well as the standard format for Parties to report on compliance to the Governing Body, included in Annex 2. In

¹¹⁰³ IT/GB-2/07/Report § 69.

¹¹⁰⁴ Resolution 1/2007 point (iv).

¹¹⁰⁵ IT/GB-3/09/Report § 24-25, and Appendix A.2.

¹¹⁰⁶ Resolution 2/2009.

¹¹⁰⁷ IT/GB-4/11/Report at §§ 19-20, and Appendix A.2.

¹¹⁰⁸ G. MWILA, *op. cit.* at p. 233.

¹¹⁰⁹ Resolution 2/2011.

¹¹¹⁰ IT/GB-5/13/Report at § 40, and Appendix A.9.

order to keep the work of the Compliance Committee rolling, the Governing Body also elected its 14 members and decided to include the costs of the Committee’s meetings in the Core Administrative Budget of the Treaty. Lastly, the Governing Body adopted Resolution 6/2015,¹¹¹¹ electing the members of the Compliance Committee for the 2016-2019 term, and approved some corrections to the Standard Reporting Format. Importantly, Contracting Parties are requested to submit their standard reports¹¹¹² in a timely manner, so that the Compliance Committee could consider them before the Seventh Session of the Governing Body. To support Contracting Parties in fulfilling their reporting commitments under Article 5 of the Compliance Procedures, the Treaty Secretariat has been asked to set up an Online Reporting System to streamline the process through electronic means.¹¹¹³

(2) The procedures and operational mechanisms to promote compliance and address issues of non-compliance

The adopted procedures and operational mechanisms consist of ten sections on: objectives; principles; institutional mechanisms; committee functions; monitoring and reporting; procedures regarding submissions relating to issues of non-compliance; measures to promote compliance and address issues of non-compliance; information; other procedures regarding the promotion of compliance; and review of the procedures and mechanisms.

Rule I defines the objective of the compliance procedures and mechanisms as follow: “to promote compliance with *all the provisions* of the International Treaty and to address issues of non-compliance. These procedures and mechanisms include monitoring, offering advice or assistance, including legal advice or legal assistance, when needed and requested, in particular to developing countries and countries with economies in transition.” (Emphasis added)

Rule II specifies the principles:

“1. The compliance procedures and mechanisms shall be simple, cost-effective, facilitative, non-adversarial, non-judicial, legally non-binding and cooperative in nature.

2. The operation of the compliance procedures and mechanisms shall be guided by the principles of transparency, accountability, fairness, expeditiousness, predictability, good faith,

¹¹¹¹ IT/GB-6/15/Report at § 35 and Appendix A.6.

¹¹¹² According to Section V of the Compliance Procedures.

¹¹¹³ On March 2016, the online reporting system was not yet operational.

and reasonableness. It shall pay particular attention to the special needs of Contracting Parties that are developing countries and Contracting Parties with economies in transition.

3. Any interpretation of the International Treaty is ultimately for the Contracting Parties to make.”

This last paragraph is interesting to note, as agreed interpretations are usually made by decision of the main organ of an international agreement, i.e. the Governing Body. This provision provides some leeway to Contracting Parties in the implementation of Treaty obligations at their national levels but does not hinder any agreed interpretation to be made at a session of the Governing Body on specific matters.

Rule III details the institutional mechanisms whereby the Committee shall consist of a maximum of 14 members elected by the Governing Body for a period of four years (two nominations per each of the seven FAO regions, with no more than two consecutive terms). The Committee shall elect its Chair who will rotate among the FAO regions. The presence of members representing a two-thirds majority of the membership of the Committee is necessary to constitute a quorum. The Committee shall hold meetings as necessary, subject to availability of financial resources.

Rule IV establishes the Committee’s functions, which include *inter alia*: offering advice or assistance to parties on compliance-related issues; assisting the Governing Body in monitoring Treaty implementation; addressing non-compliance issues as well as statements or questions concerning Treaty implementation; and submitting a report to each Governing Body session. It should be noted that questions related to interpretation, implementation or compliance with the SMTA by parties or potential parties to it are left out from the Committee’s competence.

Rule V on monitoring and reporting imposes on Contracting Parties to submit a report on measures to implement the Treaty (the first report must be submitted within three years after the approval of the standard reporting format by the Governing Body and thereafter every five years). Moreover, the Committee provides a synthesis to the Governing Body on the basis of the reports it has received from Contracting Parties. It may further provide an analysis and may submit recommendations on issues addressed in the analysis.

Rule VI deals with procedures regarding submissions relating to issues of non-compliance. It states that the Committee shall receive any submissions from the Governing Body or any party with respect to itself or another Party. Confidentiality is an essential

element of consideration of the submission. The Party concerned will be informed of the submission and has up to six months to respond. It may submit information and participate in any consideration of the submissions, but is not allowed to contribute to the elaboration of a recommendation by the Committee. Finally, the Committee may reject any submission that is *de minimis* or ill-founded.

Rule VII addresses measures to promote compliance and issues of non-compliance. Following these measures, the Committee may provide advice or facilitate assistance to the Party concerned. It may also request the Contracting Party to develop an action plan addressing issues of non-compliance within a specific timeframe and invite for progress reports to be sent.

Rule VIII deals with information and specifies that the Committee shall consider relevant information from the Contracting Party concerned, the Contracting Party that has made a submission, or the Governing Body. It may also seek expert advice and/or receive freely available information as may be provided by the Secretary and other relevant sources.

Rule IX defines other procedures regarding the promotion of compliance, inter alia, that the scope and nature of the Committee's authority in exercising its functions shall be subject to further rules to be developed by the Committee and to be submitted to Governing Body 5 for its approval. Contracting Parties may address statements or questions regarding implementation of their obligations under the Treaty. The Committee shall also consider any questions concerning the implementation of obligations under the International Treaty referred to it by decision of the Governing Body. The Secretary shall list any such questions in order to present them to the Governing Body for consideration of referral to the Committee. The Committee may reject to consider any statement or question, bearing in mind the objectives of the International Treaty, and reasons should be given for any such rejection. The Committee may only make recommendations to the Governing Body concerning statements or questions regarding the implementation of Treaty obligations, unless the Governing Body specifically provides otherwise.

Finally, Rule X sets out the review of the procedures and mechanisms. Under this provision, the Governing Body shall review the effectiveness of these procedures and mechanisms within six years of their approval and periodically thereafter, and take appropriate action.

B. Implementing compliance provisions still to come

Compliance mechanisms may potentially play a key role in the Treaty implementation. However, countries have difficulties complying with all Treaty obligations. Designing creative non-compliance procedures could significantly contribute to a better implementation. It remains to be seen if and how the Governing Body will use this tool as a complementary motor to other initiatives taken to enhance the Treaty's implementation.

§ 3 Settlement of disputes

Settlement of Disputes is to be distinguished from Compliance mechanisms in that it deals with a dispute between two or more specific Parties, for a well-defined scope regarding actions that have arisen in the past. Article 33 of the UN Charter obliges States to settle disputes in a peaceful manner; it provides a list of potential procedures: i.e. negotiation, enquiry, mediation, conciliation, arbitration, judicial settlement, etc.

A. Defining of dispute settlement in the Treaty

Article 22 of the Treaty spells out almost word by word the settlement of dispute Article 27 of the CBD. It provides for gradually more intrusive and formal procedures to settle disputes regarding the interpretation or application of the Treaty between two or more Contracting Parties: from negotiation,¹¹¹⁴ to good offices and third-party mediation,¹¹¹⁵ to arbitration or submission of the dispute to the International Court of Justice (ICJ),¹¹¹⁶ or eventually conciliation in the case that arbitration and ICJ recourses are not possible.¹¹¹⁷ Arbitration and conciliation are further developed in Annex II to the Treaty. When a country becomes party to the Treaty, or anytime thereafter, it may declare in writing to the depositary of the Treaty that a dispute which was not resolved under Article 22.1 (negotiation) or 22.2 (mediation) is to be compulsorily settled either by arbitration (Article 22.3(a)), or by submission to the International Court of Justice (Article 22.3(b)), or any of both means. Alternatively, conciliation (Article 22.4) is made available to Contracting Parties that have not accepted the 22.3 procedure. Therefore, Annex II of the Treaty is essential in specifying the

¹¹¹⁴ Article 22.1.

¹¹¹⁵ Article 22.2.

¹¹¹⁶ Article 22.3.

¹¹¹⁷ Article 22.4.

procedures for arbitration¹¹¹⁸ and conciliation. Regarding mediation, a specific procedure has been developed under the Third Party Beneficiary Procedures.

All EU countries as well as Myanmar have accepted the Article 22.3(a) (arbitration) procedure. None of the 140 Contracting Parties have accepted the ICJ as a means of compulsory dispute settlement under Article 22.3(b) (even countries that have accepted ICJ resolution under the CBD). The time consuming and costly procedure probably explains this situation.

B. Implementing dispute settlement provisions

Since the entry into force of the Treaty no dispute has arisen between Contracting Parties, i.e. at the state level. However, as mentioned above, a dispute has arisen in 2012-2013 through the Third Party Beneficiary procedure, regarding two transfers of PGRFA without the required SMTA.¹¹¹⁹ This procedure involved two CGIAR centres and a private company.¹¹²⁰

§ 4 Amendments to the Treaty

Modifying Treaty provisions is sometimes necessary when Contracting Parties agree that the existing obligations do not serve the purposes of the Treaty, or that they are not implementable. Amendment (Article 23) is the classic way of reviewing or adapting a Treaty. Other procedures, such as adding a protocol to the Treaty, will also be addressed below.

A. Defining legal procedures to review the MLS and funding strategy

Contracting Parties mandated the Ad Hoc Open ended Working Group on the Multilateral System (WG-MLS) to explore what legal procedures would allow a review of the MLS and Funding Strategy, in order to achieve the goals set by the Governing Body to increase user-based payments and contributions to the BSF in a sustainable and predictable long-term manner, and enhance the functioning of the Multilateral System by additional measures.¹¹²¹ The FAO legal office and the WG-MLS identified three main options: 1) minimal changes to the

¹¹¹⁸ Following its declaration upon approval of the Treaty, the European Union specified that for a dispute not resolved in accordance with Article 22.1 or Article 22.2 it accepts as compulsory the dispute settlement provisions in Article 22.3(a). Myanmar is the only other state which made similar declaration.

¹¹¹⁹ See same Section above §1.

¹¹²⁰ ETC GROUP, January/February 2012, at pp. 6-7.

¹¹²¹ Resolution 4/2011, Appendix, point 6.

SMTA; 2) the adoption of amendments to the Treaty; 3) the development of a possible protocol, supplementing and/or improving the existing legal framework of the Treaty.¹¹²² Further details on these procedures are provided below under the analysis of Article 23 of the Treaty.

(1) The amendment procedure

Article 23 deals with Amendments of the Treaty.¹¹²³ Amendments can be proposed by any Contracting Party.¹¹²⁴ They shall be adopted by consensus¹¹²⁵ at a Session of the Governing Body, which equates to a right of veto for each Contracting Party. The potential right of veto makes it very difficult to amend part of the Treaty text, including a potential expansion of the Annex I list of crops and forages. According to Moore and Tymowski, this “provision was viewed as essential by some countries during the negotiations as a way of ensuring that their essential interests would be taken into account in all aspects of the functioning of the Treaty, including its amendments.”¹¹²⁶ Amendments shall come into force ninety days upon the deposit of the ratification / acceptance / approval instrument by a Contracting Party.¹¹²⁷ This means that amendments may enter into force at different dates for different States.

(2) The amendment procedure within the current review process of the MLS and funding strategy

As mentioned above, in 2013 Contracting Parties have initiated a review process of the MLS and Funding Strategy in order to enhance the functioning of the MLS and increase user-based payments and contributions to the BSF in a sustainable and predictable long-term manner. To this end, the *Ad-Hoc* Open-Ended Working Group to Enhance the Functioning of the Multilateral System has worked on preliminary considerations on possible procedures to

¹¹²² First Meeting Of The Ad-Hoc Open-Ended Working Group To Enhance The Functioning Of The Multilateral System Geneva, Switzerland, 14-16 May 2014 Preliminary Considerations On Possible Procedures To Amend The International Treaty, IT/OWG-EFMLS/14/Inf. 5 - Note prepared by the FAO Legal Office; Third Meeting Of The Ad Hoc Open-Ended Working Group To Enhance The Functioning Of The Multilateral System Brasília, Brazil, 2–5 June 2015 Expansion Of The Access And Benefit-Sharing Provisions Of The International Treaty: Legal Options, IT/OWG-EFMLS-3/15/Inf.4 Rev.1.

¹¹²³ These procedures are found in the Vienna Convention on the Law of Treaties, PART IV. Amendment and Modification of Treaties, Articles 39-41.

¹¹²⁴ Article 23.1.

¹¹²⁵ As a comparison, within the CBD amendments may be adopted, as a last resort, upon a two-third majority. See CBD Article 29(3).

¹¹²⁶ G. MOORE AND W. TYMOWSKI, 2005at p. 161.

¹¹²⁷ Article 23.4.

amend the Treaty.¹¹²⁸ The identified options range from minimal changes to the SMTA to the development of a possible protocol, supplementing and/or improving the existing legal framework of the Treaty. At its Third meeting the Working Group provided more details on the procedure of adoption of amendments to the Treaty¹¹²⁹ and the procedure for proposing and approving a protocol to the Treaty.¹¹³⁰

(a) Amendments to the Treaty

The Working Group recalls that the Treaty may be amended upon proposal of one of its Contracting Parties and with the approval of the Governing Body. Indeed, Article 23.2 provides that the text of any proposed amendment shall be communicated to Contracting Parties by the Secretary at least six months before the Governing Body's session convened for adoption. It is also reminded to Contracting Parties that, provided there is a quorum at the Governing Body's session, amendments are to be approved by consensus. The document specifies further that consent of a Contracting Party should be expressed by ratification, acceptance or approval,¹¹³¹ and that a minimum number of instruments expressing the consent should be deposited for the entry in force of an amendment. In particular, in accordance with Article 23.4 of the Treaty, "[a]ny amendment adopted by the Governing Body shall come into force among Contracting Parties having ratified, accepted or approved it on the ninetieth day after the deposit of instruments of ratification, acceptance or approval by two-thirds of the Contracting Parties. Thereafter the amendment shall enter into force for any other Contracting Party on the ninetieth day after that Contracting Party deposits its instrument of ratification, acceptance or approval of the amendment".

(b) Adopting a protocol to the Treaty

If Contracting Parties decided to enhance the functioning of the MLS through the adoption of a protocol to the Treaty, the protocol should be adopted in accordance with Article XIV, paragraph 2(b), of the FAO Constitution, as the Treaty is an international instrument held within the ambit of FAO. In international law, two types of protocols are

¹¹²⁸ First Meeting of the *Ad-Hoc* Open-Ended Working Group to Enhance the Functioning of the Multilateral System, Geneva, Switzerland, 14-16 May 2014, IT/OWG-EFMLS/14/Inf. 5 - Note prepared by the FAO Legal Office.

¹¹²⁹ In accordance with the rules under the Vienna Convention on the Law of Treaties Articles 39 to 41.

¹¹³⁰ Third Meeting Of The Ad Hoc Open-Ended Working Group To Enhance The Functioning Of The Multilateral System Brasília, Brazil, 2–5 June 2015 Expansion Of The Access And Benefit-Sharing Provisions Of The International Treaty: Legal Options, IT/OWG-EFMLS-3/15/Inf.4 Rev.1.

¹¹³¹ In accordance with the Vienna Convention on the Law of Treaties Articles 11 to 17.

identified by the Working Group: amending protocols and supplementary protocols.¹¹³² An amending protocol is aimed at altering the wording of provisions of an existing Treaty. A supplementary protocol rather complements an earlier convention with additional provisions and obligations. In the present, situation, a protocol could be used to add measures to complement the MLS with new payment schemes and obligations.

A note is made on the fact that a supplementary protocol is a stand-alone instrument, often designed to implement an earlier Convention and occasionally to broaden substantive provisions of the Treaty it supplements. The Working Group specifies that the right to become a party to a supplementary protocol is in principle not necessarily limited to the Contracting Parties of the earlier Treaty unless provided otherwise in the supplementary protocol. Finally, a supplementary protocol may be proposed by a technical meeting or conference comprising FAO Member Nations, which have assisted in drafting the Protocol and have suggested submitting it to Member Nations for acceptance.¹¹³³

The Working Group suggests that the Governing Body could encourage and provide guidance on the development of a protocol. “The drafting of a protocol could be entrusted to a technical meeting or a conference comprising Member Nations. Specifically, the negotiation of an amending protocol would be limited to the Treaty’s Contracting Parties. Interested Member Nations that are not Contracting Parties to the Treaty could, instead, take part to the negotiation of a supplementary protocol. In general, the drafting phase often involves protracted negotiations to achieve the desired concurrence of views among the participating Member Nations. Once final agreement is reached on the text of the protocol, the proposed text shall be submitted to the Council, through the Director-General, on behalf of the relevant technical meeting or conference.¹¹³⁴ The Council may, by at least two thirds of the membership of the Council, approve and submit it to Member Nations.^{1135”1136}

¹¹³² Third Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Brasília, Brazil, 2–5 June 2015 Expansion of the Access and Benefit-sharing Provisions of the International Treaty: Legal Options, IT/OWG-EFMLS-3/15/Inf.4 Rev.1.

¹¹³³ Article XIV, paragraph 3(a) of FAO Constitution.

¹¹³⁴ Article XIV, paragraph 3(a), of the FAO Constitution.

¹¹³⁵ Article XIV, paragraph 2(b) of the FAO Constitution.

¹¹³⁶ Third Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Brasília, Brazil, 2–5 June 2015 Expansion of the Access and Benefit-sharing Provisions of the International Treaty: Legal Options, IT/OWG-EFMLS-3/15/Inf.4 Rev.1, at p. 7.

B. Implementing the amendment procedure

At its Sixth Session, the Governing Body decided to extend the mandate of the Working Group for the 2016-2017 biennium, and requested to “elaborate a full draft revised SMTA focusing especially on the development of a Subscription System and aiming to avoid the necessity of any other legal instrument primarily through a revision of Article 6.11 of the SMTA.”¹¹³⁷ The Resolution adds that “[i]f a legal instrument would nevertheless be deemed necessary to develop an effective subscription system, [the Working Group is requested] to elaborate a complete proposal for an appropriate legal instrument, (including an amendment of or a Protocol to the Treaty).”¹¹³⁸ Contracting Parties therefore seem to prefer avoiding going through a formal amendment process, without shutting that door completely. It remains to be seen what option Contracting Parties will go for.

In this section, the various rules and procedures regarding monitoring, sanctions, dispute settlement and amendments to the Treaty were detailed. They have been established by Contracting Parties to allow for an efficient implementation of the Treaty and of its MLS. The procedures intervening at the level of the Treaty, where Contracting Parties (i.e. States) are the major stakeholders at play, are common procedures under laws of treaties. Above and beyond, Contracting Parties have been creative in dealing with the procedures intervening at the level of the MLS and its SMTA, where PGRFA users may act, by inventing the concept of Third Party Beneficiary to protect the collective interest of the MLS and BSF.

Section 8. Treaty governance and stakeholders’ participation

Like any international Treaty, Contracting Parties of the Plant Treaty have established its administrative bodies (Articles 19-20¹¹³⁹), which care for the administrative functioning of the Treaty, leaving little space for other stakeholders in the PGRFA field to act in governing PGRFA matters. Under this section, the functioning of these administrative bodies, i.e. the governing body and the secretariat will first be explained (§1). Then, an assessment of this governing scheme will be provided, with a particular focus on the (non-)role of other (non-state) Treaty stakeholders (§2).

¹¹³⁷ Resolution 1/2015 at point 3.

¹¹³⁸ Resolution 1/2015 at point 3.

¹¹³⁹ Part VII of the Treaty dealing with the “Institutional Provisions”.

§ 1 Administrative bodies governing the Treaty

Two administrative bodies are responsible for the institutional functioning of the Treaty: the Governing Body (A) and the Secretary (B). As these institutional provisions are common in international environmental treaties, comments will remain concise.

A. The Governing Body

Article 19 establishes the highest organ of the Treaty, the Governing Body, which is composed of representatives of all its Contracting Parties (Article 19.1). This Article defines the role, procedures, rules, etc., which Contracting Parties have to apply for the Treaty's main organ to be effective. The Governing Body's function is "to promote full implementation of this Treaty, keeping in view its objectives" (Article 19.3). Sessions of the Governing Body must be regular, at least one meeting every two years (Article 19.9) and preferably held back to back with CGRFA meetings. Special sessions may be held, if necessary and agreed upon by Contracting Parties (Article 19.10).

(1) Consensus

Decisions are taken by consensus (unless decided otherwise) (Article 19.2).¹¹⁴⁰ Consensus implies that every state may potentially exercise a veto over Governing Body decisions. In practice, even in the case a Contracting Party does not agree with the totality of every decision content, veto has never been exercised explicitly at the moment the decision is to be adopted. Each Contracting Party has one vote,¹¹⁴¹ but its delegation may comprise several representatives: i.e. one (voting) delegate, eventually accompanied by alternates, experts, and advisors.¹¹⁴² Furthermore, Article 19.8 specifies that there must be a quorum of members at every session for Governing Body decisions to be adopted. In case there is not a majority of Contracting Parties attending a session (i.e. fifty percent of its members plus one), decisions cannot be adopted.

¹¹⁴⁰ However, consensus is compulsory for the adoption of amendments to the Treaty (Article 23) or to its Annexes (Article 24).

¹¹⁴¹ Regarding the special case of the European Union, which is also party to the Treaty, see Treaty Secretariat, "Statement of Competence and Voting Rights Submitted by the European Community (EC) and its Member States", First Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture, Doc. IT/GB-1/06/Inf.13, Madrid, Spain, 12-16 June 2006.

¹¹⁴² Article 19.4. I was part of the Belgian delegation (which, at most, contained two people, and often none) for two Governing Body meetings (the First Session in 2006 and Second Session in 2007), as legal advisor to the Belgian head of delegation.

(2) Observers

Observers may also attend sessions of the Governing Body,¹¹⁴³ as long as they are “qualified in fields relating to conservation and sustainable use of [PGRFA]”.¹¹⁴⁴ Candidate entities must inform the Secretary, which transmits the request to the Governing Body. The Governing Body may deny access to the observer if one third of the Contracting Parties object to its participation. This procedure seems fairly straightforward, and difficulties for candidates to acquire the status of observer within the Governing Body forum have not been reported.¹¹⁴⁵ Usual observers are NGOs including farmers’ organizations, Universities¹¹⁴⁶ or other research institutions. CGIAR centers which have signed an agreement with the Governing Body are automatically accepted as observers without other formalities. Representatives of the United Nations and specialized agencies may also participate in Governing Body sessions as observers.¹¹⁴⁷ Finally, States that are not Contracting Parties (signatory members or non-parties) may also attend Governing Body sessions as observers.¹¹⁴⁸

(3) The function of the Governing Body

Article 19.3 specifies non-exhaustively the functions of the Governing Body: “[t]he functions of the [Governing Body] shall be to promote the full implementation of this Treaty, keeping in view its objectives, and, in particular, to (...)” The functions enumerated under Article 19.3 relate to providing policy directions (19.3(a)), adopt plans and programmes (b), adopt a funding strategy to be periodically reviewed (c), adopt the Treaty budget (d),¹¹⁴⁹

¹¹⁴³ Treaty Secretariat, “Report on the Participation of Governmental and Non-Governmental Bodies and Agencies Participating in the First Session of the Governing Body”, First Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture, Doc. IT/GB-1/06/Inf.16, Madrid, Spain, 12-16 June 2006.

¹¹⁴⁴ Article 19.5.

¹¹⁴⁵ However, I have heard of such difficulties for a representative of a farmers’ organization, for which it took four years to acquire the status of observer within the UPOV and WIPO fora. Personal communication.

¹¹⁴⁶ I have experienced this status as observer under my University flag for three Governing Body sessions (in 2009, 2011 and 2015).

¹¹⁴⁷ Article 19.5 & Rules of Procedure, VII. I have experienced this status within two other negotiating fora: the CGRFA and the WIPO-IGC. I was part of the delegation representing the CGIAR at the 13th meeting of the CGRFA in 2011.

¹¹⁴⁸ Article 19.5 & Rules of Procedure, VII.

¹¹⁴⁹ At every Session, Contracting Parties define and adopt the budget and programme of work for the coming biennium. See for example Treaty Secretariat, “Draft Work Programme and Budget for the Biennium 2006/2007”, First Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture, Doc. IT/GB-1/06/13, Madrid, Spain, 12-16 June 2006; see also Treaty Secretariat, “Report by the FAO Legal Counsel on the Consistency of the Draft Rules of Procedure of the Governing Body, the Draft Financial Rules of the Governing Body, the Draft Procedures and Mechanisms to Promote Compliance and to Address Issues of Non-Compliance and the Draft Funding Strategy, with FAO’s Administrative Rules and Procedures and the Provisions of the International Treaty”, First Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture, Doc. IT/GB-1/06/Inf.10, Madrid, Spain, 12-16 June 2006.

consider and eventually establish subsidiary bodies when necessary (e),¹¹⁵⁰ establish a Trust Account (f), cooperate with other relevant international organisations and treaties (g), envisage amendments to the Treaty (h) and its annexes (i) if necessary, encourage voluntary contributions (j), perform any other functions necessary for the fulfilment of the Treaty's objectives (k), take note of CBD-COP and other relevant international organisations' decisions (l) and inform the CBD-COP and other relevant international organisations of relevant Treaty implementation issues (m), and finally approve the CGIAR centres' term of agreement relationship (n) referred in Treaty Article 15. All these functions have been exercised throughout every Governing Body session.¹¹⁵¹

(4) Rules of Procedures

Article 19.7 states that the Governing Body shall adopt and amend, as required, its own Rules of Procedures. They were adopted at the First Governing Body.¹¹⁵² Rule 1 clarifies that the “rules of procedure shall apply to all sessions of the Governing Body and the activities of its Secretary. They shall also apply, mutatis mutandis, to subsidiary bodies of the Governing Body unless the Governing Body should decide otherwise, in accordance with Rule 9.2.” Basically the Rules of Procedures builds on Article 19 provisions and details more specific functioning rules to allow for the Governing Body meetings to be effective. Such specific rules are for example how to introduce an item in the agenda of the following Governing Body, the role of the Secretary and its Secretariat in compiling and rendering available all necessary documents and information for the functioning of every Treaty meeting, etc.

¹¹⁵⁰ At Governing Body 1, Contracting Parties had envisaged the possibility to create a permanent Technical Advisory Committee to assist the Governing Body with scientific and technical advice to be provided on particular issues before it takes its decision. At Governing Body 2, it was decided that the establishment of a permanent body was premature, and that such bodies would be established on an Ad Hoc basis. See Treaty Secretariat, “Possible Establishment of a Permanent Technical Advisory Committee”, First Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture, Doc. IT/GB-1/06/8, Madrid, Spain, 12-16 June 2006; IT/GB-2/07/18. See Governing Body decisions IT/GB-1/06/Report, at § 18, and IT/GB-2/07/Report, at §§ 89-90.

¹¹⁵¹ For each topic, see the explanation provided under the relevant sub-section, disseminated throughout the present chapter.

¹¹⁵² IT/GB-1/06/Report, at § 9 and Appendix D. Treaty Secretariat, “Report of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture”, First Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture, Doc. IT/GB-1/06/REPORT, Madrid, Spain, 12-16 June 2006. For details on the negotiated text rules of procedures see: Treaty Secretariat, “Draft Rules of Procedure of the Governing Body”, First Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture, Doc. IT/GB-1/06/3, Madrid, Spain, 12-16 June 2006; and also Treaty Secretariat, “Annotated Draft Rules of Procedure of the Governing Body”, First Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture, Doc. IT/GB-1/06/3 Add.1, Madrid, Spain, 12-16 June 2006.

(5) The Bureau

Article 19.11 deals with the election of the Bureau. The Bureau is the administrative entity without which Governing Body sessions would not function. The Bureau is constituted by the Chairperson of the Governing Body, six Vice-Chairpersons (one per FAO region, except from the region of the Chairperson) and a rapporteur. They are elected by the Governing Body at the beginning of every Governing Body meeting and they serve during the whole biennium. The Rules of Procedures of the Treaty detail the role of the Bureau in Rule II. The Bureau facilitates the operation of Governing Body sessions and all inter-sessional meetings. The Bureau meets regularly in between sessions and during Governing Body meetings. As the Chairperson of the Bureau is also the person chairing Governing Body meetings, he/she functions as the link between the formal negotiation activities and the administrative endeavours necessary to support the operation of official meetings. The Chairperson conducts the Governing Body meeting by going through each item to be discussed, following the agenda point by point; by giving the floor to people; by taking note of requests from the floor; etc. When conducting the meeting, the Chairperson may consult the Bureau in order to respond to requests from Contracting Parties, for example if there is a need for clarification on the procedure to follow. While it remains an administrative body, the Bureau, in fact, may also have some sort of political power. This can take to form of facilitating the dialogue between representatives of each FAO region within a small and confidential setting; unlocking difficult situations when discussions are blocked in the Governing Body meeting; or providing guidance to the Secretary during the inter-sessional period. Although this political role is referred to nowhere in official documents, this practice cannot be denied; at a point such that some Contracting Parties have already contested actions taken by the Bureau, stating that it was overriding its role and rights.

B. The Secretary

The Secretary of the Governing Body is appointed by the Director-General of FAO with the approval of the Governing Body.¹¹⁵³ He/she may be assisted by the required staff.¹¹⁵⁴ Its role is to provide administrative support for Governing Body sessions, assist the Governing

¹¹⁵³ Treaty Secretariat, "Appointment of the Secretary and other Matters Related to the Establishment of the Secretariat", First Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture, Doc. IT/GB-1/06/11, Madrid, Spain, 12-16 June 2006.

¹¹⁵⁴ Currently, 11 persons help the Secretary in his tasks as staff of the Plant Treaty secretariat.

Body in carrying its functions, and report on its activities.¹¹⁵⁵ He/she has the duty to communicate to all Contracting Parties and to FAO Director-General all decisions of the Governing Body and information received from Contracting Parties.¹¹⁵⁶ He/she shall do so in the six official languages of the UN.¹¹⁵⁷ Finally, he/she shall cooperate with other organizations and treaty bodies, in particular the Secretariat of the CBD.¹¹⁵⁸

Following FAO Resolution 3/2001, the Secretariat of the CGRFA has acted, since November 2001, as the Secretariat of the *Interim* Committee for the Treaty, with the Secretary of the Commission acting as the Secretary of the *Interim* Committee.¹¹⁵⁹ At the First Session of the Governing Body, Contracting Parties decided to commence the process for the appointment of the Secretary, and adopted¹¹⁶⁰ the procedures for doing so based on the document “Appointment of the Secretary and Other Matters Related to the Establishment of the Secretariat.”¹¹⁶¹ Following FAO Constitution Article XIV and the Basic Texts of FAO - Part R, additional rules are to be taken into account in the appointment procedures. They are reflected in the above mentioned document. Until the Secretary would be appointed, the Governing Body requested the Secretariat of the CGRFA to continue to act as *Interim* Secretariat of the Governing Body. Following the procedure adopted at the First Governing Body, under Appendix J.2 of the Report, the Governing Body agreed that “[e]xceptionally, on a specific mandate from the Governing Body, the Chair of the Governing Body shall propose the candidate to the Director-General of FAO, on the basis of the recommendation of the Screening Committee, *without the prior approval of the Governing Body*” (emphasis added).

Therefore, at the Second Session of the Governing Body, Dr Shakeel Bhatti has been hired by the Director-General of FAO as the Treaty’s Secretary.¹¹⁶² The duration of the term of office of the Secretary is four years, renewable without limitation.¹¹⁶³ However, no rules were

¹¹⁵⁵ Article 20.2.

¹¹⁵⁶ Article 20.3.

¹¹⁵⁷ Article 20.4.

¹¹⁵⁸ Article 20.5.

¹¹⁵⁹ Josè (Pepe) Esquinas-Alcazar was the Secretary of the CGRFA at that time.

¹¹⁶⁰ IT/GB-1/06/Report, at §§ 16-17.

¹¹⁶¹ IT/GB-1/06/11. Appendix 1 “Draft Terms of Reference Secretary of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture”, and Appendix 2 “Proposed Procedures for the Appointment of the Secretary of the Governing Body of the International Treaty.”

¹¹⁶² It is important to note that Shakeel Bhatti was the former Head of the Genetic Resources, Biotechnology and Associated Traditional Knowledge Section at WIPO, where he was responsible for WIPO’s work on intellectual property law in relation to genetic resources, biodiversity, traditional knowledge and biotechnology. Shakeel Bhatti has taught international patent law and genetic resource policy at several universities in India, Japan and Sweden. His background rooted in the IP field may explain some directions that have been taken in Governing Body governance and decisions.

¹¹⁶³ IT/GB-1/06/REPORT, Appendix J.1 under the Terms of reference - “The Term of Office is four years, renewable.”

foreseen to establish a procedure for the possible renewal of the appointment of the Secretary.

§ 2 Implementing governance issues

Treaty governance is not an easy item to assess, as the Treaty follows classical rules of international law regarding laws of treaties. In the following sub-section, brief information is provided regarding the functioning of the Governing Body (A), the Secretary's mandate (B), and most of all on the attempts to include stakeholders in different ways during the review of the Treaty process (C).

A. The Governing Body meetings

Since the First Governing Body in 2006, Contracting Parties have been very active in crafting the legal and technical apparatus to apply Treaty obligations. This dynamism transpires from the many meetings that took place. The Governing Body meetings allow the 140 Contracting Parties to identify and discuss their needs, and to negotiate and adopt the resulting instruments and mechanisms. The Treaty Secretariat and its Secretary have played a crucial role in the efficiency of the administrative process. Governing Body meetings have systematically been held within the two-year schedule (Article 19.9), and numerous inter-sessional meetings were organized (upon availability of funds) in order to provide negotiators with the necessary time and space to address the issues under discussion and be ready to negotiate and adopt measures during the Governing Body meetings. While negotiations have not necessarily always been easy, the negotiating "mood" has most of the time remained positive and constructive.

B. Renewal of the Secretary's mandate

In 2010, the FAO Secretariat followed an *ad hoc* procedure of consultation of the Bureau of the Treaty, as a result of which the Director-General of FAO extended the appointment of the Executive Secretary for a term of four years. In 2014, as the second term of office of the Secretary was drawing to a close, the FAO Secretariat proposed an *interim* extension of the appointment of the Secretary, pending review of the matter by the Governing Body and approval of a procedure to that effect. At Sixth Session of the Governing Body, a document

was presented to establish such a procedure.¹¹⁶⁴ With Resolution 12/2015, Contracting Parties decided to set the matter on the provisional agenda of the Seventh Session of the Governing Body and to extend the appointment of the current Secretary of the Governing Body of the Treaty until a new appointment of a Secretary has been made, following approval of the Governing Body, at its Seventh Session in 2017.

C. Consultation with stakeholders, in particular the seed industry, during the review process of the MLS and funding strategy

It is the first time that an official sub-organ of the Treaty conducts an official consultation with a stakeholder group, other than the usual participation of these stakeholders as observers (or within country's delegation) to Treaty meetings. Negotiators realized that if they wanted to have the seed industry use the SMTA, they would need to really, deeply understand the seed industry's needs, expectations, and direct interests. It should therefore be applauded that such consultation of members from the seed industry took place in 2012-13. The study seems to have been well-received by the private sector, whose interviewees have frequently expressed support to the Treaty. The results of this study are available on the Treaty website and have already been integrated in the working documents of the WG-MLS for the coming biennium.¹¹⁶⁵

(1) The myth of the financial solution by the seed industry

To this positive note, some remarks will be added. First, this consultation is of primary importance, as one of the issues that renders the Treaty so difficult to implement is the fact that stakeholders are not sufficiently integrated in the Treaty institutional functioning (as part of the governance scheme). However, it is a myth to imagine that obtaining the seed industry to participate in the MLS will solve major financial issues in the Treaty. It is unlikely that the private sector will voluntarily pay for the overall cost of conservation and sustainable use activities worldwide. This is not to say that they should not. On the contrary, they should pay their fair share. However, unless governments manage to impose the system to the "Big Six" who have been most reluctant to access material from the MLS,¹¹⁶⁶ it will not work. Indeed,

¹¹⁶⁴ IT/GB-6/15/26.

¹¹⁶⁵ Research Study 7 "Summary of user opinions, following interviews with members of the seed industry" Author: Nina Isabella Moeller.

¹¹⁶⁶ The Big 6 are BASF, Bayer, Dupont, Dow Chemical Company, Monsanto, and Syngenta.

while these companies have the financial means to pay a significant, fair share, they also can perfectly live without accessing material from the MLS for the near future, relying on their significant private collections. The sole participation of the small-to-medium-size private sector industry would not be sufficient to create a stable, long-term secured and financially reasonable funding source for the Treaty's Funding Strategy. Efforts in convincing the Big Six to participate in the system should be enhanced. Dialogue with the CEOs could be an opportunity to better share views and identify common ground for participation. However, up to now such dialogue has not been possible. A solution might lay in informal consultation with these CEOs. The Informal Multi-stakeholder Dialogue initiative¹¹⁶⁷ that took place in 2014 could have provided for such open and franc debate and could have fertilized the soil for finding an innovative agreement (out of the box). Unfortunately, the initiative has not been pursued.¹¹⁶⁸ It is therefore crucial that efforts towards finding other means of obtaining financial support are maintained and come to a positive outcome.

(2) The absence of other stakeholder groups' consultations

A second remark is made regarding the fact that other stakeholder groups have not been consulted. While it is easy to understand that there are no specific other stakeholder groups whose participation in the MLS would potentially bring significant financial benefits back to the Treaty, it is nonetheless a pity that the voice of other stakeholders groups were not heard on the same basis. Indeed, other PGRFA users might have interesting opinions and concrete proposals to make in ways of enhancing the functioning of the MLS, regarding both monetary and non-monetary aspects.

(3) The "silent observers" at the WG-MLS

Thirdly, an interesting note is to be made regarding the composition of the WG-MLS. Besides the usual experts and negotiators representing the FAO Regions in the Treaty

¹¹⁶⁷ See same sub-section, point (4) below. The Informal Multi-stakeholder Dialogue initiative was endorsed by the Treaty Secretariat. See "Rio Six-Point Action Plan for the International Treaty on Plant Genetic Resources for Food and Agriculture", Second High-level Roundtable on the International Treaty on Plant Genetic Resources for Food and Agriculture, United Nations Conference on Sustainable Development Rio de Janeiro, Brazil, 21 June 2012. Available at [http://www.planttreaty.org/sites/default/files/ME253e\(Rio_action_plan\)01.pdf](http://www.planttreaty.org/sites/default/files/ME253e(Rio_action_plan)01.pdf)

¹¹⁶⁸ See same sub-section, point (4) below.

Governing Body,¹¹⁶⁹ the Secretariat staff, and official observers representing main Treaty stakeholder groups,¹¹⁷⁰ additional “silent observers” were admitted to the meetings.¹¹⁷¹ The participation of these silent observers could be considered as an indirect additional way of consulting stakeholder groups, along the line of the WG-MLS’ mandate. These silent observers include people from NGOs (such as the South Centre, the Third World Network or the Centre for Research, Information, Action in Africa), the Seed Industry (Syngenta International AG or the European Seed Association), as well as representatives from FAO and other international bodies (CBD, CGRFA, FAO legal staff).¹¹⁷² This shows the clear need and will of Contracting Parties to collaborate with the direct users / stakeholders of the MLS in finding ways to enhance the functioning of the MLS. This sounds logical, as these are the real people who actually use the SMTA and MLS material. However, from an international law point of view, such an initiative is not the usual practice, as official representatives of governments are the only negotiators with recognized power of decision, engaging the State they represent. The fact that these technical meetings have been opened to more stakeholders shows the realization that decisions need to take into account and include the voice of the stakeholders on which the decisions will apply. This note might sound simplistic and quite logic, but from the viewpoint of negotiation practices within the Treaty forum, it may be considered as a “little revolution”. This is probably why negotiators, very cautiously, specified in the first meeting report that “this decision would set no precedents for other inter-sessional bodies of the Governing Body”.¹¹⁷³ This practice should be encouraged and widened. Yet, it should not be interpreted in an overly optimistic manner. “Normal” observers may only talk when they are invited to do so (contrary to Contracting Parties who may request the floor at any time),

¹¹⁶⁹ The composition of the WG-MLS is as follow: up to 5 members for Africa, Asia, Europe, and Latin America and the Caribbean; up to 3 members for Near East; up to 2 members for North America and South West Pacific. Two co-chairs are elected from these regional representatives. Resolution 2/2013, point 23.

¹¹⁷⁰ Observers may participate to the meetings; two persons per stakeholder groups. The four stakeholders groups are: civil society organizations, the seed industry, farmers’ organizations, and the CGIAR centres. Resolution 2/2013, point 23.

¹¹⁷¹ The WG-MLS decided at its first meeting that “[f]urther to Resolution 2/2013, the Working Group invited a number of silent observers to follow the meeting. These silent observers had made a request in advance to attend the meeting to the Secretariat. The Working Group decided that silent observers had no speaking rights unless at the invitation of the Co-Chairs. All requests from Contracting Parties or stakeholder groups to have additional observers present beyond the number of representatives invited according to the Resolution will be considered as silent observers. It further decided that *this decision would set no precedents for other inter-sessional bodies* of the Governing Body, and requested the Governing Body to develop procedures for participation in future inter-sessional meetings. The list of participants is attached as *Appendix 2.*” (Emphasis added) See “First Meeting of the Ad Hoc Open-Ended Working Group to Enhance the Functioning of the Multilateral System”, Geneva, Switzerland, 14-16 May 2014, document IT/OWG-EFMLS-1/14/Report.

¹¹⁷² See the lists of participants of each meeting: IT/OWG-EFMLS-1/14/Report; IT/OWG-EFMLS-2/14/Report; IT/OWG-EFMLS-3/15/Report; IT/OWG-EFMLS-4/15/Report.

¹¹⁷³ See “First Meeting of the Ad Hoc Open-Ended Working Group to Enhance the Functioning of the Multilateral System”, Geneva, Switzerland, 14-16 May 2014, document IT/OWG-EFMLS-1/14/Report.

and as their title says, the fact that these additional observers are “silent observers” certainly limits their real involvement in the (formal) discussions.

(4) The Multi-stakeholder dialogue Initiative: a missed opportunity

Finally, a last comment is made regarding the “Informal Multi-stakeholder Dialogue” initiative that took place in 2013-2014. During the second High-level Roundtable on the International Treaty on Plant Genetic Resources for Food and Agriculture,¹¹⁷⁴ a “Rio Six-Point Action Plan for the International Treaty on Plant Genetic Resources for Food and Agriculture (the “Rio Six-Point Action Plan”) was adopted by consensus by the High-level Roundtable. The third point of the Rio Six-Point Action Plan had the objective to “facilitate a new Keystone-type dialogue, to complete the governance of all plant genetic resources for food and agriculture under the Treaty”.¹¹⁷⁵ This was to take the form of an informal multi-stakeholder dialogue¹¹⁷⁶ (the Informal Dialogue), as adopted by Resolution 2/2013, where Contracting Parties welcomed “the organization of an informal multi-stakeholder dialogue to enhance the functioning of the Multilateral System and increase contributions to the Benefit-sharing Fund, which may provide input to the *Ad Hoc* Working Group”.¹¹⁷⁷

Biodiversity International and the Meridian Institute jointly convened the Informal Dialogue which took place in September 2014 in the form of a two-day workshop.¹¹⁷⁸ The rationale for organizing such dialogue was mainly to allow all stakeholders to talk to each other and express their views and perspectives more freely, applying Chatham House rules, in parallel to the formal negotiating process. Indeed, the formal process does not necessarily provide space for investigating options and solutions outside the limited scopes of official

¹¹⁷⁴ The second High-level Roundtable on the International Treaty on Plant Genetic Resources for Food and Agriculture took place on the occasion of the United Nations Conference on Sustainable Development Rio de Janeiro, Brazil, 21 June 2012.

¹¹⁷⁵ “Rio Six-Point Action Plan for the International Treaty on Plant Genetic Resources for Food and Agriculture”, Second High-level Roundtable on the International Treaty on Plant Genetic Resources for Food and Agriculture, United Nations Conference on Sustainable Development Rio de Janeiro, Brazil, 21 June 2012. Available at [http://www.planttreaty.org/sites/default/files/ME253e\(Rio_action_plan\)01.pdf](http://www.planttreaty.org/sites/default/files/ME253e(Rio_action_plan)01.pdf)

¹¹⁷⁶ Similar informal consultation had taken place between 1994 and 2001 under the Keystone Dialogue sessions, and between 1999-2002 with the follow-up Crucible Group, with the same facilitators Michael Lesnig and Timothy Mealey. For more information see Chapter 5 Section 8.

¹¹⁷⁷ Resolution 2/2013, point 7.

¹¹⁷⁸ Treaty Secretariat, “Facilitator’s Summary: Informal Stakeholder Workshop on Multilateral System of the ITPGRFA”, Submissions Received from Stakeholders Groups and International Organizations: The Meridian Institute, document IT/OWG-EFMLS-2/14/Inf.4.1, Second Meeting of the *Ad-Hoc* Open-ended Working Group to Enhance the Functioning of the Multilateral System, Geneva, Switzerland, 9-11 December 2014. Prior preparatory meetings and/or conference calls took place between December 2013 and September 2014, but no official documents are openly accessible.

positions. Allowing for representatives of a variety of stakeholder groups¹¹⁷⁹ involved in the Treaty to compare their perspectives on the state of implementation of the Treaty and documenting these diverse perspectives constitutes an important contribution to the formal negotiating process, which have fed the second meeting of the WG-MLS.¹¹⁸⁰

However, the Informal Dialogue was not pursued further in parallel to the work of the WG-MLS. The information document summarizing the reflections expressed during the two-day workshop contains important aspects, which would have benefited from further explorations by the same participants in later gatherings, until the overall review of the MLS and Funding Strategy of the Treaty are completed. Indeed, such informal dialogue constitutes a good place to tackle highly technical issues (and take these issues far from the political sphere for a while), by those very persons who deal with these aspects in their everyday work (contrary to negotiators in official Governing Body meetings who are generally representatives of ministries and not direct users of PGRFA). Such open, de-politicized space enables the development of ideas that might not persist if they were to be first introduced in the formal setting (whether at an *Ad Hoc* Working Group or Governing Body meeting). It seems that this initiative, which has been pushed by some stakeholders in order to create the space for “out of the box” thinking, has been hesitantly adopted by the Governing Body through Resolution 2/2013 and has subsequently been given very limited space and scope, in order, perhaps not to override the official formal negotiations of the *Ad Hoc* Working Group. It is a pity that the complementary role of the initiative to the formal negotiations has not been better understood and that more resources and space have not been devoted to this Informal Dialogue for it to provide significant and useful inputs to the formal process. This is especially true taking into account the success in unlocking difficult negotiations between “opponent” stakeholders that had occurred thanks to such informal process at the time of the Keystone Dialogues.

In this section, information on the rules and procedures for the governance of the Treaty was provided, showing that there is little space for other actors than States, as only Contracting parties to the Treaty, to govern the PGRFA issues at stake. However, History has

¹¹⁷⁹ 24 participants from farmers’ organizations, civil society organizations, the seed industry and research institutes as well as 5 staff members were present at workshop. The list of participants can be found in the meeting document TREATY SECRETARIAT, “Facilitator’s Summary: Informal Stakeholder Workshop on Multilateral System of the Itppgrfa” document IT/OWG-EFMLS-2/14/Inf.4.1, Second Meeting of the Ad-Hoc Open-Ended Working Group to Enhance the Functioning of the Multilateral System, Geneva, Switzerland, 9-11 December 2014 appendix B.

¹¹⁸⁰ Second Meeting of the Ad-Hoc Open-Ended Working Group to Enhance the Functioning of the Multilateral System, Geneva, Switzerland, 9-11 December 2014.

shown with the Crucible Group Keystone Dialogues the utility of involving stakeholders in discussing problems and imagining solutions that would contribute to collectively face major future challenges. Moreover, when taking into account such important data as the fact that small-holder farmers produce 70 percent of our world's food, one may wonder how come their expertise, needs, and solutions are not officially included in the governance system of the Treaty.

Conclusion

The thorough legal analysis of the Treaty complemented by the participatory observation of the all Governing Body meetings enables to distinguish several conceptual constraints related to the eight identified Treaty topics. A short word of conclusion is now provided for each of these topics. Regarding the Treaty's overall goals of food security and sustainable agriculture, the above study reveals that the way the MLS is designed and implemented does not seem to contribute significantly to reaching food security and sustainable agriculture. New ways of envisaging and implementing the MLS are necessary to achieve these overall goals, e.g. by attracting more concrete political attention and stronger legal levers for their realization.

On the matter of the difference in scope of the Treaty (all PGRFA) and of the MLS (only Annex-I PGRFA), the legal examination highlights the complications in the implementation process resulting from these discrepancies in scope. It also shows that Treaty stakeholders are more open than a few years ago in addressing this matter, *inter alia* by envisaging an eventual enlargement of the annex I list of crops. However, this matter should be tackled together with the access and the Farmers' Rights issues, as a harmonization of scope will not happen as long as facilitated access constraints persist.

To conclude on the analysis of the implementation of Farmers' Rights, it is clear that in the consecutive Governing Body meetings the different Resolutions regarding FRs have become more substantial, more specific, and therefore more easily implementable, even though there is still no agreement on one definition as to what is covered under the concept of FRs. However, the lack of formal recognition of FRs at the international level, coupled with a formal recognition of strong associated rights, has created a serious imbalance of rights, which prevents Contracting Parties from reaching the Treaty's objectives.

Regarding facilitated access, the analysis shows several things. First, that accessing seed by all PGRFA beneficiaries is not straightforward, i.e. the primary beneficiaries (smallholder farmers) do not benefit from Article 13.1). Second, that there remains a discomfort and distrust from a majority of Contracting Parties as to the potential enlargement of the Annex I list. This distrust is explained by the fact that many stakeholders do not benefit from the system. Consequently, reviewing the existing system will necessitate to leave some space to all stakeholders to participate in the process. Finally, it also reveals that further work is needed to design and promote *sui generis* PVP systems to recreate an effective farmers' exemption.

On benefit-sharing, the study shows that the system is very ineffective. The lack of funding is crucial, but more so is the position in which the Treaty places “beneficiaries” of the Benefit-sharing Fund, i.e. farmers. This position of “passive receiver” of the system contrasts with the central role and position of farmers in our world food chain. This contrast creates structural dysfunction in the Treaty's stakeholder's relationship that hinders reaching the Treaty's objectives. This central role should be reflected in the Treaty.

Addressing the information and knowledge topic, the Treaty analysis demonstrates that the Global Information System developed in response to the Treaty's obligations does not meet the needs of all stakeholders, but rather focuses on breeders and researchers. This exacerbates the imbalance of rights mentioned above. Furthermore, on the question of IP over knowledge and information related to PGRFA, the international institutions addressing these matters seem to be rather distant from the Treaty, and no concrete collaboration is foreseen in the future agendas of these international bodies to address this issue.

On the seventh Treaty topic, the various rules and procedures regarding monitoring, sanctions, dispute settlement and amendments to the Treaty were detailed. The assessment stresses the creativity of the Third Party Beneficiary instrument as an innovative international law instrument. However, this tool could have a much greater potential in facilitating the implementation of the Treaty, and suffers from a lack of transparency. Besides, the compliance mechanism seems to be kept voluntarily void, thereby being inefficient in helping Contracting Parties complying with all Treaty obligations. Since the entry into force of the Treaty, no dispute has arisen between Contracting Parties, i.e. at the state level. However, a dispute has arisen in 2012-2013 through the Third Party Beneficiary procedure – regarding two

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transfers of PGRFA without the required SMTA – and was resolved fairly quickly. Finally regarding the amendment provision, Contracting Parties seem to prefer to avoid going through a formal amendment process of the Treaty during the current MLS review process, without shutting that door completely.

Finally, regarding participation and governance issues, the legal analysis stresses that there is little space for other actors than States, as the only Contracting Parties to the Treaty, to formally play a role in the collective governance of PGRFA. However, history has shown –

Chapter 5 Seeds and People : A Stakeholders' Analysis of the Treaty

"In this book, we shall be dealing with evolution. (...) We shall deal with the activities of man that have shaped the evolution of crops and with the influences of crops in shaping the evolution of human societies. Crops are artifacts made and molded by man as much as flint arrowhead, a stone ax-head, or a clay pot. On the other hand, man has become so utterly dependent on the plants he grows for food that, in a sense, the plants have "domesticated" him. A fully domesticated plant cannot survive without the aid of man, but only a minute fraction of the human population could survive without cultivated plants. Crops and man are mutually dependent and we shall attempt to describe how this intimate symbiosis evolved."

Jack R. Harlan,(1975) "*Crops & Man*" ¹¹⁸¹

With this citation, Jack R. Harlan, a notorious American agronomist of the twentieth century, begins one of his most famous books, where he developed a philosophy of the evolution of crop plants and civilization. Through these first lines of *Crops and Man*, Harlan stresses that crops were developed harvest after harvest, in the hands of many different farmers, all over the world, generation after generation, following social, cultural and economic trends.¹¹⁸² As a consequence, a crop variety bread today is the result of this past collaboration and interdependence.¹¹⁸³ Domesticated crops are dependent on farmers and breeders, in the same way that farmers and breeders are dependent on these crops. Similarly, the World's population relies on farmers and breeders in producing the necessary food to live and survive, thereby widening the interrelation and interdependence circle between crops and men.

Does the current international setting for the management of PGRFA (the above identified "regime complex")¹¹⁸⁴ apply this philosophy? Is there another choice than respecting (*inter alia*) both underlying principles of collaboration and interdependence in setting up a sustainable PGRFA regime complex, responding to human needs (and the

¹¹⁸¹ J. R. HARLAN, "*Crops & Man*", *op. cit.*, at p. 3.

¹¹⁸² S. BRAGDON, 2004 *op.cit.at pp. 12-13*.

¹¹⁸³ C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., "*Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*", at Chapter 1.

¹¹⁸⁴ See above Chapter 2 of the present thesis.

planet’s needs too). Following the analysis conducted under Chapters 2 and 3 of the present dissertation, it seems that the equilibrium in the interactions between plants and men has not been respected over the last decades. Rather, the “hyperownership”¹¹⁸⁵ trend seems to have led to the predominance of human activities over the evolution of crops, dismissing some of the plants’ vital and intrinsic characteristics: i.e. evolution as a universal, dynamic, cooperative, diverse and interdependent system. Chapter 4 has highlighted how Treaty stakeholders have attempted to re-establish some sort of equilibrium by creating the Treaty and its Multilateral System of access and benefit-sharing. However, the legal analysis of the Treaty has shown that the implementation of the Treaty is difficult and that stakeholders are currently unable to reach that goal due to intrinsic conceptual constraints.

To further assess (and cross-check with the legal analysis) whether the current regime of the Plant Treaty allows to reshape an equilibrium by reaching the set objectives of conservation, sustainable use and exchange of PGRFA, a Treaty stakeholders’ analysis¹¹⁸⁶ was carried out through the publication of an edited book: *“Plant Genetic Resources and Food Security: Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture”*.¹¹⁸⁷ By briefly describing who these actors¹¹⁸⁸ are and by summarizing the findings of the stakeholders’ analysis, the following Chapter attempts to give a voice to PGRFA actors that have participated in the negotiation and current implementation of the Treaty. The objective is to identify the various needs and interests of these stakeholders, their expectations regarding the Treaty, and assess whether the Treaty satisfies their needs. The overall goal is to allow stakeholders to identify constraints they are faced with when implementing the Treaty. These constraints are then be used in Part III of the present thesis, as a basis for suggestions to mitigate the dys-functioning of the Treaty. As the reader will see, the constraints identified by stakeholders below confirm and complement the results of the legal analysis of the Treaty in the preceding Chapter 4.

¹¹⁸⁵ S. SAFRIN, 2004 *op.cit.*.

¹¹⁸⁶ A classical definition of stakeholder analysis is “any group of individual who can affect or is affected by the achievement of the organization objectives.” Stakeholders may be natural persons, groups or legal entities; they are not limited to ‘insiders’ within the organisation. R. E. FREEMAN, *cit.at p. 46*. Stakeholder theories cover any ‘group or individual that can be influenced by, or can itself influence, the activities of the organisation’, see A. L. FRIEDMAN AND S. MILES, 2002 *op.cit.*.

¹¹⁸⁷ C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., *“Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture”*,

¹¹⁸⁸ In the present work, actors and stakeholders are used inter-changeably.

Several remarks are made regarding the edited book. While the effort to have Treaty stakeholders’ views expressed in a publication constitutes an original contribution in itself, there are limits to this piece of work. First and foremost, the book’s sole ambition is to provide a compilation of stakeholders’ views on the Treaty,¹¹⁸⁹ and a preliminary analysis of these views. The book is not a rigorous social science study complying with all the requirements and methods of stakeholder analysis;¹¹⁹⁰ rather, the purpose was to gather information directly from Treaty stakeholders in support of the legal assessment of the Treaty. Second, deriving from this first limitation, the stakeholders who participated in the book are those people already present and active within the FAO/Treaty forum. A classical definition of stakeholders is “any group of individual who can affect or is affected by the achievement of the organization objectives.”¹¹⁹¹ Stakeholders may be natural persons,¹¹⁹² groups or legal entities; they are not limited to “insiders” within the organization.¹¹⁹³ The participating authors¹¹⁹⁴ were the people who identified themselves as Treaty stakeholders and which were (relatively easily) accessible within the limited means of this research.¹¹⁹⁵ It is acknowledged that this constitutes a bias, in that the voices of other people active in PGRFA management, but not present in the Treaty forum, are not represented in the book. However, an attempt was made to mitigate partly this bias with the inclusion of a chapter

¹¹⁸⁹ Authors had a great liberty in the content of their chapter. Identical very general guidelines were provided to all, without further requirements in order to keep their voice as autonomous, free and objective as possible. The guidelines requested the authors to talk about the past, present and future of the Treaty, and to identify what difficulties and constraints they were facing in their experience with the implementation of the Treaty.

¹¹⁹⁰ M. S. REED *et al.*, 2009, "Who's in and Why? A Typology of Stakeholder Analysis Methods for Natural Resource Management", *Journal of environmental management*, Vol. 90, (5). The food processing industry was also approached to provide input, but the editors did not receive a positive response from the several persons approached.

¹¹⁹¹ R. E. FREEMAN, *cit. at p. 46*. Modern stakeholder theories include any “group or individual that can be influenced by, or can itself influence, the activities of the organisation”, see A. L. FRIEDMAN AND S. MILES, 2002 *op.cit.*.

¹¹⁹² According to Bjornstad, “Individuals earning the label entrepreneurial leaders seem to have been crucial for the adoption of the ITPGRFA, thus supporting Young’s assumption that leadership is a necessary condition for regime formation. These leaders have in several aspects also been fundamental in addressing the issues in such a way that the developing countries partly got their interests included.” I. B. BJORNSTAD, 2004, at p. 90.

¹¹⁹³ Many other narrower or wider definitions exist but will not be further examined here. For a narrow definition of stakeholders see *inter alia* N. BOWIE, 1988, “The Moral Obligations of Multinational Corporations”, *Problems of international justice*, Vol. 97; for a wider view see M. STARIK, 1995, “Should Trees Have Managerial Standing? Toward Stakeholder Status for Non-Human Nature”, *Journal of business ethics*, Vol. 14, (3); and K. HUBACEK AND V. MAUERHOFER, 2008, “Future Generations: Economic, Legal and Institutional Aspects”, *Futures*, Vol. 40, (5).

¹¹⁹⁴ See Appendix 4 of the online PDF file of this thesis, for the complete list of stakeholders, available on my ResearchGate profile.

¹¹⁹⁵ These persons were the “usual” accredited representatives present at FAO Treaty meetings, well-known in the field by other stakeholders.

representing views of consumers.¹¹⁹⁶ Third, the content of the book remains cautious. Although it is the first time that Treaty stakeholders have spoken relatively openly on the subject in a collective book, the very fact that the means chosen to express their voice is a written publication has led stakeholders’ to write cautiously. Views, which might have been expressed quite openly during conversations with authors, have necessarily been translated into a “politically correct language. Finally, the book was published in 2011. Although five years have passed, the up-to-date legal assessment of the Treaty in Chapter 4 shows that the Treaty evolution concur with the results of the stakeholders’ analysis. It also further confirms the suggestions made by the book editors in 2011 on ways and options to reach the Treaty’s objectives and to improve its implementation.¹¹⁹⁷

Despite the above-mentioned biases, the edited volume fills in an information gap and provides a published and freely accessible source of information on the subject.¹¹⁹⁸ It constitutes a useful contribution for researchers wishing to better understand the role and relationship between stakeholders during the negotiations of the Treaty, especially when taking into account the fact that there exists no verbatim (written or oral recording) of negotiation meetings expressing stakeholders’ positions at the time of the negotiations.

This Chapter is divided into two sections. First, Section 1 identifies the major stakeholders who participated in the Treaty negotiations and briefly explains their specific interests and concerns. The section ends with a table recapping (in an overly simplified manner) stakeholders’ various (and contradicting) views. Then based on the content of the eighteen book chapters, Section 2 summarizes the challenges identified by the authors in a table listing seventeen “specific implementation challenges and constraints”.¹¹⁹⁹

¹¹⁹⁶ C. SCAFFIDI, "Consumers - Biodiversity Is a Common Good", in C. FRISON, F. LÓPEZ, AND J.T. ESQUINAS-ALCAZAR (eds), *Plant Genetic Resources and Food Security: Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*, Washington, DC, Earthscan, FAO and Bioversity International, 2011. Several attempts failed as to obtain the participation of a representative of the food-processing industry, resulting in no chapter from that category of actors.

¹¹⁹⁷ C. FRISON, F. LÓPEZ, AND J. T. ESQUINAS-ALCÁZAR, *op. cit.*.

¹¹⁹⁸ The book can be downloaded freely at <http://www.bioversityinternational.org/e-library/publications/detail/plant-genetic-resources-and-food-security/>

¹¹⁹⁹ The table is a simplified version of Table 20.1 “Constraints, needs and implementation tools” in C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., *"Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture"*, at pp. 276-277.

Section 1. A description of Treaty stakeholders

In theory, all Treaty stakeholders have an overall common interest, i.e. to conserve seeds in order to be able to use them to produce food. Notwithstanding this self-evident statement, stakeholders have very different agendas and objectives, specific institutional structures and aims, diverse economic means to reach their goals, etc. Hence, there is a diversity of direct short and medium term objectives, which may be competing and which may hinder reaching the identified common overall interest. The historical account of PGRFA management (Chapter 2) has revealed the complexity of the connections between the fields of agriculture, the environment, scientific advances and international regulatory developments, especially regarding intellectual property rights. This complexity is reflected in the relationships between stakeholders involved in the international management of PGRFA, which includes states, public and private institutions, individuals, communities, commercial, and non-profit actors. This section aims at describing these actors. It is essential to comprehend how they function, what their claims and interests are, and how they participate in the PGRFA regime complex in order to understand the roots of the current setting; to foster ways of bridging stakeholders' diverse interests; and to propose solutions that are likely to be accepted and implemented by these stakeholders. Indeed, as Reed puts it “[o]nly by understanding who has a stake in an initiative, and through understanding the nature of their claims and inter-relationships with each other, can the appropriate stakeholders be effectively involved in environmental decision-making.”¹²⁰⁰

In this Section the following actors, who contributed to the edited volume, are described: States; the CGIAR; the Global Crop Diversity Trust; genebanks and collections; plant breeding and the seed industry; farmers and farmers' organizations; NGOs; and the Crucible Group.

¹²⁰⁰ M. S. REED *et al.*, 2009 *op.cit.* at p. 1935.

§ 1 States

A. States as sole recognized decision-making actors within FAO

States are the primary actors in inter-governmental organizations such as FAO. There are 186 nations that are member of FAO, and 140¹²⁰¹ are Contracting Parties to the Treaty. In international law, all states are equal, as every state has a legal personality, and there is no hierarchy among them.¹²⁰² Within international fora such as UN agencies, one state equals one vote according to the sovereign right of states to negotiate international treaties.¹²⁰³ State sovereignty can be seen as the warranty for state compliance with the designed international regulatory instruments.¹²⁰⁴ Decisions are generally taken by a two-thirds majority, although unanimity or systems with weighted voting¹²⁰⁵ are also frequent for specific types of decision.¹²⁰⁶ Notwithstanding this equality of status, it is a fact that states with greater economic power and political clout use their influence to impose their views.

B. States' diversity of objectives in creating and complying with regulatory instruments

While each state has its own national policy regarding PGRFA management, it is impossible for any state – no matter how powerful it is – to impose its own economic, social, and environmental political agenda on all other FAO members. While States share a common concern for the conservation of biological diversity, for their economic growth and health, or for their social development, it is clear that they all have divergent agendas and objectives according to their specificities, wealth, or stage of development, etc.

¹²⁰¹ On 30 June 2016.

¹²⁰² G. M. CRAGG *et al.*, 2012, "Nat. Prod. Rep.", Vol. 29 at p. 289.

¹²⁰³ See FAO Constitution, Article 3.1; see also the Vienna Convention on the Law of Treaties Article 6 stating that every State possesses capacity to conclude treaties.

¹²⁰⁴ A. CHAYES AND A. H. CHAYES, 1998, "The New Sovereignty : Compliance with International Regulatory Agreements", Cambridge, Mass., Harvard University Press.

¹²⁰⁵ Weighted voting (voting power is determined according to the economic weight of states) is the rule for decision-making in Bretton Woods' organizations (i.e. the International Monetary Fund and the World Bank). For two opposite views on this issue see A. HORTON, "Analysis of World Bank Voting Reforms. Governance Remains Illegitimate and Outdated", and W. N. GIANARIS, 1990, "Weighted Voting in the International Monetary Fund and the World Bank", *Fordham International Law Journal*, Vol. 14, (4).

¹²⁰⁶ G. M. CRAGG *et al.*, 2012 *op.cit.* at. 292; see also Vienna Convention on the Law of Treaties Article 9.

Furthermore, States’ negotiating behaviour will reflect the concomitant constraints of both a domestic political game and an international game.¹²⁰⁷ During the Treaty negotiations for example, the seed industry strongly lobbied within developed countries’ delegations such as The Netherlands or the U.S. to develop access rules that do not affect their businesses too much, i.e. that do not interfere with their IPR policy; while conservationists or farmers’ organizations tried to weigh-in on the voting power of other states (with more or less success).

C. States’ negotiating practice within FAO

Within FAO’s CGRFA, a practice has emerged that countries from the same region meet in regional groups in order to develop consensus positions and therefore have stronger influence on the negotiation outputs. CGRFA member nations¹²⁰⁸ are subdivided into seven geographic regions: Africa, Asia, Europe, Latin America and the Caribbean, Near East, Northern America and South West Pacific.¹²⁰⁹ Gerbasi recognizes that “[w]hile the existence of these regions responds to technical needs, it is also true that this has political implications,”¹²¹⁰ thereby increasing states’ political and economic weight during the negotiations. Other groupings have emerged, such as the European Union (EU),¹²¹¹ the G-77,¹²¹² the OECD group¹²¹³ or the mega-diverse countries,¹²¹⁴ each with the aim of giving more weight to states with overall common objectives during negotiations and decision-making processes. However, none of these groups really align with the political divide that

¹²⁰⁷ R. D. PUTNAM, 1988, "Diplomacy and Domestic Politics: The Logic of Two-Level Games", *International organization*, Vol. 42, (03); see also P. B. EVANS, H. K. JACOBSON, AND R. D. PUTNAM, 1993, *Double-Edged Diplomacy: International Bargaining and Domestic Politics*, Univ of California Press.

¹²⁰⁸ As of June 2011, 173 countries and the European Union are Members of the Commission. Membership is open to all FAO Members and Associate Members, upon request.

¹²⁰⁹ Rule III, 1 of the Rules of Procedure of the Commission on Genetic Resources for Food and Agriculture, adopted pursuant to Article 10 of its Statutes, at its Twelfth Regular Session, in 2009.

¹²¹⁰ S. OBERTHÜR AND F. RABITZ, 2013, "On the Eu's Performance and Leadership in Global Environmental Governance: The Case of the Nagoya Protocol", *Journal of European Public Policy*, Vol. 21, (1) at p. 29.

¹²¹¹ The EU group has a specific position as it is the only regional group which is also a party to the Treaty.

¹²¹² This group was founded on 15 June 1964 by the 'Joint Declaration of the Seventy-Seven Countries' issued at the United Nations Conference on Trade and Development (UNCTAD). It integrates 131 developing countries. In the G-77 there are countries from the following regions: Latin America and Caribbean, Africa, Asia, Near East and Pacific.

¹²¹³ The OECD was created in 1960 with 31 developed countries. Country members of OECD are from North America, Europe, Latin America and Asia and the Pacific.

¹²¹⁴ This group of countries is active within the CBD forum. The initial member countries of the Like-Minded Group of Mega-diverse Countries were Brazil, China, Colombia, Costa Rica, Ecuador, India, Indonesia, Kenya, Mexico, Peru, South Africa and Venezuela. Since then, Bolivia, the Democratic Republic of the Congo, Madagascar, Malaysia and the Philippines have also joined.

occurred during the Treaty negotiations between gene-poor developed countries and gene-rich developing countries.¹²¹⁵

As for all international negotiations, the resulting instrument reflects the balancing powers and interests of most parties. Although in theory, states have equivalent powers and one state equals one vote, in reality not all states can exert the same level of influence. In explaining why Africa did not obtain as much as initially hoped, representatives from the African group contend to have “given in” too quickly and hence to have lost their major bargaining power.¹²¹⁶

§ 2 The Consultative Group on International Agricultural Research

A. A brief history of the Consultative Group on International Agricultural Research

The Consultative Group on International Agricultural Research (CGIAR) grew out of the international response to widespread concern in the 1950s, 1960s and early 1970s that many developing countries would succumb to hunger.¹²¹⁷ Experts predicted prevalent and devastating famine between 1970 and 1985, with hundreds of millions starving to death. The roots of the CGIAR go back almost 3 decades before its formal inauguration in 1971, beginning with a collaborative program between Mexico and the Rockefeller Foundation.¹²¹⁸ The CGIAR is a strategic partnership of countries, international and regional organizations and private foundations supporting the work of 15 International Agricultural Research Centres united in a Consortium.¹²¹⁹ The CGIAR has strong links with university and

¹²¹⁵ For a detailed analysis of states’ positions during the Treaty negotiation and implementation, see the eight chapters in Part I of the book C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., *Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*, and in particular F. GERBASI, "Overview of the Regional Approaches - the Negotiating Process of the International Treaty on Plant Genetic Resources for Food and Agriculture", in C. FRISON, F. LÓPEZ, AND J.T. ESQUINAS-ALCAZAR (eds), *Plant Genetic Resources and Food Security: Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*, Washington, DC, Earthscan, FAO and Bioversity International, 2011.

¹²¹⁶ T. B. G. EGZIABHER, E. MATOS, AND G. MWILA, "The African Regional Group: Creating Fair Play between North and South", in C. FRISON, F. LÓPEZ, AND J.T. ESQUINAS-ALCAZAR (eds), *Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*, Washington, DC., Earthscan, FAO and Bioversity International, 2011 at p. 52.

¹²¹⁷ Founding Resolution of the Consultative Group for International Agricultural Research, Washington DC, May 1971, available at <http://www.worldbank.org/html/cgiar/publications/founding.html>

¹²¹⁸ D. BYERLEE AND H. J. DUBIN, 2010, "Crop Improvement in the Cgiar as a Global Success Story of Open Access and International Collaboration", *International Journal of the Commons*, Vol. 4, (1).

¹²¹⁹ CGIAR, "Consortion Constitution," ed. CGIAR (2010) Article 2. For more information see G. MOORE AND E. FRISON, *op. cit.*

private research, *inter alia* through public-public or public-private partnerships. Its activities are mainly financed with public funds from donor countries, developing countries, regional organizations, international organizations and foundations.

B. The CGIAR’s objectives

According to their website, the CGIAR is dedicated to the conservation and use of agricultural biodiversity to improve the livelihoods of poor people. It fosters sustainable agricultural growth through high-quality science aimed at benefiting the poor through e.g. stronger food security, better human nutrition and health, higher incomes and improved management of natural resources.¹²²⁰ The CGIAR research centres do so in collaboration with national agricultural research systems, civil society and the private sector, as complementary stakeholders to states’ actions in international agricultural policies. The CGIAR Constitution does not explicitly mention that one of its objectives is to provide international agricultural goods and services which states fail to provide on their own (i.e. such as food security and sustainable agriculture). However, several studies have shown that the CGIAR has *de facto* acted as an early provider of such goods¹²²¹ either by providing global knowledge or specific products and services in agricultural research.¹²²²

C. The role of the CGIAR and of Bioversity International in the Treaty negotiation

The CGIAR has developed many policies, programmes and tools to reach the above mentioned objectives.¹²²³ Indeed, by collecting, characterizing and conserving PGRFA, and by training, transferring knowledge, technology and material in an “open access” manner,

¹²²⁰ <http://www.cgiar.org/>

¹²²¹ F. SAGASTI AND V. TIMMER, "An Approach to the Cgiar as a Provider of International Public Goods", 2008 ; H. SHANDS, L. CASTINEIRAS, AND T. V. HINTUM, "Collective Action for the Rehabilitation of Global Public Goods in the Cgiar Genetic Resources System: Phase 2 (Gpg2)", 2008 ; J. R. ANDERSON, 1998,"Selected Policy Issues in International Agricultural Research: On Striving for International Public Goods in an Era of Donor Fatigue", *World Development*, Vol. 26, (6).

¹²²² F. SAGASTI AND V. TIMMER, 2008 at p 27. See also for example the GPG Project of the genebanks of the CGIAR Centres, at <http://www.sgrp.cgiar.org/?q=node/158>

¹²²³ These include *inter alia* the System Wide Program on Property Rights and Collective Action (CAPRI), which is one of several intercenter initiatives of the Consultative Group on International Agricultural Research (CGIAR) created to foster research and collaboration among the CGIAR and national agricultural research institutes on the institutional aspects of natural resource management. CAPRI contributes to policies and practices that reduce rural poverty by analyzing and disseminating knowledge on the ways that collective action and property rights institutions influence the efficiency, equity, and sustainability of natural resource use. More information at www.capri.cgiar.org

the CGIAR has significantly contributed to designing “a new international regime for germplasm development and transfer.”¹²²⁴ The research, conservation and training activities are mainly focused on developing countries. Since its inception, the CGIAR has contributed to facilitate the access to as many PGRFA as possible, first by creating a global network of gene banks and collections, then by holding PGRFA in trust for the global community,¹²²⁵ and by making information available to the community (*inter alia* through databases such as SINGER or Genesys).¹²²⁶

Biodiversity International is one of 15 centres supported by the CGIAR.¹²²⁷ A study was published in 2003 on the role and political influence that Biodiversity (at that time named IPGRI) exerted between 1996 and 2001 in the international negotiations revising the IU. The study shows that “the provision of timely and relevant technical inputs directly linked to IPGRI’s area of expertise was the most successful means of influencing the negotiations. (...) [P]olitical neutrality and reliability were seen as factors that enhanced IPGRI’s ability to influence [negotiations].”¹²²⁸

Biodiversity International and the CGIAR are accredited to participate in Treaty meetings as “observers from intergovernmental organizations”.¹²²⁹ Albeit being a key stakeholder in the Treaty negotiation and implementation, the CGIAR “lacks the resources and formal rights that endow states, and this fact ultimately limited IPGRI’s ability to directly influence the negotiations.”¹²³⁰

¹²²⁴ W. P. FALCON AND C. FOWLER, 2002 *op.cit.*.

¹²²⁵ Signed in October 1994, the in-trust agreement state that the CGIAR agree to hold designated germplasm in trust for the international community under the auspices of FAO, thereby making this material freely available for research and crop improvement purposes.

¹²²⁶ See Chapter 4, Section 6, §1 for details on such information systems.

¹²²⁷ Biodiversity International is based in Rome, Italy. It was formerly named the International Plant Genetic Resource Institute (IPGRI) up to 2004 and the International Board for Plant Genetic Resources (IBPGR) from its creation in 1974 up to 1992. <http://www.biodiversityinternational.org/>

¹²²⁸ R. SAUVÉ AND J. WATTS, 2003, "An Analysis of Ipagri's Influence on the International Treaty on Plant Genetic Resources for Food and Agriculture", *Agricultural Systems*, Vol. 78, (2), at p. 307.

¹²²⁹ See the different categories of participants to Governing Body sessions at the end of each Governing Body report.

¹²³⁰ R. SAUVÉ AND J. WATTS, 2003 *op.cit.*

D. Outcomes of CGIAR’s participation in the Treaty negotiating process

The CGIAR has actively contributed to the creation of the Treaty’s innovative MLS.¹²³¹ As a matter of fact, during the Treaty negotiations, the CGIAR, and especially Bioversity International, has played a crucial role in unblocking negotiations on technical matters, in particular regarding the access to and exchange of PGRFA, as well as the SMTA.¹²³² As the historical accounts have shown, the CGIAR objectives and policy instruments have functioned as a driver to design and adopt the policy instruments and objectives for the international management of PGRFA under the Treaty.

During the implementation process, the CGIAR continues to be a central actor of the PGRFA regime. Indeed, its role has been recognized and integrated within the Treaty system under Article 15. The CGIAR Centres and other international institutions holding PGRFA collections in trust are the main distributors of Annex I (and non-Annex I) PGRFA following the MLS provisions (i.e., using the SMTA). Even more, the CGIAR is now subject to policy guidance of the Governing Body for the *ex situ* collections held by them.¹²³³

§ 3 The Global Crop Diversity Trust

A. The mission and objectives of the Global Crop Diversity Trust

The mission of the Global Crop Diversity Trust (GCDT) is to ensure the conservation and availability of crop diversity for food security worldwide. It contributes to sustaining PGRFA collections that are critical for food security and sustainable development, and to secure PGRFA in the long-term.

The objectives of the GCDT are to safeguard collections of unique and valuable PGRFA held *ex situ*, with priority being given to those that are included in Annex I to the Treaty or referred to in Article 15.1(b) of the Treaty. This includes the funding of projects for the regeneration, characterization, documentation and evaluation of PGRFA and the exchange

¹²³¹ D. COOPER, J. ENGELS, AND E. A. FRISON, 1994, "A Multilateral System for Plant Genetic Resources: Imperatives, Achievements and Challenges", Bioversity International; see also W. P. FALCON AND C. FOWLER, 2002 *op.cit.*

¹²³² G. MOORE AND E. FRISON, *op. cit.* at pp. 156-159.

¹²³³ Plant Treaty, Article 15.1(c).

of related information, as well as securing the availability of PGRFA. The GCDT also aims at supporting the implementation of the Global Plan of Action for the Conservation and Sustainable Utilization of PGRFA and at participating in national and regional capacity building initiatives.¹²³⁴

B. Legal status of the GCDT

The GCDT is an independent organization under international law, officially established in October 2004,¹²³⁵ although discussions on the need for such an institution had been ongoing for several years already. The adoption of the Treaty unblocked the discussions and allowed for its swift creation.

A “Relationship Agreement between the Governing Body of the International Treaty and the Trust” was formally approved during the first meeting of the Governing Body of the Treaty in June 2006.¹²³⁶ Although the agreement recognizes the GCDT as an “essential element” of the funding strategy of the Treaty, and provides for the Governing Body to give policy guidance to the Trust and to appoint four members of its Executive Board,¹²³⁷ many developing countries were unhappy with the establishment of the Trust as an independent organization. Besides the lack of real control of the Governing Body over the Trust, one of the reasons of this resentment was the fact that they saw significant funding going to the Trust for *ex situ* conservation, while they would have liked to see more investment in *in situ* conservation.

¹²³⁴ G. HAWTIN AND C. FOWLER, "The Global Crop Diversity Trust - an Essential Element of the Treaty's Funding Strategy", in C. FRISON, F. LÓPEZ, AND J.T. ESQUINAS-ALCAZAR (eds), *Plant Genetic Resources and Food Security: Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*, Washington, DC, Earthscan, FAO and Bioversity International, 2011, at pp. 215-216.

¹²³⁵ Establishment Agreement & Constitution of the GCDT at <http://www.croptrust.org/main/governance.php?itemid=5>

¹²³⁶ IT/GB-1/06/Report at §§ 35-40.

¹²³⁷ For more information, see <http://www.croptrust.org/main/governance.php?itemid=6>

C. Strategies and policy results of the GCDT

The GCDT uses a constellation of strategies and formal policies to reach its objectives.¹²³⁸ It finances *ex situ* conservation projects all over the world and reports on its activities to the Treaty’s Governing Body.

Since its inception, the GCDT was able to provide long-term maintenance grants to many collections (aroids, banana, barley, bean, cassava, fava bean, forages, grass pea, pearl millet, rice, sorghum, wheat and yam). In addition, the GCDT has funded projects around the world in partnership with a large number of other institutions (including private corporations). As of December 2015, the GCDT had received from donor countries, foundations, the private sector and international organisations total pledges of support amounting to over US\$ 444 million and of this more than US\$ 309 million had already been received.¹²³⁹

§ 4 Genebanks & plant genetic resources collections

A. The predominance of *ex situ* conservation of PGRFA

Genebanks are the facilities where major crop plants and their crop wild relatives are stored for their conservation and use. They provide the raw material for the improvement of crops by professional plant breeders. 90 percent of the six million accessions conserved in *ex situ* collections worldwide are stored as seed because it is practical and relatively cheap. Other conservation methods include freezing plant tissues or pollen (i.e. cryopreservation), tissue cultures grown in test tubes (*in vitro* conservation), live plants in greenhouses and live plants grown in the field (field collections). Various types of genebanks exist, i.e. crop-based collections which focus on one crop,¹²⁴⁰ or national,¹²⁴¹ regional or international collections, which store a variety of crops. N.I. Vavilov was the first to create a genebank in Saint-Petersburg (Leningrad) at the beginning of the twentieth century; his activities were focused on crop improvement. Pistorius identifies the US

¹²³⁸ G. HAWTIN AND C. FOWLER, *op. cit.*

¹²³⁹ Global Crop Diversity Trust Pledges available at <https://www.croptrust.org/>

¹²⁴⁰ Like the IARCs collections for rice, wheat, potato, etc.

¹²⁴¹ An example is provided with the US National Plant Germplasm System.

National Seed Storage Laboratory – created in 1958 – to be one of the first real *ex situ* collection facilities to conserve threatened landraces and wild species.¹²⁴² By 2010, FAO registered some 1750 genebanks around the world.¹²⁴³

B. Objectives of genebanks

Genebanks have various functions. The IU distinguished between a “base collection of plant genetic resources” and an “active collection”.¹²⁴⁴ “Base collections” hold plant genetic resources for long-term security in order to preserve the genetic variation for scientific purposes and as a basis for plant breeding. They constitute a safe long-term duplicate of PGRFA that are also conserved in “active collections”. The Svalbard Global Seed Vault,¹²⁴⁵ which is probably the most famous genebank, provides for an additional safety back-up. “Active collections” complement base collections in that they maintain seed samples that are drawn on for use. They acquire (through exchanges or exploration and collection trips), conserve, multiply, regenerate, study (*inter alia* through characterization and evaluation,) and distribute genetic resources to users such as breeders or researchers from various fields, including genetics, plant and seed physiology, *in vitro* culture, cryopreservation or information technology. In the Treaty, a general inclusive definition of “*ex situ* collection” is provided in its Article 2 as a collection of PGRFA maintained outside their natural habitat.

C. Conservation strategy at the international level

According to some experts, “maintenance of seed viability and genetic integrity remain the cornerstones of gene bank management. The quality and sustainability of any genetic conservation effort depends on how seeds are processed and conserved. Inappropriate procedures for seed handling lead to accelerated deterioration, making

¹²⁴² R. PISTORIUS, *cit.* at p. 7.

¹²⁴³ FAO, "Second Report on the State of the World’s Plant Genetic Resources for Food and Agriculture", 2010at p. 55.

¹²⁴⁴ IU, Article 2.1.

¹²⁴⁵ The Svalbard Global Seed Vault was built as a last resort safety back-up repository, which is now freely available to the world community for the long-term storage of duplicate seed samples. More information at <http://nordgen.org/sgsv/> and <http://www.croptrust.org/main/arcticseedvault.php?itemid=211>

conservation more expensive.”¹²⁴⁶ While *ex situ* conservation has invaluablely contributed to the mitigation of diversity losses and has constituted the core “raw” material for major public research on food security issues, genebank curators have pointed to the lack of sufficient financial, human and technological means to efficiently conserve and safeguard PGRFA.¹²⁴⁷ Therefore, there is a need to develop coherent genebank management strategies and policies, which are direly required to respond to the increasing pressure to improve cost efficiency and effectiveness. Such efforts are made by international actors such as FAO or Bioversity International through the development of guidelines for breeders and researchers, a common framework for seed policies, information sharing mechanisms,¹²⁴⁸ or standardization of material transfer agreements.¹²⁴⁹ During the Treaty negotiations, genebanks have mainly been involved indirectly through either the CGIAR or through national delegations. The policy implemented through the supporting components of the Treaty (the GPA, the role of the CGIAR, the international PGRFA networks, and the GLIS)¹²⁵⁰ reinforces the global strategy for *ex situ* conservation. A remark is made on the fact that this strategy clearly focuses on providing material mainly to one type of users, i.e. breeders and researchers.

§ 5 Plant breeding and the seed Industry

A. Companies within the breeding and seed industry

While seed companies constituted a very fragmented market until the 1960s,¹²⁵¹ a massive industrialisation of agriculture has led to a ruling by a few oligopolistic

¹²⁴⁶ K. RAO *et al.*, 2006, "Manual of Seed Handling in Genebanks", Rome, Bioversity International, at p. 2.

¹²⁴⁷ J. I. CUBERO, "Plant Breeders - the Point of View of a Plant Breeder on the International Treaty on Plant Genetic Resources for Food and Agriculture", in C. FRISON, F. LÓPEZ, AND J.T. ESQUINAS-ALCAZAR (eds), *Plant Genetic Resources and Food Security: Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*, Washington, DC, Earthscan, FAO and Bioversity International, 2011.

¹²⁴⁸ See WIEWS website at <http://apps3.fao.org/wiews/wiews.jsp>

¹²⁴⁹ SGRP, 2003, "Booklet of Cgiar Centre Policy Instruments, Guidelines and Statements on Genetic Resources, Biotechnology and Intellectual Property Rights", Vol. .

¹²⁵⁰ See above Chapter 4, Section 6.

¹²⁵¹ See above, Chapter 2 Section 3 and Chapter 3, Section 2. See also A. VAN DEN HURK, "The Seed Industry - Plant Breeding and the International Treaty on Plant Genetic Resources for Food and Agriculture", in C. FRISON, F. LÓPEZ, AND J.T. ESQUINAS-ALCAZAR (eds), *Plant Genetic Resources and Food Security: Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*, Washington, DC, Earthscan, FAO and Bioversity International, 2011.

companies.¹²⁵² The global seed market increased from US\$ 12 billion in 1975, to around US\$ 20 billion in 1985 and was estimated at US\$ 36.5 billion in 2007.¹²⁵³ The rapid progress of technology, especially in molecular biology and genetic engineering, has introduced new players into the field.¹²⁵⁴ The wave of acquisitions that took place in the 1980s has significantly concentrated the seed market,¹²⁵⁵ where mega-seed companies¹²⁵⁶ expanding on the agro-chemical market aim at controlling everything from genetic engineering of seeds to the selling of seeds to farmers, to marketing plant-grown drugs, modified foods, and industrial products.¹²⁵⁷ According to Laird and Wynberg, “[t]he seed industry is characterized by three levels of companies: life science giants, large multinational firms, and small and medium-sized enterprises.”¹²⁵⁸ By reminding that in 2005, ten companies controlled 49 percent of the global seed market, with an increased trend towards acquisitions and mergers between seed and agrichemical companies Laird and Wynberg confirm that “[m]ost of the larger companies also have active interests in agro-chemicals and pharmaceuticals. An intensifying trend over the past decade has been the continued consolidation of the seed, crop protection and plant biotechnology industries.”¹²⁵⁹ Today, the agro-chemical-seed market is dominated worldwide by the Big-Six that is to say BASF, Bayer, Dupont, Dow Chemical Company, Monsanto, and Syngenta. In 1996 Monsanto was ranked number 12 in the overall ranking of seed company revenues with 170 million Euros, whereas it reached the first place in 2006, with a company turnover exceeding 4000 million Euros.¹²⁶⁰ The concentration tendency is continuing, as shown by the 2015 failed

¹²⁵² J. R. KLOPPENBURG, "First the Seed. The Political Economy of Plant Biotechnology, 1492-2000," at pp. 11-18.

¹²⁵³ A. VAN DEN HURK, *op. cit.* at p. 164.

¹²⁵⁴ P. H. HOWARD, 2009, "Visualizing Consolidation in the Global Seed Industry: 1996–2008", *Sustainability*, Vol. 1, (4); see also M. E. FOOTER, 2000 *op.cit.* at p. 51.

¹²⁵⁵ B. LEBUANEC, 2007, "Evolution of the Seed Industry During the Past Three Decades", *Seed Testing - International*, Vol. 134, at p. 10.

¹²⁵⁶ R. W. HERDT, "Enclosing the Global Plant Genetic Commons," at p. 8.

¹²⁵⁷ Aoki cites Janet Hope saying that "the merger-mania was driven primarily by the need to avoid high transaction costs associated with clearing multiple IPR, (...) and that most key enabling technologies are now in the hands of only a handful of firms," in K. AOKI, "Seed Wars : Controversies and Cases on Plant Genetic Resources and Intellectual Property", *op. cit.* at p.113.

¹²⁵⁸ S. A. LAIRD AND R. WYNBERG, "The Commercial Use of Biodiversity: An Update on Current Trends in Demand for Access to Genetic Resources and Benefit-Sharing, and Industry Perspectives on Abs Policy and Implementation", 2005 , at p. 18.

¹²⁵⁹ S. A. LAIRD AND R. WYNBERG, 2005 at p. 18.

¹²⁶⁰ B. LEBUANEC, 2007 *op.cit.*, at p. 10.

tentative US\$ 46.5 billion takeover bid of Monsanto over Syngenta,¹²⁶¹ and is now also shifting towards farm machinery industry, thereby potentially creating a “one-stop shop for farm inputs”¹²⁶² for all farm machinery, seeds, fertilizers and chemicals.

Besides, in specific countries, such as the Netherlands where plant breeding has a strong historical trade background, or in developing countries where the breeding industry is emerging, small and medium-size seed enterprises manage to continue to evolve in the international seed market.¹²⁶³ Laird and Wynberg confirm that “small and medium-sized seed companies, of which there are several thousand, are also significant and occupy different market niches, [such as] vegetables, grasses and more marginal crops.”¹²⁶⁴ These small and medium-sized companies hold different interests and positions than the mega-companies.

B. Activities of the private seed industry

Seed companies are market entities, which objectives are primarily profit-oriented. They exploit the potential of isolating and manipulating specific genetic characteristics in seed varieties.¹²⁶⁵ Over the years, plant breeding has largely concentrated on the following aspects of major crops: increased yields, earliness, resistance to biotic stresses and tolerance to abiotic stresses; these characteristics are incorporated in new varieties. Some qualitative characteristics like taste or nutritional value were also improved for some crops.¹²⁶⁶ According to the first report of the State of the World PGRFA, the private sector “tends to focus on crops that either cover large areas (maize, soybean, wheat, rice) or that generate high per hectare income (tomatoes, sugar beet, etc.). It also tends to concentrate

¹²⁶¹ With Monsanto being the world leader in seeds and genetically engineered traits and Syngenta in insecticides, fungicides and herbicides, the merger would have created an agricultural behemoth with the largest market share in the world in both seeds and agricultural chemicals. Available at

http://www.nytimes.com/2015/08/27/business/dealbook/monsanto-abandons-47-billion-takeover-bid-for-syngenta.html?_r=2

¹²⁶² ETC GROUP, "Breaking Bad: Big Ag Mega-Mergers in Play Dow + Dupont in the Pocket? Next: Demonsanto?", December 2015 at p. 3.

¹²⁶³ According to Plantum, the Dutch association for the plant reproduction material sector, Dutch plant reproductive materials sector in 2014 consists of around 300 specialised breeding and propagation companies. See “The sector of plant reproductive materials. The Netherlands, an international leader”, available at <https://www.plantum.nl/321519619/Basis-for-the-Green-Economy>

¹²⁶⁴ S. A. LAIRD AND R. WYNBERG, 2005, at p. 18.

¹²⁶⁵ M. E. FOOTER, 2000 *op.cit.* at p. 51.

¹²⁶⁶ M. BRUINS, "The Evolution and Contribution of Plant Breeding and Related Technologies in the Future," in *Proceedings of the Second World Seed Conference, Rome, September 8-10, 2009* (FAO Headquarters 2009), at p. 23.

on those crops that offer the strongest protection, either through IPR legislations or more often through the technical or physical characteristics of the seed such as hybrid seed or the terminator technology. This indicates a continuing need for public investment in plant breeding to cover the gaps in private-sector efforts."¹²⁶⁷

C. The seed industry's strategy in the international PGRFA forum

To represent the interests of the mainstream seed industry at a global level, seed companies have grouped into the International Seed Federation (ISF, formerly ASSINSEL). The mission of ISF is to facilitate the international seed flow, related know-how and technology; to mobilize and represent the seed industry at a global level; to inform its members; and to promote the interests and the image of the seed industry.¹²⁶⁸ ISF has been very active during the negotiations on the Treaty and its SMTA.¹²⁶⁹ Two aspects are crucial for the seed industry: IPRs and access to material.

Regarding the first aspect, companies insist on the fact that the cost of R&D is substantial. Therefore, they perceive intellectual property protection on the varieties they produce as the most appropriate manner to ensure a return on R&D investments.¹²⁷⁰ The possibilities offered by intellectual property protection of plant varieties and biotechnological inventions have encouraged companies to increase their spending on R&D: the plant-breeding industry spends on average 10 to 15 percent of its annual turnover.¹²⁷¹ Therefore, during the Treaty negotiations, ISF has strongly supported the protection of crop improvements based on plant breeders' rights (UPOV 1991 rather than the 1978 Convention) and on patents. ISF argues it provides a stronger protection of plant varieties against inappropriate exploitation by others,¹²⁷² and therefore allows for a fair return on investments. Notwithstanding this position, the European Seed Association has

¹²⁶⁷ FAO, "The State of the World's Plant Genetic Resources for Food and Agriculture", 1996 at p. 165. For an extensive historical and socio-technological account of plant improvement mechanisms and innovation contexts, and an illustration of the impact of enclosure mechanisms on plant improvement stakeholders, see the PhD thesis of F. BATUR, "Agrobiodiversity Conservation and Plant Improvement : Adjustments in Intellectual Property Rights Reclaiming the Public Domain Towards Sustainability and Equity,".

¹²⁶⁸ More information at <http://www.worldseed.org/isf/home.html>

¹²⁶⁹ A. VAN DEN HURK, *op. cit.*.

¹²⁷⁰ M. E. FOOTER, 2000 *op.cit.* at p. 51.

¹²⁷¹ M. BRUINS, "The Evolution and Contribution of Plant Breeding and Related Technologies in the Future," at p. 22.

¹²⁷² A. VAN DEN HURK, *op. cit.* at p. 172.

shown support to the Treaty and to the MLS, which is “seen as the more suitable system by the plant breeding sector”.¹²⁷³ Furthermore, ESA (European Seed Association) recently contributed to the Benefit-sharing Fund for 300.000 EUR, thereby confirming its willingness to have a functional MLS.¹²⁷⁴

Regarding the second aspect i.e. access to seeds, Ten Kate and Laird highlight that “shared access and reciprocity (applied to genetic resources and information on research results) constitute the norm between breeders. As one private breeder explained: It is an unwritten rule of ethics for breeders that when someone provides genetic resources, breeders will send them information relating to the research done.”¹²⁷⁵ Van den Hurk confirms that it is important for the seed industry to have “sufficient freedom to operate to carry out their breeding activities and have access to the necessary plant genetic resources. This means that a flow of genetic resources should continue to take place. It is important to realize that access is required both in developed and developing countries. In the latter it may become even more important as the plant breeding sector is expanding. Moreover, genetic resources should be available for all type of users, be they small, medium-sized or large enterprises.”¹²⁷⁶ ESA members use the SMTA when accessing MLS seed, because the SMTA recognizes existing IPR systems over seeds. This recognition of IPRs is the cornerstone of ESA’s position: the MLS shall respect their need for a “suitable framework that ensures adequate return on investment to the plant breeder for his accomplishment,” such suitable framework being plant breeder’s rights system (PBR) as provided for within the framework of the UPOV Convention.¹²⁷⁷ On the contrary, the Big-Six, which are more focused on high-tech biotechnological products, favour a protection based on patents.

¹²⁷³ https://www.euroseeds.eu/system/files/publications/files/esa_14.0625.pdf

¹²⁷⁴ ESA sends strong signal of support to the ITPGRFA, <https://www.euroseeds.eu/esa-sends-strong-signal-support-itpgrfa> ; <https://www.euroseeds.eu/esa-hands-300000%E2%82%AC-voluntary-financial-contribution-fao-it>

¹²⁷⁵ A private plant breeding company interviewed and quoted by Kerry Ten Kate and Sarah Laird in S. A. LAIRD AND R. WYNBERG, 2005 at p. 148.

¹²⁷⁶ A. VAN DEN HURK, *op. cit.* at p. 173.

¹²⁷⁷ https://www.euroseeds.eu/system/files/publications/files/esa_11.0156.1_0.pdf

D. Succeeding in imposing their voice

In 2006, the global seed market amounted to US\$ 30 billion and 49 percent of its value was owned by the ten major agro-biotech life science companies.¹²⁷⁸ In 2008 they controlled 55 percent of the commercial seed market and 64 percent of the patented seed market.¹²⁷⁹ During the Treaty negotiations, seed companies were active as observers and as experts being part of national delegations (e.g. the US or the Netherlands). Moreover, their voice was heard during the negotiations on the SMTA between 2004 and 2006 and recently during the review process of the MLS,¹²⁸⁰ especially regarding the rate adopted for the benefit-sharing payment schemes.

§ 6 Farmers & farmers’ organizations

A. The many faces of farmers

The first farmers were also the first breeders,¹²⁸¹ they domesticated wild species to transform them into crops. Farmers are the ones selecting, sparing and sowing seeds; which is a method of crop improvement called “bulk selection”.¹²⁸² Today, farmers have many different faces: from the prosperous entrepreneur managing highly industrialised large-scale farms in Brazil or the U.S., to the small-scale traditional subsistence farmer in Africa.¹²⁸³ Within the scope of this research, farmers refer primarily to small-holder farmers (or subsistence farmer) and rural people who produce their food for survival. The “Rural Poverty Report” published by the International Fund for Agricultural Development (IFAD)¹²⁸⁴ in 2011 shows that 55 percent of the total population in developing countries are

¹²⁷⁸ S. Laird and R. Wynberg (2008), ‘Access and Benefit-Sharing in practice: Trends in Partnerships Across Sectors’, Technical Series No. 38, CBD Secretariat, Montreal, Canada, at p. 15 and Table 3.

¹²⁷⁹ C. CHIAROLLA, *cit.* at p. 49.

¹²⁸⁰ https://www.euroseeds.eu/system/files/publications/files/esa_11.0938.1.pdf

¹²⁸¹ J. I. CUBERO, *op. cit.* at p. 197.

¹²⁸² Bulk selection consists in choosing the seeds of the best individuals of a harvest, and to mix them to form the sowing bulk for the next season.

¹²⁸³ Svanhild-Isabelle Batta Bjørnstad (2004) “Breakthrough for ‘the South’? An Analysis of the Recognition of Farmers’ Rights in the International Treaty on Plant Genetic Resources for Food and Agriculture” Fridtjof Nansen Institute, FNI Report 13/2004, at pp. 30-31.

¹²⁸⁴ IFAD is a specialized agency of the United Nations. It was established as an international financial institution in 1977 as one of the major outcomes of the 1974 World Food Conference. The Conference was organized in response to the food crises of the early 1970s that primarily affected the Sahelian countries of Africa. For more information, see <http://www.ifad.org/governance/index.htm>

rural and that despite the current shift towards urbanization, poverty remains largely a rural problem.¹²⁸⁵

Regarding the relations between farmers and seed, Louwaars describes two independent yet complementary systems of crop development, with two types of farmers acting within two types of seed systems.¹²⁸⁶ On the one hand, farmers from industrialized countries mainly get propagating material from the formal sector. Formal seed systems are constituted by an organised and often regulated chain that includes genebanks, breeders, seed producers and seed marketing and distribution organisations. They provide tested, certified seed to farmers in an organised manner. On the other hand, small-scale subsistence farmers usually get seeds from their own holding, from neighbouring farmers and from local markets.¹²⁸⁷ These informal seed systems are “by far the most important suppliers of seed, and are particularly important for resource-poor farmers. (...) In practice, these different systems operate side by side to serve the needs of different types of farmers for different types of crops.”¹²⁸⁸ And indeed, Halewood states that “farmers’ systems of informal exchange are crucial to: (i) their ability to constantly introduce new material into their cropping systems; (ii) maintaining high levels of diversity; (iii) maintaining relatively stable yields.”¹²⁸⁹

B. Farmers’ movement defending their rights to save, use, exchange and sell seeds

While farmers have always exchanged seeds freely and traditional agriculture depended on the constant exchange and movement of PGR, current regulations tend to hinder this practice more and more, leading to the privatization of resources.¹²⁹⁰ This trend limits the exchange of seeds, whereas the right of farmers to save, use, exchange and sell

¹²⁸⁵ IFAD, "The Rural Poverty Report 2011", 2011 at pp. 16 and 46.

¹²⁸⁶ In writing so, Louwaars cites De Boef, Berg and Haverkort (1996). See N. LOUWAARS, "Seeds of Confusion. The Impact of Policies on Seed Systems," at Chapter 2.

¹²⁸⁷ S. MCGUIRE AND L. SPERLING, 2016 *op.cit.*.

¹²⁸⁸ N. LOUWAARS, "Seeds of Confusion. The Impact of Policies on Seed Systems," at p. 29.

¹²⁸⁹ M. Halewood *et al.* (2007), 'Farmers, Landraces and Property Rights: Challenges to Allocating *Sui Generis* Intellectual Property Rights to Communities over their Varieties', in S. Biber-Klemm and T. Cottier (eds), *Rights to Plant Genetic Resources and Traditional Knowledge—Basic Issues and Perspectives*. Wallingford, UK: CABI, at p. 179.

¹²⁹⁰ See above Chapters 2 and 3.

seeds is seen by farmers as one of the most basic foundations of the farmers' system of PGR management, as this is how PGRFA diversity has been created and maintained.¹²⁹¹

Farmers' movements at the international level have emerged in the 1970s to react to the corporate driven intensification of agriculture. The most active one within the FAO fora is La Via Campesina,¹²⁹² which defines itself as an international movement bringing together peasants, small and medium-size farmers, landless people, women farmers, indigenous people, migrants and agricultural workers from around the world to defend small-scale sustainable agriculture as a way to promote social justice and dignity.¹²⁹³ Other non-profit international organization supporting small farmers include GRAIN¹²⁹⁴ or the International Planning Committee for Food Sovereignty (IPC).¹²⁹⁵

La Via Campesina, GRAIN and IPC were very active during the Treaty negotiations, although only participating as accredited observers, without any decision-making power. They fought most intensively for Article 9 on Farmers' Rights in order to safeguard their practice of saving, using, exchanging and selling seeds freely, thereby allowing farmers to grow the diversity needed for their own food, provide for the different other needs of farming communities, deal with climate changes and other biotic and abiotic stresses.¹²⁹⁶ Besides, Pelegrina and Salazar note that "while there are farmers and farmer groups who have started expounding on Farmers' Rights, a large number of farmers and their organizations have yet to identify themselves with this 'social construct'. No one can teach farmers about Farmers' Rights because it is imbedded in them and it is the role of

¹²⁹¹ W. R. PELEGRINA AND R. SALAZAR, "Farmers' Communities - a Reflection on the Treaty from Small Farmers' Perspectives", in C. FRISON, F. LÓPEZ, AND J.T. ESQUINAS-ALCAZAR (eds), *Plant Genetic Resources and Food Security: Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture*, Washington, DC, Earthscan, FAO and Bioversity International, 2011, at p. 178.

¹²⁹² The movement was born in 1993 in Mons, Belgium, from a group of farmers' representatives from the four continents. La Via Campesina comprises about 150 local and national organizations in 70 countries from Africa, Asia, Europe and the Americas, representing altogether about 200 million farmers. It defines itself as an autonomous, pluralist and multicultural movement, independent from any political, economic or other type of affiliation. More information at <http://viacampesina.org/en/>

¹²⁹³ For an in-depth analysis of the movement's vision and strategies, showing how it has contributed to an alternative conception of human rights, see P. CLAEYS, "Human Rights and the Food Sovereignty Movement. Reclaiming Control.",

¹²⁹⁴ More information at <http://www.grain.org/>

¹²⁹⁵ IPC is an international network that brings together several organizations representing farmers, fisherfolks and small and medium scale farmers, agricultural workers and indigenous peoples, as well as NGOs. More information at <http://www.foodsovereignty.org/>

¹²⁹⁶ For an account on their strategy of using Human Rights to support their claim see P. CLAEYS, 2012, "The Creation of New Rights by the Food Sovereignty Movement: The Challenge of Institutionalizing Subversion", *Sociology*, Vol. 46, (5); and P. CLAEYS, 2014, "Food Sovereignty and the Recognition of New Rights for Peasants at the Un: A Critical Overview of La Via Campesina's Rights Claims over the Last 20 Years", *op.cit.*

governments and other stakeholders to ensure that farmers can continue with what they have been doing or strengthen their knowledge and skills for global public good.”¹²⁹⁷

C. Farmers’ strategy

As small-scale farmers’ priority strategy is to meet their immediate needs related to cultivation, storage, processing and consumption,¹²⁹⁸ being able to maintain several varieties is essential to select those varieties best adapted to different fields or for different uses. This results in specific adaptation to micro-level agro-ecological niches and to cultural, economic and social needs.¹²⁹⁹ In order to maintain this practice, farmers’ organizations demand to fully recognize Farmers’ Rights at the international and national levels. La Via Campesina calls for an increased awareness of the importance of farmers’ practices, and for the participation of farmers and farmer communities in decision-making processes that have an impact on their lives. Pelegrina and Salazar recall that “farmers are primarily concerned about their livelihood, [i.e.] the return on their inputs and hard labour in the form of sufficient (preferably with surplus) food supply and income. It is natural for farmers to test and innovate as part of risk management measures to ensure their livelihoods.” They argue that it is not just about protecting the germplasm materials, but using it to satisfy their needs. Therefore, farmers organizations stress that they need to be able to access seeds, to use and exchange them freely, including modern cultivars, to be able to feed the world’s population, to continue participating in the development and conservation of PGRFA diversity and to face unpredictable pressure such as climate change.¹³⁰⁰ Jarvis *et al.* argue that enabling farmers to take a greater role in the management of their

¹²⁹⁷ W. R. PELEGRINA AND R. SALAZAR, *op. cit.* at p. 177.

¹²⁹⁸ T. BERG *et al.*, 1991, "Technology and the Gene Struggle", *NORAGRIC Occasional Paper - Series C, Development and Environment, Norwegian Centre for International Agricultural Development, Agricultural University of Norway*, Vol. at p.16.

¹²⁹⁹ “In formal plant breeding, the strategy is the opposite. The breeding- and seed industry cannot economically handle a great number of varieties. The breeders therefore have to opt for stability in order to produce varieties which can be used by as many farmers as possible. The strive for stability is also based on the desire for plant variety protection, which requires stability as one of the conditions for receiving such protection. Thus, the informal system of crop development produces genetically diverse farmers’ varieties (traditional varieties), while the formal system contributes genetically homogeneous cultivars (high-yielding varieties).” I. B. BJORNSTAD, 2004 at pp. 30-31.

¹³⁰⁰ W. R. PELEGRINA AND R. SALAZAR, *op. cit.* at pp. 177-181.

resources could increase the conservation of PGRFA diversity, and therefore contribute to achieve global food security.¹³⁰¹

D. Farmers' Rights: a claim partially heard

It is clear that farmers' communities as such did not have much influence during the Treaty negotiations. Many farmers and farmers' communities around the world had no clue about the Treaty negotiations happening in Rome. Those who were informed and registered as observers were divided into several groups, with little training, information and coordination. Although developing countries and some developed countries (notably Norway) have fought for their cause, the result is limited. Farmers' Rights are recognized by the Treaty under its Article 9 but they are subject to national legislation¹³⁰² and therefore to the good-will of national legislators and politicians. Therefore, most farmers are reluctant to engage in the Treaty discussions, as they have yet to see concrete results out of the Treaty, as translated into national policies (e.g. seed regulations) and programmes on PGR.

Farmers' Rights is a crucial aspect of the Treaty, and I believe that the Treaty's implementation can only be successful if the Farmers' Rights provisions are fully operating.

§ 7 Non-governmental organizations

A. NGOs at FAO

NGOs are local, national or international not-for-profit groups or associations acting outside political and governmental institutions. They perform a variety of functions e.g. bring citizens' concerns to governments, advocate and monitor policies or encourage political participation through the provision of information.¹³⁰³ According to the room left to NGOs to operate within specific environmental international fora, NGOs will influence debates with more or less success.

¹³⁰¹ D. I. JARVIS *et al.*, 2011 *op.cit.* at p. 126.

¹³⁰² Plant Treaty, Article 9.2.

¹³⁰³ An attempt to define NGOs is provided by Peter Willetts in a recent book, where he contends that it is easier to agree on what NGOs are not than on a widely accepted definition of NGOs, see Chapter 1 in P. WILLETTS, 2011, "*Non-Governmental Organizations in World Politics : The Construction of Global Governance*", Oxon (England) ; New York, Routledge.

Within the CBD forum, “non-governmental organizations, including environmental not-for-profit organizations, played a leading role in the initial conception, negotiation and adoption of the Convention on Biological Diversity, and continue to shape policy development.”¹³⁰⁴ Indeed, the CBD has created an Alliance¹³⁰⁵ of civil society organisations aimed at facilitating more diverse, coordinated, and effective civil society input into CBD policy-making. FAO¹³⁰⁶ has a more restrictive definition in which an NGO is “an organization which seeks funding, hires staff, and undertakes programmes, but does not realize a profit.”¹³⁰⁷ Within the limits of this research, the focus will be directed on NGOs which have been active in the agricultural field and which have the status of observers at FAO. They are less numerous than in the wider biodiversity field.¹³⁰⁸

ETC Group (Action Group on Erosion, Technology and Concentration, formerly RAFI) was the first civil society organization to draw attention to the socio-economic and scientific issues related to the conservation and use of PGRFA, IPRs and biotechnology. Within the PGRFA fora, although civil society organisations were very dynamic in the beginning of the CGRFA era (during the 1980s),¹³⁰⁹ few organizations have had a strong influence on the Treaty negotiations from the 1990s onwards.¹³¹⁰ Some NGOs have been more active over the last few years, such as: the Berne Declaration, the Third World Network, or the

¹³⁰⁴ A. DJOGHLAF, "Message of Dr Ahmed Djoghla, the New Executive Secretary of the Convention on Biological Diversity, to the Environmental Ngos of Our Planet," (Secretariat of the Convention on Biological Diversity, 2006).

¹³⁰⁵ The CBD Alliance is a loose network of activists and representatives from NGOs, community based organizations, social movements and Indigenous Peoples organizations advocating for improved and informed participation in CBD processes. The Alliance is premised on the belief that global policy-making should be a transparent and democratic undertaking. It aims to increase the informed and effective participation of Southern NGOs, Indigenous Peoples, Community Based Organizations and social movements. The Alliance exists to help them be more effective in their CBD-related advocacy by facilitating communication among Civil Society representatives and other organizations, Parties to the Convention, media and the CBD Secretariat – to change and ultimately improve biodiversity-related policy at international, national and community levels. More information at <http://www.cbdalliance.org/>

¹³⁰⁶ FAO Constitution Article 3.5 provides that the “Conference may invite any public international organization which has responsibilities related to those of the Organization to appoint a representative who shall participate in its meetings on the conditions prescribed by the Conference. No such representative shall have the right to vote.” Available at <http://www.fao.org/docrep/x5584e/x5584e0i.htm>. The basic texts of FAO also rules on the matter in its sections L, M and N, Resolution. 39/57 and 44/57; available at <http://www.fao.org/3/a-mp046e.pdf>

¹³⁰⁷ FAO Forestry Department, Glossary and Acronyms, FAO corporate document repository, available at <http://www.fao.org/docrep/X5327e/x5327e03.htm>

¹³⁰⁸ Within FAO, there is no permanent fixed location for the NGO delegate community to meet and coordinate, contrary to WTO and WIPO fora or now even within the CBD (with the Alliance).

¹³⁰⁹ P. MOONEY, *op. cit.*, at p. 143.

¹³¹⁰ Mooney states that “[i]f not sooner, the 1991 Commission meeting was certainly the last that was dominated by civil society. By the time governments met again in 1993, the Commission was thoroughly institutionalized and government delegations coming to Rome had marching orders from their capitals that demanded obedience. We could still cajole and tease but we could not decide.” P. MOONEY, *op. cit.* at p. 145.

International Planning Committee for Food Sovereignty (IPC). Some of these organizations have grouped under the initiative “No patents on Seeds”,¹³¹¹ which calls to re-think European patent law in biotechnology and plant breeding and to support clear regulations that exclude patentability processes for breeding, genetic material, plants and animals and food derived thereof.

B. The role of NGOs in the Treaty forum

NGOs are information carriers making the link between individuals, people and the negotiating fora and politics. National, regional¹³¹² and international accredited NGOs may participate in the international PGRFA meetings as observers, but they cannot participate in the decision-making process. A note is made regarding the way institutions are listed as observers in Governing Body reports. Under the category “observers from non-governmental organisations”, all sorts of entities are listed, which do not fall under the above mentioned definition of an NGO, including companies from the seed industry. Under the same category one can find universities, “true” NGOs or civil society organizations, research centres, foundations, national programmes, the international seed federation, etc. Therefore, one should be cautious when looking at which NGO had the status of observer for Governing Body meetings.

According to Matthews, NGOs’ objectives are mainly to provide information and support to country delegates, to enhance the negotiating capacity of delegates, particularly from developing countries (i.e. raising awareness, providing advice and technical expertise, keep delegates informed),¹³¹³ and to achieve coherence on policy positions in different multilateral fora.¹³¹⁴ However, when looking at ETC group’s website for example, the NGO clearly goes beyond that and claims that its actions influences public policy and institutional change. An example is given with the seed wars in the mid-

¹³¹¹ <https://no-patents-on-seeds.org/en/about-us/home>

¹³¹² For example, the Southeast Asia Regional Initiatives for Community Empowerment (SEARICE) is a regional non-government development organization that promotes and implements community-based conservation, development and sustainable use of plant genetic resources in partnership with civil society organizations, government agencies, academic research institutions and local government units in Bhutan, Lao PDR, the Philippines, Thailand and Vietnam. It was established on June 1977. More information at <http://www.searice.org.ph/>

¹³¹³ D. MATTHEWS, 2007, “Role of International Ngos in the Intellectual Property Policy-Making and Norm-Setting Activities of Multilateral Institutions”, *Chicago-Kent Law Review*, Vol. 82, (3) at p. 1371.

¹³¹⁴ Id at p. 1372.

1980s and 1990s, where ETC Group called attention on what they called the terminator technology,¹³¹⁵ or on the then new concept of biopiracy.¹³¹⁶ ETC claims that their action has led to revoke patents on crop species and human tissues.¹³¹⁷

C. NGOs' strategy and mixed influential outcome

Agenda 21 recognizes that NGOs hold well-established and diverse experience, expertise and capacity, and that they offer a global network that should be exploited, further enabled and strengthened in order to support efforts in achieving environmentally sound and socially responsible sustainable development.¹³¹⁸ NGOs interact in formal and informal settings where they exchange information and share knowledge, ideas and expertise.¹³¹⁹ They act as facilitators by building trust. They try to increase coordination and interaction between NGOs and developing countries.¹³²⁰ And indeed, during the Treaty negotiations, the organisation of a series of informal meetings – called the Keystone International Dialogue Series on Plant Genetic Resources¹³²¹ and the Crucible Groups¹³²² – allowed NGOs and many other actors to meet in a neutral setting in order to openly discuss their views and interests. These discussions were effective in allowing these actors to seek consensual solutions to a range of critical issues that were then transmitted to the negotiating fora.¹³²³ However, unlike during the IU period, it has to be recognized that during the first decade of implementation of the Treaty, NGOs lacked influential participation and negotiating power within Governing Body meetings.¹³²⁴

This state of affairs contrasts with the commonly admitted view that today a larger participation of civil society in international policy negotiations has the capacity to increase

¹³¹⁵ J. R. KLOPPENBURG, "First the Seed. The Political Economy of Plant Biotechnology, 1492-2000," at p. 319.

¹³¹⁶ J. M. LENNÉ AND D. WOOD, *cit*; S. B. BRUSH, 2004, "Farmers' Bounty Locating Crop Diversity in the Contemporary World", *op.cit.* at p. 154.

¹³¹⁷ See http://www.etcgroup.org/en/about/History_of_etcgroup_page

¹³¹⁸ Agenda 21, Chapter 27, available at <http://www.un.org/esa/dsd/agenda21/>

¹³¹⁹ D. MATTHEWS, 2007 *op.cit.* at p. 1373.

¹³²⁰ D. MATTHEWS, 2007 *op.cit.* at p. 1372.

¹³²¹ The process created bonds of cooperation and, sometimes, comradeship that have held up over the years. It did not really cause people to change positions so much, but to at least be able to understand one another's positions and find common ground where common ground was occasionally useful. P. MOONEY, *op. cit.* at p. 142.

¹³²² See §8 below for details on these initiatives.

¹³²³ C. FRISON, F. LÓPEZ, AND J. ESQUINAS-ALCÁZAR, T., "Plant Genetic Resources and Food Security : Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture", at p. 8.

¹³²⁴ P. MOONEY, *op. cit.*.

efficiency, impartiality, transparency and democracy in the global policy-making process.¹³²⁵ Indeed, within FAO, this progressive position has been officially acknowledged through the reform of the Committee on World Food Security (CFS),¹³²⁶ qualified by Olivier De Schutter as being the “single most significant development in the area of global food security in recent years.”¹³²⁷ The new CFS aims at being “the foremost inclusive international and intergovernmental platform for a broad range of committed stakeholders to work together in a coordinated manner and in support of country-led processes towards the elimination of hunger and ensuring food security and nutrition for all human beings.”¹³²⁸ The CFS does so by creating a forum where different international stakeholders including governments, but also international organizations and transnational networks of civil society organizations “can work together to ensure that their policies converge, rather than undermining each other’s efforts.”¹³²⁹ Perhaps this recent progress in FAO governance will little by little “contaminate” the Treaty forum too and enable NGOs’ voice to be better heard, for the benefit of all.

§ 8 The Keystone International Dialogue Series and the Crucible Groups

A. An ephemeral but important informal setting

Following the adoption of the CBD and before the conclusion of the Uruguay round of multilateral trade negotiations in 1993-1994, 28 individuals active in the field of PGRFA met three times in an informal way to discuss contentious issues related to the management of PGRFA: “policy concerns related to intellectual property over biomaterials”.¹³³⁰ This group, hosted by IDRC and coordinated by Bioversity International (at that time IPGRI) was called

¹³²⁵ D. BEVILACQUA AND J. DUNCAN, 2010, “Towards a New Cosmopolitanism: Global Reflexive Interactive Democracy as a New Mechanism for Civil Society Participation in Agri-Food Governance”, *Global Jurist - Advances*, Vol. 10, (1).

¹³²⁶ O. DE SCHUTTER, 2009, “Governing World Food Security: A New Role for the Committee on World Food Security”, *Right to Food and Nutrition Watch, Who Controls the Governance of the World Food System*, Vol. ; see also O. DE SCHUTTER, “The Reform of the Committee on World Food Security: The Quest for Coherence in Global Governance,” in *CRIDHO Working Paper 2013/8* (UCLouvain, 2013).

¹³²⁷ O. DE SCHUTTER, “The Reform of the Committee on World Food Security: The Quest for Coherence in Global Governance,” at p. 4.

¹³²⁸ Committee on World Food Security, (Oct. 2009) “Reform of the Committee on World Food Security – Final version” Document CFS:2009/2Rev. 2 available at <ftp://ftp.fao.org/docrep/fao/meeting/018/k7197e.pdf>

¹³²⁹ O. DE SCHUTTER, “The Reform of the Committee on World Food Security: The Quest for Coherence in Global Governance,” at p. 16.

¹³³⁰ THE CRUCIBLE GROUP, “People, Plants and Patents. The Impact of Intellectual Property on Trade, Plant Biodiversity, and Rural Society”, 1994 at p. xi.

the Crucible Group (I and II).¹³³¹ The group was composed of people from public and private institutions, developed and developing countries, civil society organisations and the seed industry.¹³³² They met to continue the work done by the Keystone International Dialogue on PGR, and in particular finish the “unfinished business”¹³³³ regarding the IP agenda. They held very different views on many contentious issues regarding the international agenda for genetic resources. However, they all agreed that decisions taken in international fora could imperil the availability of PGRFA for world food security and agricultural development. They believed that it was imperative to inform decision-makers on the reality of scientists, researchers, breeders, collection holders: i.e. all PGRFA users. The Crucible Group did not last after the adoption of the Treaty, however, a short explanation of its function is provided because it played an important role during the Treaty negotiations as information provider.

B. A fruitful and useful open multi-stakeholder dialogue without consensus

Crucible Group members could not reach an agreement on many issues (and indeed, it was not an objective to reach agreement, but rather to express the differing views and positions to enlighten people on each other’s interests). After several meetings and in-depth discussions, they published a book¹³³⁴ where they identified 28 recommendations for policy-makers, many of which related to IPR issues. Five years later, while it was not the initial purpose to have a second round of discussions, most of the same persons and many others (up to 45 persons participated) decided to organize a Crucible II cycle because the developments in biotechnology and genetic resources-related policies called for further solutions. Two books were published as a result of Crucible II.¹³³⁵

¹³³¹ IDRC, 1994, "People, Plant and Patents. The Impact of the Intellectual Property on Biodiversity, Conservation, Trade and Rural Society", Vol. In September 2014, a similar attempt to form a “Crucible Group type” of meeting took place through the Informal Multi-stakeholder Dialogue workshop jointly convened by Bioversity International and the Meridian Institute. See above Chapter 4, Section 8, §2, C(4).

¹³³² The list of participants is available at pp. viii-ix of THE CRUCIBLE GROUP, 1994.

¹³³³ THE CRUCIBLE GROUP, 1994 at p. xi.

¹³³⁴ CRUCIBLE GROUP, 1994, "*People, Plant and Patents. The Impact of the Intellectual Property on Biodiversity, Conservation, Trade and Rural Society*", Ottawa, International Development Research Centre; see also M. HALEWOOD, "The Crucible Group Experience", 2000 .

¹³³⁵ CRUCIBLE GROUP II "Policy Options for Genetic Resources: People, Plants and Patents Revisited", 2000 ; see also CRUCIBLE GROUP II, "Options for National Laws Governing Control over Genetic Resources and Biological Innovations", 2001 .

What is important to note from this initiative, is its spontaneous, informal, multi-stakeholder and non-consensus modality.¹³³⁶ Based on the beliefs and goodwill of individuals, discussions were initiated, points of views were openly exchanged, opposing parties met in an attempt to understand each other and move forward for a common goal: safeguarding access to and conservation of PGRFA for world food security and poverty alleviation. This second informal dialogue setting (the first one being the Keystone Dialogues) has accompanied and fed the formal negotiation of PGRFA management.

C. A failed revival

In 2013, some stakeholders wanted to recreate a “Crucible Group” type of dialogue through the organization of an informal multi-stakeholder dialogue, in order to progress on the difficult review process of the Treaty MLS and funding strategy.¹³³⁷ While the initiative was officially welcomed at the Fifth Session of the Governing Body,¹³³⁸ there was little concrete subsequent support neither from the Treaty Secretariat nor from Contracting Parties, and this despite the strong interest expressed by the different stakeholders participating in a two-day workshop in September 2014.¹³³⁹ The workshop was jointly organized by Bioversity International and the Meridian Institute (under the guidance of Michael Lesnick and Timothy Mealey who were both facilitators during the Keystone dialogue between 1988 and 1991). Unfortunately, not much has happened following this workshop and no other meeting is scheduled. Regrettably, stakeholders were not able this time to mobilise the resources to take benefit of such informal dialogue-type initiative.

¹³³⁶ M. HALEWOOD, "The Crucible Group Experience", 2000, at p. 1.

¹³³⁷ See above Chapter 4, Section 8, §2, C, (4) for details on the review process and on this informal dialogue attempt.

¹³³⁸ Resolution 2/2013, point 7.

¹³³⁹ Treaty Secretariat, “Facilitator’s Summary: Informal Stakeholder Workshop on Multilateral System of the ITPGRFA”, Submissions Received from Stakeholders Groups and International Organizations: The Meridian Institute, document IT/OWG-EFMLS-2/14/Inf.4.1, Second Meeting of the *Ad-Hoc* Open-ended Working Group to Enhance the Functioning of the Multilateral System, Geneva, Switzerland, 9-11 December 2014. Prior preparatory meetings and/or conference calls took place between December 2013 and September 2014, but no official documents are openly accessible.

The above description of Treaty stakeholders provides a concise view of who these actors are, as well as how and why they are involved in the Treaty. In order to clarify in a glance their divergent interests, a summary table is provided below, stating stakeholders’ objectives with the Treaty, their positions on IPRs, their conservation strategy and the main technology they apply when using PGRFA, as well as their favourite exchange networks to access seeds. The objective of this table is to show (in a rather basic manner) the divergences in positions. This oversimplification is necessary to help understand why stakeholders have difficulties in implementing the Treaty and reaching its objectives in a speedy and collaborative way. It is contended that the reality in their positions is much more nuanced.

Stakeholders	Primary objective	Secondary objective	Position on IPRs	Conservation strategy	Main technology	Exchange Networks
Gene-rich & technology poor countries	Benefit-sharing	Access to seed & technology	No IPRs	<i>In situ</i> & <i>ex situ</i>	Conventional plant breeding	Mainly informal networks
Gene-poor & technology rich countries	Access	Protection of IPRs	IPRs	<i>Ex situ</i>	Conventional plant breeding & biotechnology	Formal networks
Seed industry big	Protection of IPRs	Access	Strong IPR (patents)	<i>Ex situ</i>	Biotechnology breeding	Own collections & Formal networks
Seed industry small & medium	Protection of IPRs	Access	Flexible IPR (PBRs)	<i>Ex situ</i>	Conventional plant breeding	Formal networks
Genebanks & GCDT	Conservation	Facilitated access	?	<i>Ex situ</i>	Conservation technology	Formal networks
CGIAR	Facilitated access	Conservation & Sustainable Use	Flexible IPR + non IPR	<i>Ex situ</i> & <i>in situ</i>	Conventional plant breeding; biotechnology; various conservation technologies & participatory plant breeding	Formal networks & sharing with farmers
Farmers & farmers’ organizations	FRs	Access & Sustainable Use	No IPRs	<i>In situ</i>	Farmers’ selection & participatory plant breeding	Informal networks

Table 5.1: Synopsis of stakeholders’ objectives, positions and strategies

Section 2. List of Treaty constraints identified by stakeholders

Following the presentation of Treaty stakeholders and of their various interests and positions, Section 2 summarizes the challenges and constraints faced by Treaty stakeholders in their implementation of the Treaty. The list of seventeen constraints identified by stakeholders originates from the 2011 edited book, where a full analysis can be found.¹³⁴⁰ In order to provide a rapid and concise summary of the book authors’ claims, the identified constraints have been listed in a simple manner under the table 5.2 below.

It is noteworthy to mention that most of these issues have been confirmed as needing solutions in the Treaty review process which began in 2013 at the Fifth Session of the Governing Body. Furthermore, while recognizing that many actions could be taken at the local, national or regional level, the list of actions and their related needs remain at the Governing Body¹³⁴¹ level, as the scope of the present work is limited to the international law level.

¹³⁴⁰ C. FRISON, F. LÓPEZ, AND J. T. ESQUINAS-ALCÁZAR, *op. cit.* at pp. 257-280.

¹³⁴¹ See above Chapter 4 for a detailed analysis of the Treaty review process under way

Treaty Part	Specific implementation challenges and constraints identified by stakeholders		Needs related to the constraint				
			Clarification	Further Development	Review/Update	Coordination/Coherence	
Part I General Constraints	1	Policy coherence between the ITPGRFA & other conventions (CBD, TRIPS, UPOV)		X	X	X	
	2	Public awareness & capacities at the national level		X	X	X	
	3	Trust between Contracting Parties	X	X		X	
	4	Clarity of Treaty provisions (e.g. Art. 6, 9, 11.2, and 12.3(d))	X	X		X	
Part II Conservation & Sustainable Use of PGRFA	5	Financial, technical & scientific limits		X		X	
	6	Weak implementation of <i>in-situ</i> conservation obligation		X			
Part III Farmers’ Rights	7	Recognition & National implementation	X	X		X	
	8	Participation of Farmers’ organizations		X		X	
Part IV The Multilateral System of Access and Benefit- sharing	9	Modification of Annex I list to face new challenges		X	X		
	10	Limitations in access to PGRFA	X	X	X		
	11	Notification of PGRFA Inclusion in MLS	X			X	
	12	Limited realization of benefit-sharing		X	X	X	
	13	Limited realization of non-monetary benefit-sharing		X		X	
Part V Supporting Components	14	Limited implementation of the GPA		X	X	X	
	15	Little use of existing formal & informal networks		X		X	
	16	Limited implementation of the GLIS		X		X	
Part VI Financial Provisions	17	Limited and unpredictable funding		X	X	X	

Table 5.2: List of constraints identified by Treaty stakeholders

The above list of constraints is based on the authors’ experience with the implementation of the Treaty. They are very diverse and deal with scientific, technical, legal, political, and/or economic aspects of the Treaty implementation. Many constraints cover several of these aspects at the same time. This makes it even harder to tackle them.

In an attempt to facilitate the analysis of all the constraints identified, they have been categorized into four types of associated needs: the need for more clarity; the need for review and update; the need for further development; and the need for more coherence and coordination. This classification should help in identifying what type of legal procedures could respond to these needs (i.e. amending the Treaty, adopting agreed interpretations, adopting codes of conducts, etc.). These four categories of constraints are not exhaustive, and respond to the following four questions.¹³⁴²

§ 1 Is there a need for clarification of Treaty provisions?

Many authors had indicated the need for clarification of various Treaty provisions to guide the implementation, in particular, of Article 11.2 and Article 12.3 (d). A clear example of ambiguity concerns the scope of the following expression “PGRFA [...] that are under the management and control of the Contracting Parties and in the public domain” (see Article 11.2). The need to provide guidance in the interpretation of this and other ambiguities related to the MLS has led to the establishment of an Ad Hoc Technical Advisory Committee by the Governing Body to provide inter alia some guidance regarding the identification of plant genetic resources for food and agriculture under the control and management of Contracting Parties, and in the public domain.¹³⁴³ Another example relates to Article 12.3(d), where different interpretations can be given to the terms “parts and components” and “in the form received” and therefore to the definition of the material that can be protected by IPRs or not.

§ 2 Is there a need for further development of Treaty mechanisms and strategies?

Authors had pleaded in favor of rapid action by the Governing Body to develop further mechanisms and strategies in various aspects. A major example concerns the non-monetary benefit-sharing obligations (Article 13.2 (a), (b) and (c)), which is poorly implemented, according to many authors. A second example relates to the need to further

¹³⁴² The subsequent four questions and their answers are extracted from Section 2 of my analysis in the book. See C. FRISON, F. LÓPEZ, AND J. T. ESQUINAS-ALCÁZAR, *op. cit.* at pp. 268-270.

¹³⁴³ IT/AC-SMTA-MLS1/10/4. See above Chapter 4 Section 2, §1, B, (2).

develop financial mechanisms helping countries to implement the GPA priority activities, and especially the priorities that are not directly covered by funds already established (the GCDT or the Benefit-sharing Fund). Indeed, many priorities of the GPA do not foresee an appropriate and specific financing mechanism to implement them yet. This could perhaps be done by taking advantage of the experience of other existing fundraising mechanisms and funding organizations active in the agricultural sector (such as the Global Environmental Facility (GEF), the United Nations Development Programme (UNDP) or the International Fund for Agricultural Development (IFAD)). A third example where further development is needed relates to the Global Information System. At the last Governing Body meeting, progress was made on this question.¹³⁴⁴

§ 3 Is there a need for review or update of Treaty mechanisms and strategies?

The text of the Treaty and its implementation mechanisms and strategies request, in certain cases, such review and update processes. Several examples can be mentioned, such as the review of the levels of payment in the SMTA by the Governing Body (Article 13.2(d)(ii)); or the periodic establishment of a funding target (Article 18.3). Another example concerns Article 17.3 of the Treaty, which requires Contracting Parties to collaborate with the CGRFA to periodically reassess the State of the World's plant genetic resources for food and agriculture in order to update the GPA. A last example is constituted by the priorities set for the Benefit-sharing Fund, where Annex 1 of the Funding Strategy sets out eligibility, selection criteria and additional requirements that can be updated regularly by the Governing Body. In addition, the editors further consider the possibility to modify and review Treaty mechanisms and strategies in reaction to external circumstances, which were not foreseen at the moment of the Treaty negotiations and which may have a substantial impact on its implementation. A good example would be the updating of Annex I list as a consequence of external factors. Indeed, the identification of the list of crops and forages were negotiated according to the double criteria of interdependency and food security, which are currently being affected by climate change and technological developments.

¹³⁴⁴ See above Chapter 4, Section 6.

§ 4 Is there a need for a stronger coordination in order to facilitate the implementation of this Treaty provision?

Many authors have stressed the limited coordination and coherence at three levels, resulting sometimes in numerous competing and/or conflicting international obligations: (1) between governing bodies and secretariats of international institutions; (2) between national representatives attending different but related international fora such as the WTO, the CBD and the ITPGRFA; and (3) between different sectors and people at the national level responsible for the implementation of these different international obligations. (1) At the secretariat and governing body level, periodic meetings between Secretaries and joint meetings between Governing Bodies of different international organizations could be two options leading to the development of common programmes and activities, mitigating the limited coordination and coherence problems.¹³⁴⁵ An example of successful inter-sectorial cooperation in the negotiating process is provided by the mutual recognition and support between the Treaty and the Nagoya Protocol on Access and Benefit-Sharing. The Protocol expressly refers to the Treaty as a complementary instrument of the international ABS regime.¹³⁴⁶ (2) At the national delegation level, common preparatory meetings and inter-sectorial composition of delegations could be envisaged to prepare for international meetings. (3) At the national level, coordination by national inter-sectorial committees could contribute to improve coherence and coordination when implementing international obligations at the national level.

¹³⁴⁵ At the last two Sessions of the Governing Body , such impulse to collaborate further with the CBD, UPOV and WIPO has been provided by the Governing Body and the Treaty Secretariat.

¹³⁴⁶ Convention on Biological Diversity, COP Decision X/1, § 6 and 11 of the preamble.

Conclusion

Already in 2011, authors had pointed at the risk that the lack of appropriate and quick decisions and actions to speed up the implementation process might lead to a “decreased level of confidence in the general framework set up by the Treaty.”¹³⁴⁷ The legal analysis of the Treaty in Chapter 4 has confirmed this tendency, and shown that the implementation process requires a review of the MLS and of the Funding Strategy, which is currently underway by the Governing Body. Specific conceptual constraints have been highlighted throughout the legal analysis. In addition, the Stakeholders’ analysis in this chapter comes to the same results with the list of 17 identified Treaty constraints and limitations.

The further analysis of these constraints, as well as the guidance of Treaty stakeholders – some of which had named the MLS a “global crop commons” –, have led to the recognition of a link between these identified limitations and concepts and principles from the theory of the commons: stakeholder participation in governing collectively a common resource; rights of access, use and management of a common resource; sustainability; equitable use of the resources and benefits deriving from their collective management; the importance of boundaries and of the community; etc. Therefore, Part III will explore the application of the commons theory to the PGRFA field. The aim is to provide recommendations on how and what could be done to mitigate the identified constraints and to allow stakeholders to reach the Treaty’s objectives and overall goals, using the theory of the commons as guidance.

¹³⁴⁷ C. FRISON, F. LÓPEZ, AND J. T. ESQUINAS-ALCÁZAR, *op. cit.* at p. 257.

PART III PLANTING THE COMMONS: TOWARDS REDESIGNING THE GLOBAL SEED COMMONS

With its Chapters 2 and 3, Part I of the present work aimed at setting the historical, political, economic and legal context for seed management in the twentieth century. This descriptive analysis has allowed to begin the exploration of the subject from the ground, as a first step of the bottom-up inductive research approach. Part I highlights that the dichotomy between public (states' sovereignty) and private ownership (individual property) has influenced the way seed management was designed during the past century. It showed how these two concepts were built up as a reaction one to the other in the international arena. This construct contributed to further push seeds into the grips of reduced access and use. Indeed, once technology and legal developments have allowed to modify the control of seed exchange and use, gene-rich States' struggled for a recognition of their sovereign rights to regain control over the access and use of genetic material within their territories and to benefit financially from the exploitation of their resources. This trend has pushed seed management further into the commodification process, away from to its prior state of unfettered access and collective use.¹³⁴⁸ This situation has crystalized several tensions maintaining the issues at stake in a bottleneck: the tension between public seeds and IPRs; the tension between advancements in (bio)technology and small-scale farmers; the tension between informal exchange of PGRFA and national or international over-regulation on conservation and access to seeds; and the North / South divide.

To bring back fluidity in the access and use of seed diversity, the International Treaty on Plant Genetic Resources for Food and Agriculture was adopted early 2000s within the ambit of FAO. Through the creation of the Multilateral System of access and benefit-sharing and of its Third Party Beneficiary (acting on behalf of the MLS), Contracting Parties attempted to propose a third way to overcome the public/private dichotomy by collectivizing the management of a common basket of seeds. Guided by the results of the contextual study in Part I, Part II of this thesis assessed the Treaty in two ways: through a legal analysis and a stakeholder analysis. The objective was to evaluate whether the Treaty mitigates the identified tensions and whether it reaches its objectives of conservation,

¹³⁴⁸ For a summary of this historical development and the related legal impact on seed management see K. AOKI, 2004, "Weeds, Seeds & Deeds: Recent Skirmishes in the Seed Wars", *Cardozo Journal of International and Comparative Law*, Vol. 11.

sustainable use and access and benefit-sharing for seeds. The study showed that, by integrating the concept of multilateral management of seeds into the debate, the Treaty constitutes a creative and innovative instrument under international law, designed to respond to specific needs of specific seed users. However, the results also demonstrated that the implementation of the Treaty is difficult for many countries and that the voices and needs of part of the Treaty stakeholders are neither heard nor met, partly because the Treaty remains deeply rooted in the above mentioned appropriation scheme. This second step in the inductive research approach dug deep into the technicalities of the Treaty in order to identify concrete “data”, i.e. eight conceptual constraints and a list of 17 implementation constraints have emerged from the legal study and from the stakeholders’ analysis of the Treaty. The results of this second step have led to identifying the theory of the commons as a relevant theoretical framework to be mobilized in the final step of the research.

Hence, Part III formulates a normative proposal by which the theory of the commons would serve to mitigate the Treaty implementation difficulties identified in Part II and contribute to make proposals for different ways forward. Enlarging the legal research to governance concepts from the theory of the commons allows for the development of a wider comprehensive picture of the global context where exchanges of seeds take place. The necessity of using such a wider “lens” is intrinsically linked to the universal and “common good” nature and management systems of PGRFA (i.e. the interdependence character), as well as to the highly political nature of the subject. It implies that the success of the Treaty is rooted in a common interest of the main actors involved in the exchange of seeds, which leads to the creation of global common management mechanisms.¹³⁴⁹ Moreover, the importance of informal seed exchange systems¹³⁵⁰ cannot be made visible with a classic legal analysis, as they are not recognized by the formal system. Understanding law in a broad sense, as the creation of norms and rules to regulate actors, which includes informal norms, social norms,¹³⁵¹ and self-regulation,¹³⁵² can be done using political and social science concepts and methods. For these reasons, the theory of the commons is applied to see if and how managing seeds as a

¹³⁴⁹ M. ZÜRN, *op. cit.*, at p. 730.

¹³⁵⁰ L. B. BADSTUE *et al.*, 2006, "Examining the Role of Collective Action in an Informal Seed System: A Case Study from the Central Valleys of Oaxaca, Mexico", *Human Ecology*, Vol. 34, (2); N. LOUWAARS, "Seeds of Confusion. The Impact of Policies on Seed Systems,"; C. J. ALMEKINDERS AND N. P. LOUWAARS, 2002 *op.cit.*.

¹³⁵¹ L. LESSIG, 1995 *op.cit.*; R. C. ELLICKSON, 1998 *op.cit.*.

¹³⁵² I. AYRES AND J. BRAITHWAITE, *cit.*.

commons can mitigate the constraints identified in the Treaty implementation and overcome the problems raised by the legal imbalance of rights pertaining to seeds. By suggesting that collective governance (rather than the state or the market power) can reach the objectives of resource conservation, access and use by a community in a sustainable and reliable way, Ostrom proposed a different vision to resource management. A caveat is made as to the fact that the present work is not a thesis in political sciences. The aim is therefore not to be exhaustive and unravel the theory of the commons at large. While the principles of sustainable and collective governance are clearly helpful for answering problems in the implementation of the Treaty, other aspects of Ostrom's thinking¹³⁵³ might be less easily suitable. Moreover, new thinkers of the general theory of the commons, such as Dardot and Laval for a socio-philosophical perspective, Mattei for a legal perspective, or Coriat for the economic field, will also be approached. Their views will be used to further support the normative proposals made, *inter alia* by examining how the law can be used as a catalyst to the Global Seed Commons. Part III is composed of a sole chapter (Chapter 6), which is followed by an overall conclusion.

¹³⁵³ Authors have argued *inter alia* that Ostrom's thinking omits the role of political powers and bargains within a community; or that her thinking remains entangled in the dominant economic trend where resources are 'objects' to be governed according to their 'nature'. P. DARDOT AND C. LAVAL, "*Commun: Essai Sur La Révolution Au Xxie Siècle*", *op. cit.* at pp. 138-144.

Chapter 6 Feeding an Effective Plant Treaty with the Commons Theory

“[A]n ecological vision of law does not reduce law to a professionalized, preexisting, objective framework “out there,” separate from the behavior it regulates and tries to determine. Instead, law is always a process of “commoning,” a long-term collective action in which communities, sharing a common purpose and culture, institutionalize their collective will to maintain order and stability in the pursuit of social reproduction. Thus the commons—an open network of relationships—rather than the individual, is the building block of the ecology of law and what we call an “ecolegal” order. Such an ecolegal order is built on the recognition that human survival on this planet is not guaranteed by the destruction of life and by the domination of nature in search of growth. Rather, it seeks a quality of economic life aimed at nurturing our living planet and focusing on generative, complex patterns of relationships.”

Fritjof Capra and Ugo Mattei (2014) “The Ecology of Law”¹³⁵⁴

The twentieth century was marked by worldwide genetic resource erosion, in reaction to which the international community (in particular countries from the North) developed large *ex-situ* conservation policies that culminated with the creation of significant national and international genebanks and research centres,¹³⁵⁵ as observed in Chapter 2 of the present thesis. At that time (between 1900 and 1970/80s), the State and public institutions were urged to take action to conserve biodiversity by scientists that were alarmed by the state of biodiversity erosion worldwide. Since the 1960s and mostly from the 1990s onwards, another actor was perceived to be the most apt to regulate biodiversity management: the market. The science (modern breeding and biotechnology) and the law (IPRs and international trade laws) were used as enabling tools for the market to dominate biodiversity management and the agriculture market. While some actors - mainly FAO, Bioversity International and the CGIAR - presented the necessity to conserve genetic diversity in trust for the benefit of humanity,¹³⁵⁶ the general commodification of genetic resources trend was well established, and all the international agreements adopted to protect biodiversity were entangled within these market

¹³⁵⁴ F. CAPRA AND U. MATTEI, “*The Ecology of Law: Toward a Legal System in Tune with Nature and Community*”, *op. cit.* at pp. 14-15.

¹³⁵⁵ Such as those of the Consultative Group on International Agricultural Research (CGIAR).

¹³⁵⁶ Although authors rather see this role played by the CGIAR as a means to maintain an easy access to resources for developed countries and their breeding companies as a warrant to secure their economic development through the Green Revolution. See for examples J. M. LENNÉ AND D. WOOD, *cit.* at p. 150; and also P. MOONEY, *op. cit.* at 142.

beliefs.¹³⁵⁷ Indeed, the Convention on Biological Diversity formalized the objectification of biodiversity as mere economic resources, the use out of which benefits should be derived, but also consecrated the market to be the most appropriate regulating instrument for reaching biodiversity conservation and sustainable use objectives.

While in the 1980s, the FAO Commission on Plant Genetic Resources had attempted to establish an “in trust for humanity” status for the most important plants feeding the world,¹³⁵⁸ the negotiations of the International Undertaking on Plant Genetic Resources soon turned out to agree on a non-legally-binding instrument, incapable of counter-weighting the general appropriation of biodiversity trend. The idea that seeds should be governed differently through an international legally-binding instrument, and most of all collectively, germinated in some minds.¹³⁵⁹ As a reaction to the commodification scheme and to resolve important tensions in the field explained in Chapter 3 of the present work,¹³⁶⁰ the Multilateral System of access and benefit-sharing of the Plant Treaty was developed,¹³⁶¹ thereby definitely recognizing the special status of the most important plants feeding the world.¹³⁶² Since then, the MLS is considered to function as a Global Seed Commons,¹³⁶³ thereby implicitly endorsing a collective governance policy for PGRFA. Yet, Chapters 4 and 5 demonstrate that, because of the hyper-ownership mentality that has dominated the negotiation of the Treaty, as of 2016, the Treaty implementation process is entangled in significant problems. They clearly show that many Contracting Parties have difficulties implementing the Treaty and that specific stakeholders’ voices and needs (i.e. farmers) are neither heard nor met.

The hypothesis underlying this chapter postulates that picturing the MLS as a “true” global commons, with the intrinsic consequences as to its governance, may contribute to a more efficient implementation of the Treaty and to better reaching the Treaty’s overall goals

¹³⁵⁷ See Chapter 2 for more details.

¹³⁵⁸ Resolution 8/83 recognized that “plant genetic resources are a heritage of mankind to be preserved, and to be freely available for use, for the benefit of present and future generations”.

¹³⁵⁹ D. COOPER, J. ENGELS, AND E. A. FRISON, *cit.*.

¹³⁶⁰ Four major tensions are described in Chapter 3 of the present work.

¹³⁶¹ For a detailed explanation and analysis of the MLS, see Sections 4 and 5 in Chapter 4 of the present thesis.

¹³⁶² W. P. FALCON AND C. FOWLER, 2002 *op.cit.*.

¹³⁶³ M. HALEWOOD, I. L. NORIEGA, AND S. LOUAFI, *cit.*; T. DEDEURWAERDERE, "Institutionalizing Global Genetic Resource Commons for Food and Agriculture", in M. HALEWOOD, I.L. NORIEGA, AND S. LOUAFI (eds), *Crop Genetic Resources as a Global Commons*, Oxon, Earthscan by Routledge - Bioversity International, 2013; M. HALEWOOD, 2013, "What Kind of Goods Are Plant Genetic Resources for Food and Agriculture? Towards the Identification and Development of a New Global Commons", *op.cit.*.

of food security and sustainable agriculture.¹³⁶⁴ Indeed, considering seeds as common goods constitutes an alternative way to overcome the problematic dichotomy that appeared above in the Treaty analysis between seeds defined exclusively as private goods and seeds characterized as public goods. According to Ostrom, common-pool resources institutions are an answer to manage resources in a sustainable manner, to avoid depletion and to allow communities to live perpetually from a resource (fishing; irrigation, etc.).¹³⁶⁵ Local and collective self-organisation by community users is seen as a third, and often overlooked possibility, for effectively managing a resource sustainably, as alternatives to market regulation or State intervention.¹³⁶⁶

Considering this hypothesis, there are many questions that arise in order to build further the last step of the inductive research carried out in the present thesis: how would the concept of commons better allow for reaching the Treaty's direct objectives and overall goals? Can the current review process of the Treaty resolve all the PGRFA management constraints listed at the end of Chapter 5? Can one instrument answer all the different needs and expectations of all the different stakeholders? Would the theory of the commons enable the Treaty to address the central issue of heterogeneity of resources (landraces / breeding lines / genomic resources), heterogeneity of stakeholders (small farmers / breeders / Big Six / consumers/ funders), heterogeneity of uses (self-consumption / local market / global trade market / speculation and financing-investment), and heterogeneity of contexts (various development perspectives)?¹³⁶⁷ What expectations might one have of "the law" in solving the identified issue? Would the commons theory allow the Treaty to intrinsically respect the interdependence criterion, which is fundamental for the seed governing system to realize the necessary balance, equilibrium and resilience between the above mentioned aspects? These are the questions to be explored when relating the research results of the legal and stakeholders' analysis to the theoretical framework of the commons.

¹³⁶⁴ Authors have applied such mechanism to microbial resources or PGRFA: T. DEDEURWAERDERE *et al.*, 2009 *op.cit.*; and M. HALEWOOD, 2010, "Governing the Management and Use of Pooled Microbial Genetic Resources: Lessons from the Global Crop Commons", *op.cit.*.

¹³⁶⁵ E. OSTROM, "Governing the Commons: The Evolution of Institutions for Collective Action", *op. cit.*.

¹³⁶⁶ E. OSTROM, M. A. JANSSEN, AND J. M. ANDERIES, 2007, "Going Beyond Panaceas", *Proceedings of the National Academy of Sciences*, Vol. 104, (39).

¹³⁶⁷ F. BATUR, "Agrobiodiversity Conservation and Plant Improvement: Adjustments in Intellectual Property Rights Reclaiming the Public Domain Towards Sustainability and Equity,"; see also F. BATUR AND T. DEDEURWAERDERE, 2014 *op.cit.*.

This final chapter is divided into three sections. Section 1 explains the theory of the commons, from Hardin to Ostrom including the “new vogue” with Mattei, Dardot and Laval, and others. Section 2 shows how this theory is a pertinent theoretical framework in resolving the Treaty’s dysfunction by focusing on six underlying principles pertinent both for the Treaty and the theory of the commons. Section 3 analyses the eight identified Treaty topics in light of the theory of the commons and explores how a deeper “commonization” might contribute to enhance the Treaty’s implementation, that is to say how to transform the current MLS into a “real global seed commons”. It makes normative proposals for possible solutions to boost reaching the Treaty’s objectives.

Section 1. A brief history of the theory of the commons

The concept of *Commons* is not very well defined, and has grown fuzzier with globalization and the complexification of wider resource governing systems.¹³⁶⁸ To provide some clarity on the concept as addressed in the present work, this section describes the evolution of the theory of the commons from the 1960s to nowadays. As mentioned above, this is not a thesis in political sciences that is to say that the use of the theory of the commons will be selective and partial in serving specific purposes. Therefore, this section will be limited in two ways: from a temporal side and at the level of the scope and definition of the commons. Regarding the temporal limit, explanations will focus on the recent developments of the theory, from the 1960s onwards, and will not cover historical commons¹³⁶⁹ since the middle ages. At the level of the scope and definition of the commons, the focus will remain on what has been described by Ostrom as common pool resources (at any scale: local, regional or global).¹³⁷⁰ It will not cover the debate on what part of the literature calls “global

¹³⁶⁸ E. BERGE AND F. VAN LAERHOVEN, 2011, "Governing the Commons for Two Decades: A Complex Story", *International Journal of the Commons*, Vol. 5, (2).

¹³⁶⁹ T. DE MOOR, 2008, "The Silent Revolution: A New Perspective on the Emergence of Commons, Guilds, and Other Forms of Corporate Collective Action in Western Europe", *International review of social history*, Vol. 53, (S16); see also T. DE MOOR, 2011, "Dossier « Le Champ Des Commons En Question : Perspectives Croisées » - from Common Pastures to Global Commons: A Historical Perspective on Interdisciplinary Approaches to Commons", *Natures Sciences Sociétés*, Vol. 19, (4); T. DE MOOR, 2009, "Avoiding Tragedies: A Flemish Common and Its Commoners under the Pressure of Social and Economic Change During the Eighteenth Century1", *The Economic History Review*, Vol. 62, (1); and G. BRAVO AND T. DE MOOR, 2008, "The Commons in Europe: From Past to Future", *International Journal of the Commons*, Vol. 2, (2).

¹³⁷⁰ Blomquist and Ostrom state that a “common-pool resource provides a finite flow of separable “use-units” over time. Multiple individuals can use a common-pool resource system simultaneously, but each person’s consumption subtracts the amount consumed from the quantity available to others.” See W. BLOMQUIST AND E. OSTROM, 1985, "Institutional Capacity and the Resolution of a Commons Dilemma", *Review of Policy Research*, Vol. 5, (2) at p. 383.

commons”¹³⁷¹ i.e. the high seas and deep seabed, Antarctica, outer space and the global atmosphere,¹³⁷² but remain attached to the notion of resource (whether physical i.e. the seed, or informational, i.e. the knowledge attached to the seed).

The purpose here is not to be exhaustive on the prolific literature on the commons, but rather to highlight some key phases in the recent history of the theory. After briefly explaining the revival of the concept of commons following Hardin’s publication in the 1960s (§1), the important contribution of Ostrom will be summarized (§2) and complemented with the most recent development in the theory, with what is called here the “new vogue” of commons’ scholars (§3).

§ 1 Hardin’s “Tragedy of the Commons”

In 1968, Garrett Hardin published an over-exploited allegory named the “Tragedy of the Commons”¹³⁷³, where he analyzed the problems related to over-exploitation of finite resources under unlimited and free access conditions to all, in the context of an ever growing world population. He took the example of grazing and posed the pre-condition that rational people would always try to get the maximum and immediate profit from their individual use of a “common resource”,¹³⁷⁴ and therefore lead to overgrazing and the destruction of the common pasture.¹³⁷⁵ He suggests that common goods, which according to him are goods that are not under exclusive property rights,¹³⁷⁶ are due to be over-consumed for men are unable to rationally exploit such common resource. Economists classify goods according to two characteristics – rivalry and excludability - as shown in the following quadrant. According to

¹³⁷¹ There is some confusion on the term and definition used in the literature regarding the commons at a “global” / universal / world level. Some authors talk about global commons when dealing exclusively with the high seas and deep seabed, Antarctica, outer space and the global atmosphere (see footnote just below). Regarding the Treaty, authors also talk about the “global seed commons”, but without associating it with the latter school of thought.

¹³⁷² S. J. BUCK, 1998, “*The Global Commons: An Introduction*”, Island Press ; see also J. VOGLER, 2012, “Global Commons Revisited”, *Global Policy*, Vol. 3, (1); and J. ASHLEY ROACH, *ibid.* The Central Arctic Ocean: Another Global Commons”, Vol. .

¹³⁷³ G. HARDIN, 1968 *op.cit.*.

¹³⁷⁴ In game theory, this has been modelled under the prisoner’s dilemma. See A. RAPOPORT AND A. M. CHAMMAH, *cit.*.

¹³⁷⁵ Hardin states that “[e]ach man is locked into a system that compels him to increase his herd without limit – in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom of the commons brings the ruin to all.” G. HARDIN, 1968 *op.cit.* at p. 1244. This view is supported by Mancur Olson in his work on the logic of collective action, who states that “unless the number of individuals is quite small, or unless there is coercion or some other special device to make individuals act in their common interest, *rational, self-interested individuals will not act to achieve their common or group interest*” (emphasis in original text). M. OLSON, “*The Logic of Collective Action : Public Goods and the Theory of Groups*”, *op. cit.*, at p. 2. Although Olson was much more cautious than Hardin in the proposed solution to the “tragedy”, leaving the question of common management open.

¹³⁷⁶ Hardin assimilates “common goods” with goods in “open access”.

this definition, common-pool resources are goods that are rival but hardly excludable, such as the grass in the grazing “commons”.¹³⁷⁷

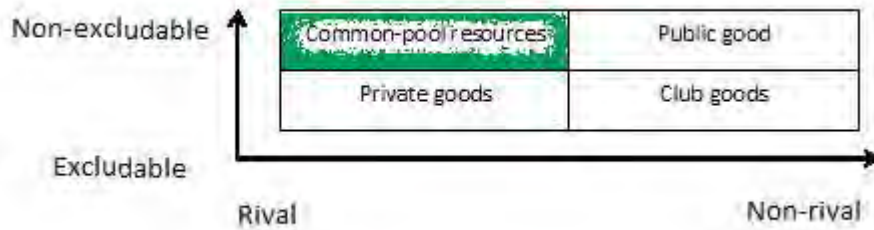


Figure 6.1: Quadrant of the economic classification of goods

Hardin proposed three options to mitigate his tragedy: reducing world population to avoid overconsumption (which is the solution he is strongly pleading for in his article); or establishing an external institution to regulate the use of the resource, whether through public management (State) or through the market (i.e. enclose the commons using property rights).¹³⁷⁸ At that time, the dominant liberal economic trend was strongly pushing for private property rights to be established as the warrant for an optimal free market, avoiding free riding and internalizing the “social cost”.¹³⁷⁹ Hardin’s paper was then used as justification to promote the reinforcement of exclusive property rights, and to develop intellectual property rights in many new fields, including over living organisms, as initiated by the US Supreme Court *Diamond v. Chakrabarty* decision in 1980.¹³⁸⁰

While Hardin’s work has received significant diffusion,¹³⁸¹ his work is now viewed quite differently by many academics from different disciplines. Criticism has bloomed on different aspects of Hardin’s tale, notably on his “explanation for the need to enclose the commons

¹³⁷⁷ However, a clarification is brought as to the fact that in reality, it is not the good and its (rival and / or excludable) characteristics that determine its mode for governance but rather the institutional setting designed by the user-community, as a collective, long-during, and evolving action in response to specific needs. Hardin confounded the good, the property rights attached to the good and its governing regime.

¹³⁷⁸ “The tragedy of the commons as a food basket is averted by private property, or something formally like it.” G. HARDIN, 1968 *op.cit.* at p. 1245.

¹³⁷⁹ R. H. COASE, 1960 *op.cit.*; see also H. DEMSETZ, 1967 *op.cit.* and A. A. ALCHION AND H. DEMSETZ, 1973 *op.cit.*.

¹³⁸⁰ US Supreme Court, *Diamond v. Chakrabarty*, 447 U.S. 303 (1980), where the court ruled (5-4) in favor of Chakrabarty, holding that: “A live, human-made micro-organism is patentable subject matter under 35 U.S.C. § 101. (...) Respondent's micro-organism constitutes a "manufacture" or "composition of matter" within that statute.” For an analysis of the evolution of plant patenting in the USA and Europe see F. BATUR, “Agrobiodiversity Conservation and Plant Improvement : Adjustments in Intellectual Property Rights Reclaiming the Public Domain Towards Sustainability and Equity,” at p. 69 et seq. For an analysis of the Chakrabarty case and following relevant case law see K. AOKI, 2004, “Weeds, Seeds & Deeds: Recent Skirmishes in the Seed Wars”, *op.cit.*

¹³⁸¹ His famous paper has been cited almost 30 thousands time according to google scholar.

[which] confounded the resource with its governance regime”;¹³⁸² on the fact that Hardin mixed up open access with community management, as well as common property rights with absence of property rights;¹³⁸³ or on the fact that he considers human being as objectively rational people, i.e. excluding the influence of other values and ethical aspects in community behaviours.¹³⁸⁴

§ 2 Ostrom’s institutional analysis of common-pool resources

In response to the presumed supremacy of property rights (whether by the state or the market) as being the optimal system to manage resources, Elinor Ostrom¹³⁸⁵ studied the collective management of common resources.¹³⁸⁶ To get a deeper comprehension of the conditions for sustainable resource use and governance regimes, she analyzed Common-Pool Resource (CPR) institutional arrangements¹³⁸⁷ based on extensive field studies.¹³⁸⁸ In her famous book “Governing the Commons” Ostrom focused on case studies in agricultural production systems, e.g. irrigation, forestry, or fishery management systems. Far from the dominant liberal system and from the usual economic classification of goods (based on the notions of rivalry and excludability), in her understanding a commons is “any natural or

¹³⁸² E. BERGE AND F. VAN LAERHOVEN, "Governing the Commons for Two Decades: A Complex Story", *op. cit.* at p. 161. Other criticism can be formulated against Hardin’s views, including the fact that in real life, people communicate and are rarely put in a situation where a common resource is used by different person who do not talk to each other and discuss how to manage the resource commonly. See also E. OSTROM, "Governing the Commons : The Evolution of Institutions for Collective Action", *op. cit.* at p. 7.

¹³⁸³ S. V. CIRIACY-WANTRUP AND R. C. BISHOP, 1975, "Common Property as a Concept in Natural Resources Policy", *Nat. Resources J.*, Vol. 15; see also D. BOLLIER, 2007, "The Growth of the Commons Paradigm", *Understanding knowledge as a commons*, Vol. ; and D. BOLLIER AND S. HELFRICH, 2014, "The Wealth of the Commons: A World Beyond Market and State", Levens Press.

¹³⁸⁴ According to Sen, who worked on welfare economics, peoples’ values and commitments influence economic policies in terms of their effects on the well-being of the community. A. SEN, "Ethique Et Économie", *op. cit.* at p. 15 and 40; and more generally A. K. SEN, *cit.*.

¹³⁸⁵ The theory of the commons gained much visibility in 2009 when Elinor Ostrom received the Nobel Prize in economic sciences.

¹³⁸⁶ Ostrom spent her career working on the notion of commons and has an extensive bibliography. Here are some of her main publications: W. BLOMQUIST AND E. OSTROM, 1985 *op.cit.*; E. OSTROM, 1987, "Institutional Arrangements for Resolving the Commons Dilemma: Some Contending Approaches", *The Question of the Commons. The Culture and Ecology of Communal Resources*, Vol. ; E. OSTROM, "Governing the Commons : The Evolution of Institutions for Collective Action", *op. cit.*; E. SCHLAGER AND E. OSTROM, 1992 *op.cit.*; E. OSTROM *et al.*, 1999 *op.cit.*; C. HESS AND E. OSTROM, 2003, "Ideas, Artifacts, and Facilities: Information as a Common-Pool Resource", *Law and contemporary problems*, Vol. 66, (1/2); E. OSTROM, "Understanding Institutional Diversity", ; C. HESS AND E. OSTROM, 2006, "A Framework for Analysing the Microbiological Commons", *International Social Science Journal*, Vol. 58, (188); E. OSTROM, 2007, "A Diagnostic Approach for Going Beyond Panaceas", *Proceedings of the National Academy of Sciences*, Vol. 104, (39); E. OSTROM, 2010, "The Institutional Analysis and Development Framework and the Commons", *Cornell Law review*, Vol. 95; A. R. POTEETE, M. A. JANSSEN, AND E. OSTROM, *cit.*; B. VOLLAN AND E. OSTROM, 2010 *op.cit.*. For a summary history of Ostrom’s research projects see B. CORIAT, 2013, "Le Retour Des Communs. Sources Et Origines D’un Programme De Recherche", *op.cit.* at §§ 20-62. See also F. V. LAERHOVEN AND E. OSTROM, *ibid.* Traditions Et Évolutions Dans L’étude Des Communs", Vol. .

¹³⁸⁷ E. OSTROM, "Governing the Commons : The Evolution of Institutions for Collective Action", *op. cit.*.

¹³⁸⁸ Ostrom conducted wide meta-analysis of existing common-pool resources case studies.; see E. OSTROM, "Governing the Commons : The Evolution of Institutions for Collective Action", *op. cit.*

manmade resource that is or could be held and used in common.”¹³⁸⁹ By focusing on the institutionalisation of managing regimes, Ostrom showed that stakeholders¹³⁹⁰ can effectively set up rules together (i.e. self-organization) to manage sustainably and efficiently resources established in a local common pool for their own use, and outside of the market or governmental intervention (i.e. self-governance). Relating practical problems to theoretical thinking following an inductive research path, Ostrom used these data and her observations to identify recurring principles useful to govern long-term efficient CPR systems¹³⁹¹:

1. Clearly defined boundaries (i.e. effective exclusion of external unentitled parties);
2. Congruence between appropriation and provision rules and local conditions;
3. Collective-choice arrangements (i.e. allow most resource appropriators to participate in and modify the operational rules);
4. Effective monitoring (by monitors who are part of or accountable to the appropriators);
5. Graduated sanctions (scale of sanctions for appropriators violating community rules);
6. Conflict-resolution mechanisms (cheap and of easy access);
7. Minimal recognition of rights to organize (the self-determination of the community is recognized by higher-level/governmental authorities);

Plus, for CPRs that are parts of larger systems:

8. Nested enterprises (organization in the form of multiple layers of nested enterprises, with small local CPRs at the base level).

These design principles are very helpful (but not compulsory).¹³⁹² Indeed, Ostrom leaves much space for heterogeneity and diversity in systems and places, insisting on the fact that the institutional arrangement should always be adapted to local needs and conditions in order to

¹³⁸⁹ E. BERGE AND F. VAN LAERHOVEN, "Governing the Commons for Two Decades: A Complex Story", *op. cit.* at p. 161.

¹³⁹⁰ Ostrom takes stakeholders as a point of departure for her research (whether empirical or theoretical); see E. OSTROM, "Governing the Commons : The Evolution of Institutions for Collective Action", *op. cit.* This approach is close to the research method I have implemented; see Chapter 1, Sections 1, 2 and 5.

¹³⁹¹ E. OSTROM, "Governing the Commons : The Evolution of Institutions for Collective Action", *op. cit.*, table 3.1, at p. 90.

¹³⁹² E. OSTROM AND P. L. DELVILLE, *cit.*, at p. 8 and 13.

be efficient (which implies that other design principles may be better adapted to different situations).¹³⁹³

Following her seminal book, Ostrom refined her approach further by defining the term common-property resource in a paper written with her colleague Schlager, where they integrated a “bundle of rights” approach.¹³⁹⁴ Schlager and Ostrom propose a scale of property rights,¹³⁹⁵ where authorized users, claimants, proprietor and owners exercise different types of *de jure* or *de facto* rights (right to access and withdraw; right to manage; right to exclude and right to alienate a resource). They distinguish between operational-level property rights and collective-choice property rights.¹³⁹⁶ This distinction is crucial, as it expresses the “difference between exercising a right and participating in the definition of future rights to be exercised.”¹³⁹⁷ Indeed, according to Schlager and Ostrom, “[a]ssigning full ownership rights does not guarantee an avoidance of resource degradation and overinvestment”.¹³⁹⁸ What is essential is the institutionalizing process between users of a common resource to manage collectively and sustainably their commons. In concluding their publication, Schlager and Ostrom call for further research to be conducted in order to understand the functioning of various efficient property-rights regimes at three levels: 1) the conditions to enhance or detract from the emergence of more efficient property-rights regimes; 2) the stability or

¹³⁹³ E. OSTROM, "Governing the Commons : The Evolution of Institutions for Collective Action", *op. cit.*; later confirmed in E. OSTROM, "Understanding Institutional Diversity", ; E. OSTROM, 2009, "Design Principles of Robust Property-Rights Institutions: What Have We Learned?", *op.cit.*; see also M. COX, G. ARNOLD, AND S. V. TOMÁS, 2010 *op.cit.*

¹³⁹⁴ The objective for Schlager and Ostrom is “to propose a property-rights scale ranging from authorized user, to claimant, to proprietor, and to owner, that provides a better analytical scheme for beginning to explain outcomes achieved by joint users of a common-pool resource (...). By examining the evidence (...), we are calling attention to the importance of discriminating among a range of incentives.” E. SCHLAGER AND E. OSTROM, 1992 *op.cit.* at p. 259. For early thoughts on the bundle of rights concept see S. V. CIRIACY-WANTRUP AND R. C. BISHOP, 1975 *op.cit.*. The bundle of rights approach can also be found in Alchain and Demsetz’ work, although leading to an opposite conclusion.

¹³⁹⁵ It has been argued that this bundle of rights approach has reinforced the “sovereignty of the proprietor”, viewed by the neoliberal Chicago School as the only way to reach economic efficiency. See F. OST, D. MISONNE, AND M.-S. DE CLIPPELE, "Propriété Et Biens Communs" (paper presented at the La propriété et ses limites, ARSP Beiheft, 2015, see also F. ORSI, 2013, "Elinor Ostrom Et Les Faisceaux De Droits: L’ouverture D’un Nouvel Espace Pour Penser La Propriété Commune", *Revue de la régulation. Capitalisme, institutions, pouvoirs*, Vol., (14).

¹³⁹⁶ “Operational activities are constrained and made predictable by operational-level rules regardless of the source of these rules. By the term "rules" we refer to generally agreed-upon and enforced prescriptions that require, forbid, or permit specific actions for more than a single individual. (...) Operational rules are changed by collective-choice actions. Such actions are undertaken within a set of collective-choice rules that specify who may participate in changing operational rules and the level of agreement required for their change. In regard to common-pool resources, the most relevant operational-level property rights are "access" and "withdrawal" rights and the collective-choice property rights include management, exclusion, and alienation.” E. SCHLAGER AND E. OSTROM, 1992 *op.cit.* at pp. 250-251.

¹³⁹⁷ E. SCHLAGER AND E. OSTROM, 1992 *op.cit.* at p. 251.

¹³⁹⁸ E. SCHLAGER AND E. OSTROM, 1992 *op.cit.* at p. 259. See also B. A. LARSON AND D. W. BROMLEY, 1990, "Property Rights, Externalities, and Resource Degradation: Locating the Tragedy", *Journal of Development Economics*, Vol. 33, (2); and C. W. CLARK, 1973, "Profit Maximization and the Extinction of Animal Species", *The journal of political economy*, Vol. , C. W. CLARK, 1974, "The Economics of Overexploitation", *Science*, Vol. 181 (both cited in Schlager and Ostrom 1992); and finally R. VAN GINKEL, 1989, "Plunderers into Planters: Zeeland Oystermen and the Enclosure of the Marine Commons", *Dutch Dilemmas: Anthropologists Look at The Netherlands, Van Gorcum, Assen*, Vol. (also cited in Schlager and Ostrom 1992).

instability of these systems when challenged by various exogenous or endogenous changes; and 3) the costs of enforcing regulations that are not agreed upon by those involved.¹³⁹⁹

Many academics have followed Ostrom's path since then. The International Association for the Study of the Commons was created,¹⁴⁰⁰ along with the International Journal of the Commons,¹⁴⁰¹ thereby contributing to the dissemination of Ostrom's innovative and interdisciplinary thinking. The commons' research has spread outside the thematic scope of physical agricultural resources, as an answer to what Boyle has identified as the "second enclosure movement".¹⁴⁰² Works in other fields have developed such as the study of complex socio-ecological systems,¹⁴⁰³ the internet¹⁴⁰⁴ and knowledge in general,¹⁴⁰⁵ microbial commons,¹⁴⁰⁶ the science commons,¹⁴⁰⁷ global environmental commons,¹⁴⁰⁸ micro-psychological foundations for governance regimes,¹⁴⁰⁹ the role of trust in communications between members of the governing community¹⁴¹⁰ in particular in a computer-mediated forms of communication setting,¹⁴¹¹ etc. (the list here could be much longer).

¹³⁹⁹ E. SCHLAGER AND E. OSTROM, 1992 *op.cit.*, at p. 260.

¹⁴⁰⁰ <http://www.iasc-commons.org/>

¹⁴⁰¹ <https://www.thecommonsjournal.org/>

¹⁴⁰² J. BOYLE, 2003, "The Second Enclosure Movement and the Construction of the Public Domain", *op.cit.*

¹⁴⁰³ F. BERKES, J. COLDING, AND C. FOLKE, 2008, "*Navigating Social-Ecological Systems: Building Resilience for Complexity and Change*", Cambridge University Press.

¹⁴⁰⁴ C. HESS AND E. OSTROM, 2003, "Ideas, Artifacts, and Facilities: Information as a Common-Pool Resource", *op.cit.*

¹⁴⁰⁵ C. HESS AND E. OSTROM, 2007, "*Understanding Knowledge as a Commons: From Theory to Practice*", Cambridge, MA, MIT Press.

¹⁴⁰⁶ C. HESS AND E. OSTROM, 2006, "A Framework for Analysing the Microbiological Commons", *op.cit.*; see also P. DAWYNDT, T. DEDEURWAERDERE, AND J. SWINGS, "Exploring the Microbiologicalcommons. Contributions of Bioinformatics and Intellectual Property Rights in Sharing Biological Information", 2006 B.P. LTD, and T. DEDEURWAERDERE, 2006, "The Institutional Economics of Sharing Biological Information", *International Social Science Journal*, Vol. 58, (188); T. DEDEURWAERDERE *et al.*, 2009 *op.cit.*; and T. DEDEURWAERDERE, 2010, "*Self-Governance and International Regulation of the Global Microbial Commons: Introduction to the Special Issue on the Microbial Commons*", Igitur.

¹⁴⁰⁷ R. COOK-DEEGAN AND T. DEDEURWAERDERE, 2006, "The Science Commons in Life Science Research: Structure, Function, and Value of Access to Genetic Diversity", *International Social Science Journal*, Vol. 58, (188); and T. DEDEURWAERDERE (eds.), "*The Role of Law, Institutions and Governance in Facilitating Access to the Scientific Research Commons*", Cambridge, Cambridge University Press, 2008.

¹⁴⁰⁸ E. BROUSSEAU *et al.*, *cit.*.

¹⁴⁰⁹ D. KAHNEMAN AND A. TVERSKY, 2000, "*Choices, Values, and Frames*", Cambridge University Press; and H. GINTIS *et al.* (eds.), "*Moral Sentiments and Material Interests: The Foundations of Cooperation in Economic Life*", MIT press, 2005.

¹⁴¹⁰ B. SIX *et al.*, 2015 *op.cit.*

¹⁴¹¹ S. KIESLER, J. SIEGEL, AND T. W. MCGUIRE, 1984, "Social Psychological Aspects of Computer-Mediated Communication", *American psychologist*, Vol. 39, (10); and G. BENTE *et al.*, 2008, "Avatar-Mediated Networking: Increasing Social Presence and Interpersonal Trust in Net-Based Collaborations", *Human communication research*, Vol. 34, (2).

§ 3 After 2008: the “New Vogue” of the commons theory

Since Ostrom, and in particular since the global financial crisis of 2007-2008,¹⁴¹² the theory of the commons has bloomed into prolific theoretical and practical developments, as a response to major difficulties in managing our societies and ecosystems sustainably.

Regarding the theoretical moves, scholars from various disciplines have built on Ostrom’s vision to provide answers to current societal challenges in many different fields,¹⁴¹³ and respond to specific issues which Ostrom’s work has only partially covered. These scholars form what one may call a “New Vogue”¹⁴¹⁴ and go beyond Ostrom’s legacy by questioning governing systems for specific resources/regimes which are conceived by some as being “essential resources”¹⁴¹⁵ for humanity. Building on Ostrom’s solid conceptual basis, academics have pointed to several issues to be further developed or reconsidered, in particular following a “political constitution of the commons”.¹⁴¹⁶

A. Going beyond Ostrom’s influence of the economic approach to the “good”

Dardot and Laval pose the fact that, notwithstanding the crucial advancement and evolution of Ostrom’s thinking over several decades, Ostrom remains within the ambit of the public / private good economic theory.¹⁴¹⁷ They see this as a limit to the further development of “a political constitution of the common”¹⁴¹⁸ as “alternative generalizable rationality”.¹⁴¹⁹ Indeed, for Ostrom, the institutionalization of governing system remains based on pooled

¹⁴¹² B. J. QUINN, 2009, "Failure of Private Ordering and the Financial Crisis of 2008, The", *NYUJL & Bus.*, Vol. 5; and also J. E. STIGLITZ, 2010, "Lessons from the Global Financial Crisis of 2008", Vol. See also various web-based information: “Economic Crisis in a Globalized World” – WideAngle (November 21st, 2008) at <http://www.pbs.org/wnet/wideangle/uncategorized/how-global-is-the-crisis/3543/> ; “Financial Crisis” – IMF, at <http://www.imf.org/external/np/exr/key/finstab.htm> ; and “Times of Crisis” – Reuters: Multimedia interactive charting the year of global change, at <http://timesofcrisis.reuters.com/app/>

¹⁴¹³ For an economic perspective see the French economist Benjamin Coriat: B. CORIAT, 2013, "Le Retour Des Communs. Sources Et Origines D’un Programme De Recherche", *op.cit.* and B. CORIAT, "Le Retour Des Communs: & La Crise De L’idéologie Propriétaire", *op. cit.*. For a legal perspective, see the Italian school with Ugo Mattei, Alberto Lucarelli and others: F. CAPRA AND U. MATTEI, "The Ecology of Law: Toward a Legal System in Tune with Nature and Community", *op. cit.*; U. MATTEI, "Beni Comuni-Un Manifesto (in Italian)", *op. cit.*; A. LUCARELLI, 2011, "Note Minime Per Una Teoria Giuridica Dei Beni Comuni", *op.cit.*; A. LUCARELLI, "La Democrazia Dei Beni Comuni", *op. cit.*; A. DANI, 2014 *op.cit.* For a socio-philosophical perspective see the works from Pierre Dardot and Christian Laval: P. DARDOT AND C. LAVAL, 2010, "Du Public Au Commun", *op.cit.*; and P. DARDOT AND C. LAVAL, "Commun: Essai Sur La Révolution Au Xxie Siècle", *op. cit.*; see also S. GUTWIRTH AND I. STENGERS, 2016 *op.cit.*

¹⁴¹⁴ Authors that are included in this trend do not necessarily all share the same ideas. What brings them together in this trend is the fact that they push further Ostrom’s thinking, but it can be (and is) in different directions.

¹⁴¹⁵ K. PISTOR AND O. DE SCHUTTER, 2015, "Governing Access to Essential Resources", Columbia University Press.

¹⁴¹⁶ P. DARDOT AND C. LAVAL, "Commun: Essai Sur La Révolution Au Xxie Siècle", *op. cit.* at p. 156.

¹⁴¹⁷ V. OSTROM AND E. OSTROM, 1977, "Public Goods and Public Choices", 1977, Vol. see table of goods at p. 12.

¹⁴¹⁸ P. DARDOT AND C. LAVAL, "Commun: Essai Sur La Révolution Au Xxie Siècle", *op. cit. inter alia* at pp. 156-157.

¹⁴¹⁹ O. WEINSTEIN, 2013, "Comment Comprendre Les «Communs»: Elinor Ostrom, La Propriété Et La Nouvelle Économie Institutionnelle", *Revue de la régulation. Capitalisme, institutions, pouvoirs*, Vol., (14) at p. 31.

physical or informational resources (i.e. the characteristic of the resource explains why people get together to institutionalize its governance regime),¹⁴²⁰ and works within the boundaries of the established concept of property over a resource.¹⁴²¹ According to them, doing so may hinder the development of different types of institutional arrangements with a more “holistic view”.¹⁴²² Prolonging Ostrom’s thought, Bollier,¹⁴²³ considers that a commons is not just about the resource that is governed. Commons are “paradigms that combine a distinct community with a set of social practices, values and norms that are used to manage a resource”; it is “a resource + a community + a set of social protocols. The three are an integrated, interdependent whole”.¹⁴²⁴ Going even further, Capra and Mattei challenge Ostrom’s thinking who addresses the problem with a “subject-object” position (i.e. individuals interact to govern an object/resource). They consider that it excludes other possible narratives where plants are not considered as objects/resources but as other living parts of ecosystems constituting the “web of life” and interacting in constant relationship with all other elements (i.e. the “object” is in relation with the individual, at the same level and their relationship result in a governing ecosystem).¹⁴²⁵

B. The role of power relations between members of a community

For Dardot and Laval, another limit in Ostrom’s work lies in the limited study of the impact of power relations between users within a community.¹⁴²⁶ When studying a CPR, Ostrom will focus her work on studying the rules governing the system and on how the rules

¹⁴²⁰ E. VERHAEGEN, 2015, "La Forge Conceptuelle. Le “Commun” Comme Réinterprétation De La Propriété", *Recherches sociologiques et anthropologiques*, Vol., (46-2) at pp. 116-117; P. DARDOT AND C. LAVAL, "Commun: Essai Sur La Révolution Au Xxie Siècle", *op. cit.* at p. 157.

¹⁴²¹ P. DARDOT AND C. LAVAL, "Commun: Essai Sur La Révolution Au Xxie Siècle", *op. cit.* at pp. 137-148.

¹⁴²² F. CAPRA AND U. MATTEI, "The Ecology of Law: Toward a Legal System in Tune with Nature and Community", *op. cit.* at inter alia p. 12, and pp. 169- 188, where they call for an “ecological understanding of life” and a “new kind of systemic thinking” towards reaching and “ecolegal revolution” (p.176).

¹⁴²³ A note is made regarding the fact that contrary to Dardot and Laval who see “le commun” with a political / ideological perspective, Bollier rather thinks of “commoning” as a “vernacular movement”, that is to say “shared spaces of a community in which people assert their collective moral values and political interests, over and above, those of the state, the corporation and other institutional powers.” D. BOLLIER, 2014, "Think Like a Commoner: A Short Introduction to the Life of the Commons", New Society Publishers, at p. 34.

¹⁴²⁴ D. BOLLIER, "Think Like a Commoner: A Short Introduction to the Life of the Commons", *op. cit.*, at p. 15.

¹⁴²⁵ F. CAPRA AND U. MATTEI, "The Ecology of Law: Toward a Legal System in Tune with Nature and Community", *op. cit.* at pp. 176-177.

¹⁴²⁶ P. DARDOT AND C. LAVAL, "Commun: Essai Sur La Révolution Au Xxie Siècle", *op. cit.* at p. 156; see also B. BECHTOLD, 2015, "Introduction: Beyond Hardin and Ostrom New Heterodox Research on the Commons", *Review of Radical Political Economics*, Vol. at pp. 3-4; and O. WEINSTEIN, 2013 *op.cit.* at p. 7.

emerge or change;¹⁴²⁷ but she will not necessarily analyze whether and how, within the community, the rules have been equitably decided amongst members of the community. They contend that she argues that social conditions will favor or inhibit the establishment of the rules, which is an important step outside of the dominant economic “rational” thinking.¹⁴²⁸ However, they perceive that more study could be focused on the power relations inside the community, and the effects of a systemic domination over behaviors.¹⁴²⁹ Indeed, this is an important point when addressing the objective of “fair and equitable” sharing of the benefits deriving from the use of the resource. If one takes the example of an Indian community managing the irrigation system of their village, it is not difficult to imagine that the voice of a member from the Brahmins’ cast could have more weight than the voices of the Dalit members that are part of that community. One could legitimately wonder whether the rules established by that community really answer the needs of all its members, i.e. the Dalits. Ostrom remains attached to the idea that people are rational and that this rationality will lead the community to take decisions in its collective interest, without analyzing deeply existing social, political or economic inequalities that the CPR system may reproduce, i.e. privilege, casts, etc.¹⁴³⁰ However, this is an important question to dig, as it entails consequences on the members of the community, *inter alia* on the fair and equitable distribution of revenues, resources or other advantages resulting from the collective management system.¹⁴³¹

¹⁴²⁷ E. OSTROM AND X. BASURTO, 2011, "Crafting Analytical Tools to Study Institutional Change", *Journal of institutional economics*, Vol. 7, (03).

¹⁴²⁸ E. OSTROM, "*Governing the Commons : The Evolution of Institutions for Collective Action*", *op. cit.* where she refers to individual who are “broadly rational”, at p. 33; and E. OSTROM, 1998, "A Behavioral Approach to the Rational Choice Theory of Collective Action: Presidential Address, American Political Science Association, 1997", *American political science review*, Vol. 92, (01) where Ostrom explains how “individuals achieve results that are “better than rational” by building conditions where reciprocity, reputation, and trust can help to overcome the strong temptations of short-run self-interest”; see also E. OSTROM, 2007, "Institutional Rational Choice: An Assessment of the Institutional Analysis and Development Framework", Vol. ; E. OSTROM, "*Understanding Institutional Diversity*", *inter alia* at p. 101 and pp. 130-131.

¹⁴²⁹ P. DARDOT AND C. LAVAL, "*Commun: Essai Sur La Révolution Au Xxie Siècle*", *op. cit.* at p. 156 ; see also O. WEINSTEIN, 2013 *op.cit.* at pp. 31-32. See also Agrawal, who argues that better off group members are likely to gain a larger share of benefits from a resource A. AGRAWAL, 2001, "Common Property Institutions and Sustainable Governance of Resources", *World Development*, Vol. 29, (10). He later confirms that “inequalities within a group are not necessarily reduced because group members are willing to cooperate in the accomplishment of a collective goal” A. AGRAWAL, 2002, "Common Resources and Institutional Sustainability", *The drama of the commons*, Vol. at p. 60.

¹⁴³⁰ This is important when addressing the issue of imbalance of rights (IPRs vs. FRs) between different users of the “Treaty community” and the question of stakeholders’ participation in the Treaty decision-making process.

¹⁴³¹ O. WEINSTEIN, 2013 *op.cit.* at pp. 18-19; see also J.-M. BALAND AND J.-P. PLATTEAU, 1997, "Wealth Inequality and Efficiency in the Commons Part I: The Unregulated Case", *Oxford Economic Papers*, Vol. 49, (4); and J.-M. BALAND AND J.-P. PLATTEAU, 1998, "Wealth Inequality and Efficiency in the Commons, Part II: The Regulated Case", *Oxford Economic Papers*, Vol. 50, (1).

C. Beyond the boundaries of the CPR: the question of scale and of internal vs. external environment

To fill a gap in her analysis which focused mainly on the micro-institutional level,¹⁴³² Ostrom was influenced by institutional theories of polycentricity, i.e. “the relationships among multiple authorities with overlapping jurisdictions”.¹⁴³³ In her recent writings, she developed a framework to enable “scholars to organize analyses of how attributes of (i) a resource system (e.g., fishery, lake, grazing area), (ii) the resource units generated by that system (e.g., fish, water, fodder), (iii) the users of that system, and (iv) the governance system jointly affect and are indirectly affected by interactions and resulting outcomes achieved at a particular time and place.” The framework aims at identifying “how these attributes may affect and be affected by larger socioeconomic, political, and ecological settings in which they are embedded, as well as smaller ones.”¹⁴³⁴

However, as she contends herself, the “framework presented (...) will obviously need further development. (...) Policy analysts need to study and record the unintended effects of particular policy interventions, so that dangerous combinations of policies devised at diverse tiers or attributable to particular aspects of a resource system and resource units can be avoided.”¹⁴³⁵ Weinstein points to the need to take into account the network of complementary institutions within which every commons’ system is integrated, through market and non-market relations of the commons and of the different individuals and groups which constitute it, with the rest of society.¹⁴³⁶ This highlights the difficulty of studying a commons, which may be very diverse in scale and heterogeneous in its composition, in

¹⁴³² E. VERHAEGEN, 2015 *op.cit.* at p. 117: “Les analystes mettent en avant les caractéristiques des ressources, la taille et l’homogénéité des communautés, les coûts de transaction, l’efficacité des arrangements institutionnels locaux..., en occultant ou minimisant les forces exogènes qui agissent sur ces communautés. L’imbrication de multiples sphères de valeurs qui se déploient à des échelles différentes et ses implications sur les espaces de choix des individus sont souvent peu prises en compte par les défenseurs des “communs”.

¹⁴³³ K. P. ANDERSSON AND E. OSTROM, 2008, “Analyzing Decentralized Resource Regimes from a Polycentric Perspective”, *Policy sciences*, Vol. 41, (1) at p. 71; E. OSTROM, 2010, “Beyond Markets and States: Polycentric Governance of Complex Economic Systems”, *Transnational Corporations Review*, Vol. 2, (2).

¹⁴³⁴ E. OSTROM, 2007, “A Diagnostic Approach for Going Beyond Panaceas”, *op.cit.* at p. 15181; see also E. OSTROM, M. A. JANSSEN, AND J. M. ANDERIES, *ibid.* “Going Beyond Panaceas”, Vol.

¹⁴³⁵ E. OSTROM, *ibid.* “A Diagnostic Approach for Going Beyond Panaceas”, Vol. at p. 15186.

¹⁴³⁶ O. WEINSTEIN, 2013 *op.cit.* at p. 19. See also B. CORIAT, *ibid.* “Le Retour Des Communs. Sources Et Origines D’un Programme De Recherche”, Vol. at p. 14, and Benjamin Coriat « La crise de l’idéologie propriétaire et le retour des communs » interview, Cédric Durand et Fabien Locher mai 2010. <http://www.contretemps.eu/interviews/crise-lideologie-propretaire-retour-communs>

relation to the context (historical, social, political, etc.) in which it is embedded.¹⁴³⁷ A final interesting issue is raised by McCarthy when he affirms that “[t]o assert a commons at one scale is almost necessarily to deny claims at another”,¹⁴³⁸ thereby exacerbating the tension that might exist between coexisting systems and communities managing a same resource-type (i.e. the sum of heterogeneous collective management systems governing a same type of resource: PGRFA).

D. Towards “inappropriability”

In reaction to the lack of protection and promotion of the collective interest through the market or the state institutions, authors have questioned the role of private property in managing resources. In line with Ostrom’s views, for Bollier a commons can coexist with private property; they can be “mutually compatible and even work hand in glove”.¹⁴³⁹ However, he recognizes that the character of the commons is quite different from that of property; commons is not a variant of property as “commons is less about *ownership* as we usually understand it than about *stewardship*.”¹⁴⁴⁰ Dardot and Laval go much further in contesting the current property rights regime attached to commons. They argue that some resources/regimes should be institutionalized as non-appropriable by society.¹⁴⁴¹ The fundamental institution of property is refuted for resources that are considered to be managed by the community for the collective interest, in perpetuity, as a “political constitution of the common”.¹⁴⁴² This theoretical step allows them to pass from the concept of “the commons” (i.e. individual interests joining in a common objective) to that of “a common” (i.e. the collective interest, superseding individual interests), thereby widening significantly the definition of what a common is. This conceptual move implies to reject the current system,

¹⁴³⁷ This is of course directly relevant for a global seed commons, where multiple stakeholders and multiple layers relate and overlap within the system itself and within the network or context in which the global seed commons is embedded.

¹⁴³⁸ J. MCCARTHY, 2005, “Commons as Counterhegemonic Projects”, *Capitalism Nature Socialism*, Vol. 16, (1); at p. 20; see also C. ROSE, 1986, “The Comedy of the Commons: Custom, Commerce, and Inherently Public Property”, *The University of Chicago Law Review*, Vol. 53, (3), where Rose was wondering whether a commons ‘inside’ would not function as private property ‘outside’, excluding people outside the community from accessing the resources managed inside the community. This idea has been rephrased by Bailey and Mattei at p. 993 in S. BAILEY AND U. MATTEI, 2013, “Social Movements as Constituent Power: The Italian Struggle for the Commons”, *Indiana Journal of Global Legal Studies*, Vol. 20, (2).

¹⁴³⁹ D. BOLLIER, “Think Like a Commoner: A Short Introduction to the Life of the Commons”, *op. cit.* at p. 102.

¹⁴⁴⁰ D. BOLLIER, “Think Like a Commoner: A Short Introduction to the Life of the Commons”, *op. cit.* at p. 102.

¹⁴⁴¹ P. DARDOT AND C. LAVAL, “Commun: Essai Sur La Révolution Au Xxie Siècle”, *op. cit.* at p. 233 et seq.

¹⁴⁴² Dardot & Laval p. 156.

and rebuild a new mode of governance.¹⁴⁴³ While this idea can seduce a utopian believer and defender of the collective interest, the political and economic context dominating our Anthropocene makes it certainly difficult to put it in practice easily today (in the review process of the Plant Treaty for example). However, one could argue that the “common” would touch upon what Allaire calls “ideal goods”,¹⁴⁴⁴ and which Ostrom classifies as public goods (e.g. peace and security of a community, national defense, knowledge, fire protection, weather forecasts, etc.); the difference being that it would not be the State as provider of that “public good” / “ideal good” / “common”, but the members of the community at large.

E. Commons and Human Rights

A wide and brief overview of some important outputs of the new commons vogue has been summarized above. There is another interesting move to be mentioned, which examines the relationship between the commons and human rights, i.e. how can the commons serve human rights and vice-versa? However, as it has been specified in the beginning of this work, Human Rights (to food / to seeds) fall outside the scope of this research. Therefore, this issue will not be analysed in much detail. Mention is made of the Rodotà Commission which, in Italy, has defined the commons as goods *essential* to the satisfaction of *fundamental human rights* (emphasis added).¹⁴⁴⁵ Following this thought, commons must be accessible for all present and future generations, as an “absolute right”. Pistor and De Schutter define *essential resources* as “resources that are either absolutely necessary for the survival of every human being”, i.e. water, basic food, clothing and shelter, or resources that are “indispensable for minimum existence in a given society”, i.e. land, electricity, etc.¹⁴⁴⁶ In their book, they develop the idea that a shift needs to occur from “the tragedy of the commons to the tragedy of exclusion”, that is to say that there need to be a “critical reassessment of existing governance regimes and their distributional effects,”¹⁴⁴⁷ towards a shift in scarce resource management from efficiency

¹⁴⁴³ Dardot and Laval propose a 10 point « memo » on ways to « institutionalize the inappropriable » (“instituer l’inappropriable”), see P. DARDOT AND C. LAVAL, “*Commun: Essai Sur La Révolution Au Xxie Siècle*”, *op. cit.* at pp. 578-583.

¹⁴⁴⁴ G. ALLAIRE, 2013, “Les Communs Comme Infrastructure Institutionnelle De L’économie Marchande”, *Revue de la régulation. Capitalisme, institutions, pouvoirs*, Vol., (14) at p. 18, where he states that “ces biens se présentent, directement ou indirectement, comme la formulation d’objectifs qui ont un intérêt ou une valeur, pour la communauté, pour la société (valeurs de sécurité, de solidarité...)”.

¹⁴⁴⁵ S. RODOTÀ, “Constituting the Commons in the Context of State, Law and Politics” (Keynote at the Economics and the Commons Conference. Berlin May, 2013, . In the same line see also A. DANI, 2014 *op.cit.* and A. LUCARELLI, 2011, “*Beni Comuni. Dalla Teoria All’azione Politica*”, *Dissensi*; A. LUCARELLI, 2011, “Note Minime Per Una Teoria Giuridica Dei Beni Comuni”, *op.cit.*

¹⁴⁴⁶ K. PISTOR AND O. DE SCHUTTER, *cit.* at p. 3.

¹⁴⁴⁷ K. PISTOR AND O. DE SCHUTTER, *cit.*

to essentiality.¹⁴⁴⁸ An example where progress has taken place is in the context of water management and the right to water, where the European Water Movement declares that water is a common good and a universal fundamental right.¹⁴⁴⁹ As Verhaegen puts it in relating human rights and the commons, “c’est la finalité des “communs” qui est mise en exergue, une finalité de *justice globale dans les droits d’accès et d’usage des ressources essentielles*.”¹⁴⁵⁰ (Emphasis added).

F. Commons and social movements

As for the practical developments, the theory of the commons has served several strong citizens’ movements¹⁴⁵¹ to protest against the hyperownership domination of the economy. The purpose is not to provide extensive details here, but simply to mention that people have appropriated themselves the concept of commons to defend their causes. Recent famous movements are the “Nuits Debout” in France,¹⁴⁵² Italy’s various movements on the Commons (Teatro della Valle,¹⁴⁵³ Naples water management¹⁴⁵⁴), Podemos in Spain,¹⁴⁵⁵ etc. These movements show the role that citizens currently play as growing actors in co-creating collective institutions to manage resources/regimes which the State or the market fail to manage sustainably in the collective interest.

These various elements of the commons’ new vogue build on Ostrom’s seminal work. It is useful to stress the important role of law – and its potential – in the institutional management of any system. As Capra and Mattei put it: “[t]he legal order is the most important vehicle through which a worldview is enforced and transformed into social action, and thus human law is also the agency through which we may implement new ideas and values. We must rethink our human laws and their relationship with the laws governing the ecology of a living planet. Such a rethinking, a kind of Copernican revolution in the law, must use nature as a mentor and model, putting the commons and a long-term vision at centre

¹⁴⁴⁸ K. PISTOR AND O. DE SCHUTTER, *cit.* at p. 355.

¹⁴⁴⁹ <http://europeanwater.org/fr/>

¹⁴⁵⁰ E. VERHAEGEN, 2015 *op.cit.* at p. 120. For an analysis of the environmental justice theory on agrobiodiversity governance, see B. COOLSAET, 2015, “Transformative Participation in Agrobiodiversity Governance: Making the Case for an Environmental Justice Approach”, *Journal of Agricultural and Environmental Ethics*, Vol. 28, (6).

¹⁴⁵¹ Examples are: Mouvement – 15M, Les Indignés; Podemos; Nuit Debout; or Gezi Park in Istanbul 2013.

¹⁴⁵² <https://nuitdebout.fr/>

¹⁴⁵³ <http://www.teatrovalleoccupato.it/>

¹⁴⁵⁴ <http://www.comune.napoli.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/20076>

¹⁴⁵⁵ <http://lasonrisadeunpais.es/>

stage. We must move from thinking of a “mechanism of law” and move toward an “ecology of law.”¹⁴⁵⁶

In order to propose ways forward for an effective Global Seed Commons in Section 3, one needs first to identify which underlying principles of the theory of the commons respond to underlying principles relevant for stakeholders to manage seeds according to the Treaty’s direct objectives and overall goals. These underlying principles are identified below in Section 2 and form the “main ingredients for a successful global seed commons recipe”. They are proposed as guiding compass to mitigate the conceptual constraints resulting from the legal and stakeholders analyses.

Section 2. The commons: useful underlying principles for the Global Seed Commons

The purpose of the present Section is to understand what important underlying principles of the theory of the commons could be useful in the review process of the Treaty in order to move towards a truly effective Global Seed Commons. It explains how the study of the Treaty brought the present researcher to explore the theory of the commons: 1) it makes the link between the Treaty and the theory; 2) it justifies why the commons is a relevant theory to mitigate the Treaty’s dysfunction; and 3) it introduces the originality of this thesis i.e. bring solutions to an existing international law instrument using tools and concepts from a governance theory. Again, a caveat is made as to the non-exhaustive character of the analysis of the commons; this work is not a study of the theory of the commons but a study of the Plant Treaty in light of the theory of the commons.

How can Ostrom’s theoretical approach, enriched by the developments undertaken by authors from the new vogue, contribute to an efficient Global Seed Commons? In particular, would the new vogue approach of the “political constitution of the commons” allow to create better conditions for building an efficient and effective Global Seed Commons? To explore this path, potential useful commons principles are explored.¹⁴⁵⁷ This list is not exhaustive and does not preclude the utility of the eight design principles defined by Ostrom. In 2013, Michael Halewood published a paper where he “identifies which subsets of

¹⁴⁵⁶ F. CAPRA AND U. MATTEI, *"The Ecology of Law: Toward a Legal System in Tune with Nature and Community"*, *op. cit.* at p. 12

¹⁴⁵⁷ These principles are not exclusively part of the theory of the commons and can be found in other theories and disciplines. Sustainability for example is clearly found in environmental international law and sustainable development principles.

PGRFA are (or could be) included in an evolving global plant genetic resources commons, [as well as] options for policy reforms to provide better tailored institutional support for the plant genetic resources commons.”¹⁴⁵⁸ He clearly explains the particularity of the seed commons, in that “PGRFA do not fit neatly within the institutional frameworks of analysis that have been developed for natural resources commons on one hand,¹⁴⁵⁹ and constructed cultural commons on the other.”¹⁴⁶⁰ He analyzed the Treaty system according to Ostrom’s design principles; therefore, it will not be reiterated here.¹⁴⁶¹ Rather, different underlying principles to be taken into account in the design of an effective global seed commons are proposed here. These are: §1 sustainability; §2 interdependence; §3 the anticommons dilemma; §4 the material and informational dual character of PGRFA; §5 community; and §6 diversity, heterogeneity and complexity.

§ 1 Sustainability

One of the shared characteristics of the CPRs studied by Ostrom and her followers is sustainability: sustainability of the resources and of the governing institutions.¹⁴⁶² These two levels of sustainability are inter-related and interdependent. Berge reminds that CPR theory is “key to understand[ing] under what conditions it can be expected that resource governance regimes may result in *more sustainable forms of resource use*”.¹⁴⁶³ This idea fits with the conservation and sustainable use objectives of the Plant Treaty and with its long term overall goals of food security and sustainable agriculture for the benefit of the whole community.¹⁴⁶⁴ Therefore, for the MLS to function sustainably, PGRFA have to be conserved and use sustainably. Capra and Mattei strongly argue that to “be sustainable, human laws should serve, rather than exploit and plunder, the web of life.”¹⁴⁶⁵ Agrawal reminds that “sustainable resource management can never be independent of sustainability of the collective human

¹⁴⁵⁸ M. HALEWOOD, 2013, "What Kind of Goods Are Plant Genetic Resources for Food and Agriculture? Towards the Identification and Development of a New Global Commons", *op.cit.* at p. 278.

¹⁴⁵⁹ E. OSTROM, "Governing the Commons : The Evolution of Institutions for Collective Action", *op. cit.*

¹⁴⁶⁰ M. J. MADISON, B. M. FRISHMANN, AND K. J. STRANDBURG, 2010, "Constructing Commons in the Cultural Environment", *Cornell Law review*, Vol. 95

¹⁴⁶¹ M. HALEWOOD, 2013, "What Kind of Goods Are Plant Genetic Resources for Food and Agriculture? Towards the Identification and Development of a New Global Commons", *op.cit.*

¹⁴⁶² E. OSTROM, "Governing the Commons : The Evolution of Institutions for Collective Action", *op. cit.*; see also Agrawal who defines sustainability of institutions as the “durability of institutions that frame the governance of common-pool resources”, A. AGRAWAL, 2002, "Common Resources and Institutional Sustainability", *op.cit.* at p. 44.

¹⁴⁶³ E. BERGE AND F. VAN LAERHOVEN, 2011, "Governing the Commons for Two Decades: A Complex Story", *op.cit.* at p. 161.

¹⁴⁶⁴ See below explanation of the term « community ».

¹⁴⁶⁵ F. CAPRA AND U. MATTEI, "The Ecology of Law: Toward a Legal System in Tune with Nature and Community", *op. cit.* at p. 29.

institution that frames resource governance, and that local users are often the ones with the greatest stakes in sustainability of resources and institutions.”¹⁴⁶⁶ Keeping in mind and implementing sustainability as a firm objective is a warrant for any institutional management system to function. While the conservation and sustainable use objectives of the Plant Treaty undeniably fit with this underlying principle, the tools and instruments designed by the Governing Body to implement the Treaty and make it function do not sufficiently take this objective into account. Long term objectives for the benefit of the community should be translated into concrete rules within the global seed commons, which integrate “more interactive and participatory process between scientist, policy makers and stakeholders.”¹⁴⁶⁷

It should be further noted that sustainability is seen as a “dynamically maintained system condition rather than a static equilibrium”,¹⁴⁶⁸ i.e. users of the community manage a resource with the perspective of duration and renewal in an adaptive relationship with each other and with the resources.¹⁴⁶⁹ This dynamic aspect should also be expressed / allowed in the governing system.¹⁴⁷⁰

Finally, Agrawal referring to Wade¹⁴⁷¹ and to Baland and Platteau¹⁴⁷² states the “importance of greater interdependence among group members as a basis for building institutions that would *promote sustainable resources management*”.¹⁴⁷³ This statement highlights the very close relationship between sustainability and interdependence, and leads us to the following underlying principle.

§ 2 Interdependence

Interdependence goes hand in hand with sustainability. As expressed by Haas, “[i]nterdependence, far from being the description of a condition, becomes something to be realized - a purpose.”¹⁴⁷⁴ He argues that actors of many entrenched networks feel “enveloped in a massive ‘collective situation’ to which there can only be a ‘collective response’ if anyone is

¹⁴⁶⁶ A. AGRAWAL, 2002, "Common Resources and Institutional Sustainability", *op.cit.* at p. 41.

¹⁴⁶⁷ T. DEDEURWAERDERE, 2014, "Sustainability Science for Strong Sustainability", Edward Elgar Publishing, at p. 24.

¹⁴⁶⁸ A. AGRAWAL, 2002, "Common Resources and Institutional Sustainability", *op.cit.* at p. 59.

¹⁴⁶⁹ This is also important in Bollier’s vision of the commons. See D. BOLLIER, 2007, "The Growth of the Commons Paradigm", *op.cit.*; D. BOLLIER AND S. HELFRICH, *cit.*

¹⁴⁷⁰ See below §6 for explanation of the concept of “dynamism”.

¹⁴⁷¹ R. WADE, 1988, "Village Republics. Economic Conditions for Collective Action in South India", Cambridge, Cambridge University Press.

¹⁴⁷² J.-M. BALAND AND J.-P. PLATTEAU, 1996, "Inequality and Collective Action in the Commons", *CRED, University of Namur*, Vol.

¹⁴⁷³ A. AGRAWAL, 2002, "Common Resources and Institutional Sustainability", *op.cit.* at p. 60

¹⁴⁷⁴ E. B. HAAS, 1975 *op.cit.*; E. B. HAAS, 1975 *op.cit.* at p 839.

to attain his objectives.”¹⁴⁷⁵ He adds that “to study how actors learn to cope, (...) we must keep in mind why actors may wish to do better in managing resources of common concern. This brings us back to the issue of political purpose.”¹⁴⁷⁶ In the same line, Capra and Mattei state that “recogniz[ing] the interconnectedness of our global problems [would] enable us to find appropriate, mutually supportive solutions that [...] would mirror the interdependence of the problems they address.”¹⁴⁷⁷

In the food and agriculture field, interdependence is the result of long run human cooperation and collaboration in the exchange of food and feed plants across the world. Farmers and breeders have selected, exchanged and bred seeds to develop such or such characteristic over millennia that respond to specific needs and adaptation.¹⁴⁷⁸ There is therefore an ongoing need to exchange plant genetic resources from countries all over the world.¹⁴⁷⁹ It is this human-level sense of the word interdependence that constitutes the foundation of the concept of benefit-sharing.

As explained above in Chapter 4,¹⁴⁸⁰ it is argued that PGRFA interdependence contains a dual social and economic dimension underpinning the concept of benefit sharing. The social

¹⁴⁷⁵ E. B. HAAS, 1975 *op.cit.* at p. 875.

¹⁴⁷⁶ E. B. HAAS, 1975 *op.cit.* at p 868.

¹⁴⁷⁷ F. CAPRA AND U. MATTEI, “*The Ecology of Law: Toward a Legal System in Tune with Nature and Community*”, *op. cit.* at p. 159.

¹⁴⁷⁸ In 1997, FAO released the results of a world-wide study aimed at assessing the degree of dependence of a country’s main food crops on genetic diversity in areas of origin and primary diversity located elsewhere. It shows that all regions in the world are highly dependent upon resources originating for another region, North America being the highest dependent region, and Asia and the Pacific region being the least dependent region. This study was requested by the CGRFA and complements the first report of the State of the World’s Genetic Resources for Food and Agriculture. X. F. PALACIOS, 1997 Palacios adds that ‘crops such as cassava, maize, groundnut and bean originated in Latin America but have become food staples in many countries of sub-Saharan Africa, illustrating the interdependence of cropped species in the developing countries. Cassava is the main food crop for 200 million Africans in 31 countries and has a farm gate value of over US\$ 7 billion. At the same time, Africa and its indigenous varieties of millet and sorghum have helped feed other parts of the world such as southern Asia (13%) and Latin America (8%).’ In 2015, another study confirms these facts, highlighting that our estimation for countries’ interdependence is even higher and more diverse than foreseen. See Khoury CK; Achicanoy HA; Bjorkman AD; Navarro-Racines C; Guarino L; Flores-Palacios X; Engels JMM; Wiersema JH; Dempewolf H; Ramirez-Villegas J; Castañeda-Álvarez NP; Fowler C; Jarvis A; Rieseberg LH; Struik PC. 2015. Where our food crops come from: A new estimation of countries’ interdependence in plant genetic resources. CIAT Policy Brief No. 25. Centro Internacional de Agricultura Tropical (CIAT), Cali, Colombia. 4 p.

¹⁴⁷⁹ FAO, “Second Report on the State of the World’s Plant Genetic Resources for Food and Agriculture”, 2010 A wide literature provides examples of this country-interdependence, some of them are given in an annotated bibliography addressing the international pedigrees and flows of PGRFA; they all conclude that there is not a single self-sufficient country for crop genetic resources. All countries are both donors and recipients of PGRFA. This means that breeding new varieties repeatedly necessitates genetic material from other countries. FRISON C., & HALEWOOD M., (2005) “Annotated bibliography addressing the international pedigrees and flows of plant genetic resources for food and agriculture” information document submitted by the System-wide Genetic Resources Programme (SGRP) of the CGIAR to the eighth Conference of the Parties of the Convention on Biological Diversity (COP 8) and the Ad hoc Open-ended Working Group on Access and Benefit-sharing. The average degree of interdependence among countries for their most important crops is around 70%. See J. ESQUINAS-ALCAZAR, 2005 *op.cit.* Most of the efforts that are necessary to manage plant genetic resources can therefore only be carried out through international cooperation. See C. FOWLER AND T. HODGKIN, 2004 *op.cit.*

¹⁴⁸⁰ Chapter 4, Section 1, §2, B.

dimension is understood as encompassing the formal¹⁴⁸¹ and informal¹⁴⁸² networks involved in governing the flows of PGRFA.¹⁴⁸³ These human networks of farmers, breeders and scientists have therefore a crucial role in safeguarding the availability of and accessibility to PGRFA diversity. As for the economic dimension of countries' interdependence, it is a consequence of the rapid globalization and economic integration, and of growing cross-boundary flows of trade, financial capital, technology and know-how. More specifically, interdependence between supply and use of genetic resources is much higher for the agricultural sector compared to other sectors using genetic resource such as pharmaceuticals or bio-engineering industries.¹⁴⁸⁴ Both social and economic interdependencies between stakeholders and states are intensifying and it has been argued that these trends limit states' leeway to deal with these challenges autonomously because "internal dynamics are to an increasing extent determined by external processes".¹⁴⁸⁵ This judgment may partly explain why the benefit-sharing concept is so well entrenched in the management of PGRFA and so intrinsically integrated into the Plant Treaty specifically.¹⁴⁸⁶

When applying this to PGRFA management, one can argue that the factual interdependencies of crops (as a scientific characteristic) and of countries (as a socio-economic result of globalization) are preconditions to put in place the multilateral access and benefit-sharing mechanism. But for the MLS to reach its overall goal of food security and sustainable agriculture, it is argued that a more profound degree of mutualism in the understanding of the criterion of interdependence is needed.¹⁴⁸⁷ Interdependence thus becomes a philosophical and political goal to be attained by all countries for them to reach global food security. PGRFA actors (countries, gene banks, researchers, farmers, NGOs, etc.) and their interactions within PGRFA networks therefore create a complex relationship of various interdependencies, at

¹⁴⁸¹ E. KALAUGHER *et al.*, 2002 *op.cit.* H. L. SHANDS, 1995 *op.cit.*

¹⁴⁸² E. KALAUGHER *et al.*, 2002 *op.cit.*

¹⁴⁸³ O. H. FRANKEL, *op. cit.* at pp. 469–89. Fowler and Hodgkin say that "materials held in genebanks eventually require regeneration, ideally in the same environment in which they were collected in order to avoid changes in the genetic composition of the sample, and even loss of some genes or alleles. Because most collections contain materials from many countries, cooperation is needed if high conservation standards are desired. In Europe, there is increasing collaboration. In some cases, different genebanks concentrate on maintaining different crops, and for a number of crops, common information resources have been developed.

¹⁴⁸⁴ Furthermore, it is likely that industry will more and more need to access new PGRFA material.

¹⁴⁸⁵ P. OOSTERVEER, "Global Food Governance", at p. 32.

¹⁴⁸⁶ Latin American and the Caribbean countries stated - during the negotiation of the Treaty, in the Bogota Declaration (18-22 March, 1996) - that "[t]he trend toward globalization of the international economy and the inherent growing interdependency find clear expression in the issue of sharing of and access to the world's Genetic Resources for Food and Agriculture." CGRFA-Ex2/96/REP, p. 4. This view was shared by most negotiating countries.

¹⁴⁸⁷ U. MATTEI, "Beni Comuni-Un Manifesto (in Italian)", *op. cit.* at pp. 101-102.

various levels. Mol says that more and more “nation-states and national political actors are embedded in broader frameworks of governance and politics, consisting of multiple layers, from local to global, and multiple actors from private firms to nongovernmental interest groups.”¹⁴⁸⁸ Commenting on Mol’s citation above, Oosterveer adds that “[c]onsequently, the resulting changes in the interaction patterns between different states and between different state and non-state actors lead to a variety of innovative forms of governance involving diverse social groups at different spatial and sectoral scales. This is generally referred to as ‘multi-sector and multi-level governance’ or ‘network-based governance’.”¹⁴⁸⁹

It is argued that the intrinsic characteristic of interdependence relating seeds’ diversity and men’s intervention in a global flow movement in time and space makes seeds undeniably difficult to fit into the classical quadrant of categories of goods (public goods; private goods; club goods and common pool resources).¹⁴⁹⁰ This calls for a sustainable management of the resource in the collective interest.

§ 3 Anticommons dilemma: underuse of seeds as main risk for erosion

Related to the sustainability and interdependence underlying principles, another key issue for the conservation and management of seeds is the “anticommons dilemma”.¹⁴⁹¹ Heller defines the anticommons dilemma as occurring when “there are too many owners holding rights of exclusion, [then] the resource is prone to underuse.”¹⁴⁹² Indeed, regarding seeds, the dilemma is not that overconsumption leads to depletion of the resource,¹⁴⁹³ but rather that under-use leads to erosion. Through “the process of domestication and co-evolution with humans, crops have become dependent on human beings for their continued

¹⁴⁸⁸A. P. J. MOL, 2001, *Globalization and Environmental Reform : The Ecological Modernization of the Global Economy*, Cambridge, Mass., MIT Press.

¹⁴⁸⁹ P. OOSTERVEER, *Global Food Governance*, at p. 32. This idea is very close to the fifth underlying principle of “community” and to questions related to stakeholder participation in governing a collective system.

¹⁴⁹⁰ See above same Chapter, Section 1, §1.

¹⁴⁹¹ M. A. HELLER, 1998 *op.cit.*; see also L. A. FENNELL, 2010, “Commons, Anticommons, Semicommons”, *RESEARCH HANDBOOK ON THE ECONOMICS OF PROPERTY LAW*, Kenneth Ayotte, Henry E. Smith, eds., Edward Elgar, 2011, Vol. ; and R. ANDERSEN, 2006, “Governing Agrobiodiversity: The Emerging Tragedy of the Anticommons in the South”, *Conference Papers -- International Studies Association*, Vol. ; K. AOKI, 1999, “Neocolonialism, Anticommons Property, and Biopiracy in the (Not-So-Brave) New World Order of International Intellectual Property Protection Symposium: Sovereignty and the Globalization of Intellectual Property”, *op.cit.*; in the biomedical field see M. A. HELLER AND R. S. EISENBERG, 1998 *op.cit.*

¹⁴⁹² M. A. HELLER, 1998 *op.cit.* at p. 624.

¹⁴⁹³ Although it is obvious that when someone eats a potato, the potato is no longer available for growing or for somebody else’s consumption.

existence; they cannot exist on their own in the wild”.¹⁴⁹⁴ This is why over the last decades where access to seeds has become more and more restricted, erosion of seed diversity has never been so wide. Halewood emphasizes that this “aspect of PGRFA informs the need for collective action institutions that are necessary to support their continual creation/evolution as well as ensuring that they are conserved and available for use.”¹⁴⁹⁵ Therefore, the only sustainable way of managing seeds and avoiding the anticommons dilemma to erode PGRFA diversity is to facilitate their access and use by all users,¹⁴⁹⁶ not only breeders and researchers, as provided for by the Treaty, but at the global level for every farmer feeding the world. Indeed, farmers constitute the large majority of day-to-day users of seeds. Hence, they are the first stewards of PGRFA conservation and sustainable use. When associating these underlying principles – sustainability, interdependence, anticommons – it is easy to conclude that promoting the widest use of and access to PGRFA leads to a “comedy of the commons”,¹⁴⁹⁷ i.e. enhancement of use and value of the resource, as framed by Rose. Like a virtuous circle, enhancing PGRFA use increases benefits, sustainability, interdependence, etc. which in turn enhances PGRFA diversity and conservation.

§ 4 Physical and informational components inextricably bound to the use of seeds

Following Ostrom’s lead on studying governing regimes for natural resource commons, academics have expanded the research field to information,¹⁴⁹⁸ knowledge¹⁴⁹⁹ and science commons.¹⁵⁰⁰ Hess and Ostrom contend that advances in law and technology “have generated

¹⁴⁹⁴ M. HALEWOOD, 2013, “What Kind of Goods Are Plant Genetic Resources for Food and Agriculture? Towards the Identification and Development of a New Global Commons”, *op.cit.* at p. 291 citing Wilkes 1988.

¹⁴⁹⁵ M. HALEWOOD, 2013, “What Kind of Goods Are Plant Genetic Resources for Food and Agriculture? Towards the Identification and Development of a New Global Commons”, *op.cit.* at p. 291.

¹⁴⁹⁶ Another argument supporting this conclusion is the one developed by Pistor and De Schutter on “essential resources”, which “calls attention to distributional equity and sustainability”. According to them, governance of resources “should be promoted with the proviso that nobody should be excluded from resources that are essential for satisfying basic needs; further, the exploitation of the resource today should not jeopardize the ability of future generations to satisfy their needs.” K. PISTOR AND O. DE SCHUTTER, *cit.*, at p. 24.

¹⁴⁹⁷ C. ROSE, 1986 *op.cit.*; see also E. VERHAEGEN, 2015 *op.cit.* at p. 116.

¹⁴⁹⁸ See Y. BENKLER, 1997, “Overcoming Agoraphobia: Building the Commons of the Digitally Networked Environment”, *Harv. JL & Tech.*, Vol. 11; Y. BENKLER, 2003, “Freedom in the Commons: Towards a Political Economy of Information”, *Duke Law Journal*, Vol. 52, (6); Y. BENKLER, 2006, “The Wealth of Networks. How Social Production Transform Markets and Freedom” (Yale University, 2006).

¹⁴⁹⁹ See the collaborative work between Ostrom and Charlotte Hess: C. HESS AND E. OSTROM, 2003, “Ideas, Artifacts, and Facilities: Information as a Common-Pool Resource”, *op.cit.*; C. HESS AND E. OSTROM, “*Understanding Knowledge as a Commons: From Theory to Practice*”, *op. cit.*; and C. HESS, 2008, “Mapping the New Commons”, *SSRN eLibrary*, Vol.

¹⁵⁰⁰ See J. H. REICHMAN AND P. F. UHLIR, 2003, “A Contractually Reconstructed Research Commons for Scientific Data in a Highly Protectionist Intellectual Property Environment”, *Law and Contemporary Problems*, Vol. 66; see also T. DEDEURWAERDERE AND R. COOK-DEEGAN (eds.), “*The Science Commons in Life Science Research: Structure, Function and Value of Access to Genetic Diversity*”, Oxford, Blackwell Publishing, 2006; R. COOK-DEEGAN AND T. DEDEURWAERDERE, 2006 *op.cit.*; see also M. BUCK, 2006, “The

greater access to important information about history, science, art, literature, and current events, while at the same time enabling profit-oriented firms to extract value from resources previously held in common and to establish property rights.”¹⁵⁰¹ Ostrom reminds that “[f]or most of human history, the [global commons] remained unclaimed due to a lack of technology for extracting their value and for establishing and sustaining property rights. To our peril, the technology to extracting value from [the global commons] has developed more rapidly than have the appropriate legal mechanism for establishing an effective property regime. The treasured resources for all mankind are threatened by the very technological abilities that we have mastered during recent eras.”¹⁵⁰²

With the advent of the Internet, CPR studies have spread to intangible material, pointing to “the second enclosure movement” phrased by Boyle in 2003.¹⁵⁰³ Hess and Ostrom highlight that “[t]he enclosure is caused by the conflicts and contradictions between intellectual property laws and the expanded capacities of new technologies”, as an “outcome of new technologies and global markets”.¹⁵⁰⁴ However, this contradiction might not exist for a majority of the world population in the sense that IPRs and advances in technology are seen as similar means to outpace access to specific “progress” for an important part of the World’s population. Hence, IPR and new technologies rather go hand in hand in enclosing information, technologies and access to knowledge and material traditionally available. See for example Monstato’s patent claim on the genetic structure of the neem tree.¹⁵⁰⁵

As regards PGRFA, the physical and informational components are inextricably bound to the use of seeds. Dedeurwaerdere confirms that PGRFA are somewhere in between the exclusive “natural resource commons” and the exclusive “knowledge commons”, containing both a physical component and an informational component.¹⁵⁰⁶ This dual component as

Science Commons Project Approach to Facilitate the Exchange of Biological Research Material. Implications for an International System to Track Genetic Resources, Associated User Conditions and Traditional Knowledge”, Vol.

¹⁵⁰¹ C. HESS AND E. OSTROM, 2003, “Ideas, Artifacts, and Facilities: Information as a Common-Pool Resource”, *op.cit.*

¹⁵⁰² S. J. BUCK, *cit.*, foreword by Elinor Ostrom at p. xiii.

¹⁵⁰³ J. BOYLE, 2003, “The Second Enclosure Movement and the Construction of the Public Domain”, *op.cit.*

¹⁵⁰⁴ See C. HESS AND E. OSTROM, 2003, “Ideas, Artifacts, and Facilities: Information as a Common-Pool Resource”, *op.cit.* at p. 112; Boyle and others confirm this view. See also Y. BENKLER, 1997, “Overcoming Agoraphobia: Building the Commons of the Digitally Networked Environment”, *op.cit.*; and J. BOYLE, 1996, “*Shamans, Software, and Spleens : Law and the Construction of the Information Society*”, Cambridge, Mass., Harvard University Press at pp. 6-7.

¹⁵⁰⁵ E. MARDEN, 1999, “The Neem Tree Patent: International Conflict over the Commodification of Life”, *Boston College International and Comparative Law Review*, Vol. 22.

¹⁵⁰⁶ T. DEDEURWAERDERE, 2012, “Design Principles of Successful Genetic-Resource Commons for Food and Agriculture”, *op.cit.*; T. DEDEURWAERDERE, “Institutionalizing Global Genetic Resource Commons for Food and Agriculture”, *op. cit.*

physical and informational asset should be taken into account when considering the institutionalization of a global seed commons. It would require specific governing rules which change and adapt with the evolution of the IP protection scheme.¹⁵⁰⁷ However, one must bear in mind that reclaiming an “intellectual public domain”¹⁵⁰⁸ might not be sufficient to dis-enclose the “knowledge commons”, particularly when the intellectual public domain deals with high-tech information and knowledge. Information on seeds is enclosed because of IPRs of course, but also because of the high-tech nature of the information. For this information to *de facto* be accessible to people through a reclaimed “intellectual public domain” would necessarily imply transfer of the related technology and training, allowing users to understand and use the technology and information. Examples of such attempt in the agriculture breeding sector were given above in Chapter 4, when explaining the recent launch of the DivSeek initiative and the Global Open Genome Sequence Data Framework.¹⁵⁰⁹ These initiatives to reopen access to breeding information are laudable. However, it will only reach specific categories of seed users, *de facto* excluding users who do not have the adequate training and technology to benefit from them.

§ 5 Community

Whether studying the meadows and forest communal tenures of Törbel in Switzerland or of Hirano in Japan, or the Huerta irrigation institutions in Valencia and Alicante in Spain, Ostrom has systematically analysed a collective management system from specific and relatively clearly defined small / local communities.¹⁵¹⁰ Bollier insists that a community is one of the three constitutive elements of a commons, along with a resource and a set of social protocols.¹⁵¹¹ A commons becomes a *commons* only when *commoners* decide collectively to *commoning* resources, i.e. manage in a fair and equitable way the access and use to a resource in the collective interest.¹⁵¹² But how can a community be identified? What / who constitutes

¹⁵⁰⁷ Thereby including the concept of “reflexivity”, i.e. “the ability to assess the actual consequences of existing practices in order to reform them if needed”. See E. BROUSSEAU *et al.*, *cit.* at p. 350.

¹⁵⁰⁸ C. HESS AND E. OSTROM, 2003, “Ideas, Artifacts, and Facilities: Information as a Common-Pool Resource”, *op.cit.* at p. 113.; see also J. BOYLE, 2008, “*The Public Domain : Enclosing the Commons of the Mind*”, New Haven, Yale University Press. For a specific application of the concept to plant breeding see F. BATUR, “Agrobiodiversity Conservation and Plant Improvement : Adjustments in Intellectual Property Rights Reclaiming the Public Domain Towards Sustainability and Equity”,

¹⁵⁰⁹ See Chapter 4, Section 6, §2, B of the present thesis.

¹⁵¹⁰ E. OSTROM, “*Governing the Commons : The Evolution of Institutions for Collective Action*”, *op. cit.*

¹⁵¹¹ D. BOLLIER, “*Think Like a Commoner: A Short Introduction to the Life of the Commons*”, *op. cit.*, at p. 15.

¹⁵¹² D. BOLLIER, “*Think Like a Commoner: A Short Introduction to the Life of the Commons*”, *op. cit.* See also Bollier and Helfrich who associate “commoning” to “a living process”, an “experiential practice”, which can hardly be defined by theory. See D.

“a community”? Who are “the commoners”?¹⁵¹³ Is there a “Plant Treaty community” or several complementary communities involved in the Plant Treaty system? This paragraph will bring more questions than answers.

Baland and Platteau define a community as an arena where “all members of a social group have an access to the local resources”.¹⁵¹⁴ This definition implies belonging to an identified social group, and a notion of (local) scale. The question of scale has focused attention of many commons scholars, in particular in trying to identify whether group size was necessarily a factor of success (or failure) of a long-enduring commons. Agrawal summarizes these studies and states that the impact of group size on effectiveness of collective action is mediated by many different factors:¹⁵¹⁵ production technology of the collective good, its degree of excludability, jointness of supply and the level of heterogeneity in the group.¹⁵¹⁶ He stresses that more research is needed on the relation between group size and success of collective action. In the Plant Treaty arena, scale of the community is certainly a crucial issue. Authors have referred to the “Global Seed Commons”, setting the scale of reference at the global level. Can one consider that a global community of seed users exists? Would this global community be constituted by all the sub-communities coexisting and co-managing PGRFA? For now, the Treaty answers fairly well the needs of the researcher-breeder community and not the farmers. However, seeds are used by many other stakeholders, the largest group being farmers.

This raises questions of legitimacy in the recognition of *de jure* and *de facto* holders, and leads to the second aspect, i.e. the notion of “social group” and therefore of heterogeneity of members. Rights of *de facto* holders, i.e. farmers, should be taken into account and heard in order to create and develop the global seed community apt to sustainably manage the global seed commons. But how to define farmers’ communities? Is it simply “all farmers”? Small-holder and subsistence farmers? What about local communities (as referred to in the Treaty), and indigenous communities (as referred to in the CBD)? The Multilateral System of the Treaty

BOLLIER AND S. HELFRICH, 2015, "*Patterns of Commoning*", Commons Strategy Group and Off the Common Press, *inter alia* at pp. 1-12.

¹⁵¹³ D. BOLLIER, "*Think Like a Commoner: A Short Introduction to the Life of the Commons*", *op. cit.* See also D. BOLLIER AND S. HELFRICH, "*The Wealth of the Commons: A World Beyond Market and State*", *op. cit.*

¹⁵¹⁴ J.-M. BALAND AND J.-P. PLATTEAU, 1998, "Division of the Commons: A Partial Assessment of the New Institutional Economics of Land Rights", *American journal of agricultural economics*, Vol. 80, (3), at 644.

¹⁵¹⁵ A. AGRAWAL, 2002, "Common Resources and Institutional Sustainability", *op.cit.* at p 59; and Ostrom 1997 (in Agrawal 2002 p. 60).

¹⁵¹⁶ A. AGRAWAL, 2002, "Common Resources and Institutional Sustainability", *op.cit.* at p. 60.

facilitates access to Annex I PGRFA for “research, breeding and training” purposes (Article 12.3(a)). Does this imply that the MLS community is restricted to breeders, researchers and trainers? If so, this is clearly inconsistent with other commons underlying principles (sustainability, interdependence, anticommons dilemma) which call for a widest access and use of seeds as possible for reaching the Treaty’s overall goals of food security and sustainable agriculture.

Defining who is part of the community is crucial as it sets the legitimacy for rights in managing the resources, i.e. only those members that are part of the community may collectively manage (and benefit from) the resource. In the Treaty, farmers are clearly identified as the target group for benefit-sharing (the first benefit of which being facilitated access to seeds). Should this then automatically equate to a right to collectively manage the resource¹⁵¹⁷ at that global level (and not relegate this right subject to national legislation – and therefore recognition). To be congruent with the objectives of the Treaty, recognizing the fundamental role of farmers in the sustainable use and conservation of PGRFA and in their key role as food producer, as well as identifying the community of farmers as a targeted beneficiary should automatically integrate this category of “users / commoners” in the “management team” of the Treaty, i.e. the Governing Body and its resulting tools and instruments.

A final note is made on the concept of community and its related implication with the notion of exclusion. Community implies members being part of the group, and people being out of the group, i.e. excluded. This clearly reports to the notion of boundaries and scope of a management system. But can we talk about a community and therefore exclude people from the MLS when we talk about accessing and producing food, which is a universal human need? Is the community, excluding people from it, a relevant concept to tackle a subject for which interdependence of plants, people and institutions are so deeply entrenched to one another?¹⁵¹⁸

¹⁵¹⁷ This raises interesting questions on the operational-choice versus collective-choice level of actions developed by Schlager and Ostrom in their implementation of the bundle of rights in the CPRs. E. SCHLAGER AND E. OSTROM, 1992 *op.cit.*

¹⁵¹⁸ See De Angelis who explores about commons functioning without a community. M. DE ANGELIS, 2003, "Reflections on Alternatives, Commons and Communities", *The Commoner*, Vol. 6.

§.6 Diversity, heterogeneity, and complexity

Ostrom's eighth design principle on "nested enterprises"¹⁵¹⁹ premised that larger commons might be more complex to govern than smaller ones. Later, further studies developed this intuition, showing that heterogeneity, diversity and complexity in CPRs¹⁵²⁰ where important aspects to take into account. In studying the character of an adaptive system to a changing context, Dedeurwaerdere pointed to the importance of the modular character of organizational architecture.¹⁵²¹ This modular character of organizational architecture¹⁵²² has to be recognized and facilitated in the design of the institutional managing systems. As Ostrom and Basurto put it "[n]ous ne cherchons pas à être complexes pour le plaisir d'être complexes, mais nous devons dépasser notre manie de la simplification. À l'évidence, nos théories seront toujours plus simplistes que les mondes que nous étudions, à moins d'essayer de reproduire ces mondes plutôt que de les théoriser. Compte tenu du caractère complexe et imbriqué des systèmes du monde biophysique, nous avons donc besoin de développer une science sociale de la complexité et de l'imbrication des systèmes."¹⁵²³ This is particularly true in today's context where climate change and other hazards impose quick, reactive and adaptive responses.

Unfortunately, globalisation and the homogenisation of biodiversity governing regimes hinder the emergence of institutional diversity, regime heterogeneity, and systems complexity. Roa-Rodriguez and Van Dooren stress that "[t]he dynamics unleashed by IP and sovereign regimes are transforming the varied common spaces, with their multiple modalities of access, use and alienation of resources, into a *de facto* homogeneous commons space where the negative and exclusive characteristics are predominant. This is a highly undesirable outcome if our true goal is the conservation and sustainable use of [plant genetic resources] for the well-being of society at large."¹⁵²⁴

¹⁵¹⁹ E. OSTROM, 2009, "Design Principles of Robust Property-Rights Institutions: What Have We Learned?", *op.cit.*

¹⁵²⁰ See *inter alia* M. COX, G. ARNOLD, AND S. V. TOMÁS, 2010 *op.cit.*; B. B. HUGHES, 1997, "Local Commons and Global Interdependence: Heterogeneity and Cooperation in Two Domains - Keohane, Ro, Ostrom, E", *American Political Science Review*, Vol. 91, (1); S. JUNG CURT, "Institutional Interplay in International Environmental Governance: Policy Interdependence and Strategic Interaction in the Regime Complex on Plant Genetic Resources for Food and Agriculture,"; F. BERKES, J. COLDING, AND C. FOLKE, *cit.*; E. OSTROM, "Understanding Institutional Diversity", .

¹⁵²¹ T. DEDEURWAERDERE, 2012, "Design Principles of Successful Genetic-Resource Commons for Food and Agriculture", *op.cit.*

¹⁵²² T. DEDEURWAERDERE, 2012, "Design Principles of Successful Genetic-Resource Commons for Food and Agriculture", *op.cit.*

¹⁵²³ E. OSTROM AND X. BASURTO, 2013, "Façonner Des Outils D'analyse Pour Étudier Le Changement Institutionnel", *Revue de la régulation. Capitalisme, institutions, pouvoirs*, Vol., (14) at p. 16.

¹⁵²⁴ C. ROA-RODRÍGUEZ AND T. VAN DOOREN, 2008, "Shifting Common Spaces of Plant Genetic Resources in the International Regulation of Property", *The Journal of World Intellectual Property*, Vol. 11, (3) at pp. 193-194.

In my view, effectively reaching the Treaty's objectives of conservation, sustainable use and ABS is only possible when taking into account the need for flexibility, diversity and dynamism in the management of all PGRFA, of PGRFA networks and PGRFA conservation systems worldwide. Setting a homogenous, one-size-fits-all solution (that of the commercial value of seeds as highly technologically improved material) where exclusion is the prevailing characteristic in the management rules, will not work out for seeds. Seeds can only survive and develop through diversity and heterogeneity, movement, adaptation, and constant use and human interaction. However, Agrawal warns that "[h]eterogeneities of endowments have a positive effect on resource management while heterogeneities of identities and interests create obstacles to collective action."¹⁵²⁵ The legal and stakeholders analyses of the Treaty¹⁵²⁶ have revealed the heterogeneities of identities and of interests.¹⁵²⁷ In my view, this is a crucial element to take into account when investigating solutions to the MLS governing constraints.

As mentioned above, little legal scientific literature was published on the Plant Treaty during its first years of implementation.¹⁵²⁸ Since then, authors gained interest in the topic and Multilateral System has been assimilated to a "commons-type" regime,¹⁵²⁹ i.e. a global crop commons,¹⁵³⁰ a global genetic commons,¹⁵³¹ or semicommons.¹⁵³² However, analysing the Plant Treaty and its MLS as a global seed commons is not an easy task. One of the difficulties relates to the global dimension of the MLS, as opposed to the generally small and local character of communities studied by Ostrom.¹⁵³³ Ostrom's work is inspiring and should be

¹⁵²⁵ A. AGRAWAL, 2002, "Common Resources and Institutional Sustainability", *op.cit.* at p. 60 citing Baland and Platteau 1996 J.-M. BALAND AND J.-P. PLATTEAU, 1999, "The Ambiguous Impact of Inequality on Local Resource Management", *World Development*, Vol. 27, (5)

¹⁵²⁶ See above Chapters 4 and 5.

¹⁵²⁷ Does heterogeneity function rather as inhibiting cooperation or as facilitating cooperation? On this question see G. D. LIBECAP, "The Conditions for Successful Collective Action", in R.O. KEOHANE AND E. OSTROM (eds), *Local Commons and Global Interdependence. Heterogeneity and Cooperation in Two Domains*, 1994.

¹⁵²⁸ End of 2007, less than 25 scientific publications on the Plant Treaty were collected, more than half of which are authored by non-academics. FAO documents and publications are not counted in this list. To cite examples: D. COOPER, 2002, "The International Treaty on Plant Genetic Resources for Food and Agriculture", *op.cit.*; I. B. BJORNSTAD, 2004; M. RUIZ-MULLER, 2006 *op.cit.*; E. TSIJUMANI, *ibid.* International Treaty on Plant Genetic Resources for Food and Agriculture: Legal and Policy Questions from Adoption to Implementation", Vol. ; C. GERSTETTER *et al.*, 2007 *op.cit.*.

¹⁵²⁹ T. DEDEURWAERDERE, 2010, "Institutionalizing Global Genetic Resource Commons: Towards Alternative Models for Facilitating Access in the Global Biodiversity Regime", *op.cit.*

¹⁵³⁰ M. HALEWOOD, I. L. NORIEGA, AND S. LOUAFI, *cit.*. In the following publication authors referred to a PGRFA commons: M. HALEWOOD AND K. NNADOZIE, *op. cit.* at p 120.

¹⁵³¹ S. SAFRIN, 2004 *op.cit.* at p. 644. W. P. FALCON AND C. FOWLER, 2002 *op.cit.* at p. 200; see also L. R. HELFER, "Using Intellectual Property Rights to Preserve the Global Genetic Commons: The Itppgrfa", *op. cit.* at pp. 219-220.

¹⁵³² E. BERTACCHINI, "Seeds and Semicommons," ; E. BERTACCHINI, "Biotechnologies, Seeds and Semicommons,".

¹⁵³³ See T. DEDEURWAERDERE, 2012, "Design Principles of Successful Genetic-Resource Commons for Food and Agriculture", *op.cit.*; and E. BROUSSEAU *et al.*, *cit.*. As confirmed by Henry and Dietz or by Stern, a transposition of the design principles from the local to a global setting is not self-evident. A. D. HENRY AND T. DIETZ, *cit.* or P. C. STERN, *ibid.* "Design Principles for Global Commons: Natural Resources and Emerging Technologies".

seen as a complementary conceptual input to adapt the Treaty's governing regime under international law, but it is certainly not sufficient to be transposed as such, taking into account the very different situations and conditions of governance regimes. Another problem lies in the fact that Contracting Parties (i.e. States) have designed the existing institutional arrangement (even if it is based on prior existing practices by specific PGRFA stakeholders), and are managing it, with no formal space for all (non-state) stakeholders to participate in the management of the MLS. Other challenges are related to the little trust among stakeholders in the Treaty's Governing Body forum,¹⁵³⁴ or to the complex technicalities of the implementation tools and instruments developed by the governing body.

This thesis shows that the Treaty is an interesting and innovative international law instrument for the management of PGRFA. Notwithstanding this positive stake, difficulties and constraints in its implementation have been highlighted.¹⁵³⁵ In order to resolve them, six potentially useful underlying principles of the commons have been expounded. The purpose of the present section was to highlight the link between the study of the Treaty and the theory of the commons and to understand how underlying principles of the theory of the commons could be useful in the review process of the Treaty. In the section 3 below, recommendations will be formulated in light of these underlying principles in order to move towards a truly effective global seed commons.

Section 3. Redesigning the global seed commons

Undeniably, the Treaty can be considered a fertile ground for institutional innovation: it invented the Multilateral System of access and benefit-sharing as a unique collective exchange mechanism; it created the Third Party Beneficiary concept to safeguard the collective interests of the MLS; it took first steps to formally recognize Farmers' Rights; and it established a Benefit-sharing Fund (BSF) as trust account for farmers; thereby *de facto* creating an instrument reflecting concepts inspired from the theory of the commons.

The legal¹⁵³⁶ and stakeholder¹⁵³⁷ analyses have shown that a global seed commons exists but that its functioning is not efficient in reaching the Treaty's objectives. The review process

¹⁵³⁴ B. Six *et al.*, 2015 *op.cit.* at pp. 164-167.

¹⁵³⁵ See Chapters 4 and 5.

¹⁵³⁶ See Chapter 4.

of the Multilateral System of the Treaty launched at the Fifth Session of the Governing Body in 2013 also confirms this statement. The review underway shows that the Treaty forum is reactive and willing to function effectively, and that it remains a fertile ground for innovation in creating institutional settings for collective management of common resources.

Along this line of thought, it is hoped that the present work may modestly contribute to bringing new ideas and different perspectives to the Governing Body debates. To this end, the final section of this chapter aims at formulating proposals to mitigate the constraints identified within the eight topics covered in Chapter 4. The recommendations made are centred on the conceptual constraints identified (e.g. imbalance of power between FRs and IPRs), rather than on the concrete technical constraints (e.g. difficulties for Contracting Parties to “designate” to the Treaty secretariat the PGRFA under their management and control). The reason for this choice is that, first, making concrete proposals to technical problems would require very specific and different expertise and competencies, which the author of the present work does not claim to have. Second, it is hoped that proposing possible solutions to conceptual issues would constitute the first step in designing concrete answers to technical problems, later on in the Treaty review process. A clear caveat is therefore made, that the recommendations proposed below are not ready-to-implement solutions to the technical constraints identified during the Treaty analysis. Rather these recommendations feed the conceptual apprehension of the issues as stake in order to guide towards concrete solutions that all Treaty stakeholders will have to find together. The objective is to open up the debate to new ideas and different ways of thinking to feed the Treaty’s review process.

Similarly to Chapter 4, this section is divided into eight paragraphs: §1 sustainable agriculture and food security; §2. scope; §3. Farmers’ Rights; §4. facilitated access; §5. benefit-sharing and the Benefit-sharing Fund; §6. information and knowledge; §7. Third Party Beneficiary; and §8. participation and governance. Each paragraph is composed of a first part stating the conceptual constraint related to the Treaty Topic, and a second part proposing recommendations in light of the commons underlying principles detailed above in section 2. On a preliminary note, one cross-cutting aspect that appears in almost every topic is the lack of recognition – translated into concrete obligations, instruments or procedures in the Treaty

¹⁵³⁷ See Chapter 5.

implementation – of the role and rights of smallholder farmers. In order to provide a quick overview of this section, a table summarizes its content.

Treaty topics	Conceptual constraints	Commons underlying principles	Commons' New vogue
1. <i>Sustainable agriculture & food security</i>	Overall goals of Treaty not reached because not recognized as direct objectives	Sustainability (of resources and institutions) Interdependence Anticommons dilemma	Sustainability (of ecosystems) Ecology of Law
2. <i>Scope</i>	Difference between scope of Treaty and scope of MLS leading to dysfunction	Interdependence Anticommons dilemma	Relationship man- seed (subject-object) Ecolegal order
3. <i>Farmers' Rights</i>	No real recognition at international level in the same terms as IPRs (recognition of their role but not their rights)	Anticommons dilemma Community Interdependence	Political construct for international recognition of rights for <i>de facto</i> stewards of seeds Towards inappropriability?
4. <i>Facilitated access</i>	Facilitated access is absent for the ultimate beneficiaries : farmers	Anticommons dilemma Community Interdependence	Political construct for international recognition of rights for <i>de facto</i> stewards of seeds Towards inappropriability?
5. <i>Benefit-sharing / Benefit-sharing Fund</i>	Puts the farmer in a situation of receiver / beneficiary instead of actor/user/stakeholder	Community Interdependence Anticommons dilemma	Relationship man- seed (subject-object)
6. <i>Information / knowledge</i>	Appropriation, Protection Availability mainly of one type of information	Physical and informational components inextricably bound to the use of seeds Interdependence	Towards inappropriability?

7. <i>Third Party Beneficiary</i>	Preservation of MLS rights, but what about preservation of all stakeholders' rights? Lack of system to balance powers	Diversity, heterogeneity, complexity Interdependence Community	Ecolegal order
8. <i>Participation / governance</i>	Governance of MLS remains at state level Problem of trust Need to include all stakeholders at all levels	Community Diversity, heterogeneity, complexity	Relationship man- seed (subject-object)

Table 6.1: Treaty topics, conceptual constraints and relevant commons underlying principles

§ 1 Sustainable agriculture and food security

For this first Treaty topic, the main conceptual constraint deriving from the legal and stakeholder analyses and impeding the achievement of a truly effective global seed commons relates to the fact that food security and sustainable agriculture are two overall goals of the Treaty instead of being direct objectives. Indeed, having sustainable agriculture and food security as overall goals of the Treaty maintains some distance with the concrete implementation actions of Contracting Parties during the implementation process. Decisions and actions taken in the Governing Body are directed towards conservation, sustainable use and ABS purposes, not necessarily towards food security and sustainable agriculture as a whole.

Furthermore, the above analyses have shown that the implementation of the Treaty does not reach its direct objectives of conservation, sustainable use and ABS for all its stakeholders, and hence its overall objectives of food security and sustainable agriculture. Conservation, sustainable use of and access to PGRFA will not be achieved as long as these objectives are dissociated from the primary activity of farming and seed “commoning”¹⁵³⁸, i.e. food production. Focusing more strongly and more directly on the overall goals of the Treaty could contribute to mitigate this fact, i.e. to formally designate food security and sustainable

¹⁵³⁸ D. BOLLIER, *Think Like a Commoner: A Short Introduction to the Life of the Commons*, op. cit.

agriculture as main objectives of the Treaty. This would also be consistent with recognizing that the primary role of farmers is producing food.

Bringing back the sustainability of agriculture as a central objective of the Treaty would respond to this important underlying principle of the commons theory. Sustainability of resources and institutions are crucial for effective commons to last in time and adapt to changes. Pushing further this principle towards sustainability of ecosystems (i.e. integrating the commons “resource-institution” pair into its wider ecosystem) might be even more effective.

Doing so can be justified in several ways. First, it would follow the idea expressed in the preamble of the Treaty whereby the Treaty is positioned within an already established set of international instruments and fora dealing with sustainability and food security. Indeed, paragraphs 4, 5 and 15 of the Treaty preamble place the negotiation of the Treaty process within the ambit of FAO, and the existing (non-binding) voluntary international instruments dealing with PGRFA conservation and sustainable use, i.e. the Rome Declaration on World Food Security, the World Food Summit Plan of Action and the Global Plan of Action for the Conservation and Sustainable Use of PGRFA.¹⁵³⁹ Reinforcing this link would also fit in the current international community’s discussion on Sustainable Development Goals adopted in 2015,¹⁵⁴⁰ and with the developments taking place in the UN Human Rights Council on the rights of peasants.¹⁵⁴¹ Second, this would also allow for a debate on whether the objective of the Treaty should be food security or its competing concept food sovereignty,¹⁵⁴² thereby opening a discussion on the self-determination of farmers in a transparent manner.¹⁵⁴³ This

¹⁵³⁹ The Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture was formally adopted by representatives of 150 countries during the Fourth International Technical Conference on Plant Genetic Resources, which was held in Leipzig, Germany, from 17 to 23 June 1996. The World Food Summit took place in Rome, Italy on November 13-17, 1996, where both the Rome Declaration on World Food Security and the Global Plan of Action were adopted.

¹⁵⁴⁰ <https://sustainabledevelopment.un.org/>

¹⁵⁴¹ See the in the Advanced Version 08/03/2016, Draft UN Declaration on the Rights of Peasants and Other People Working in Rural Areas. Available at

<https://documents-dds-ny.un.org/doc/UNDOC/GEN/G16/046/42/PDF/G1604642.pdf?OpenElement>

¹⁵⁴² See Chapter 4, Section 1, §2.

¹⁵⁴³ Self-determination is understood as the choice left to farmers to decide what, how and for whom to produce food, freed from the neoliberal economic power and bargain imposed on them. Focus is set on autonomy of all seed-related activities. See J. VAN DER PLOEG, 2008, *"The New Peasantries: Struggles for Autonomy and Sustainability in an Era of Empire and Globalization"*, London, Earthscan; see also E. DEMEULENAERE, 2014 *op.cit.*; S. SCHNEIDER AND P. A. NIEDERLE, 2010, "Resistance Strategies and Diversification of Rural Livelihoods: The Construction of Autonomy among Brazilian Family Farmers", *The journal of peasant studies*, Vol. 37, (2); P. V. STOCK *et al.*, 2014, "Neoliberal Natures on the Farm: Farmer Autonomy and Cooperation in Comparative Perspective", *Journal of Rural Studies*, Vol. 36; see also P. V. STOCK AND J. FORNEY, *ibid.* Farmer Autonomy and the Farming Self", Vol.

would contribute to opening the Treaty system to all stakeholders, as all stakeholders are concerned with food security and sustainable agriculture, while within the current terms of the MLS, not all stakeholders are concerned with ABS (i.e. only breeders, researchers and trainers). Doing so could contribute to widening the scope of the MLS. Finally, this would contribute to decreasing the hyper-ownership over seeds supremacy by mitigating a fundamental contradiction within the Treaty principles. Indeed, the Treaty provisions formally recognize international IP law in its body text. The recent general trend in IP law reinforces protection rights over plants, thereby limiting access to and use of seeds.¹⁵⁴⁴ Limited access and use of seeds are contrary to conservation objectives but also to innovation processes.¹⁵⁴⁵ The fact that the MLS works so closely with IPRs *de facto* reinforces the commodification trend over biodiversity due to the “second enclosure movement”.¹⁵⁴⁶ This is fundamentally in contradiction with the underlying principles of the Treaty (in particular interdependence and the anticommons dilemma) and its overall goals of food security and sustainable agriculture. Strengthening the recognition of food security and sustainable agriculture as direct objectives to the Treaty could therefore limit the negative impact of the hyperownership trend over seeds.

Recommendation 1: Formal recognition of food and nutrition security and sustainable agriculture as direct objectives of the Treaty

§ 2 Scope

Regarding the second Treaty topic, the conceptual constraint deriving from the Treaty analysis lies in the difference in scope between the Treaty and the MLS. The problem of the boundaries of the global seed commons is a real problem and is twofold. First the Treaty applies to all PGRFA and rules mainly on conservation and sustainable use obligations while the MLS applies to the Annex I list of 64 crops and forages and rules on access and benefit-sharing obligations. Second, at the level of the contracting parties, the Treaty is not (yet) truly global, as there are 140 members, with important countries – in terms of genebanks and

¹⁵⁴⁴ See Chapters 2 and 3.

¹⁵⁴⁵ See M. A. HELLER AND R. S. EISENBERG, 1998 *op.cit.*; and M. HELLER, *cit.*; see also recent research by Petra Moser who finds out that narrow and short-lived IPRs benefit innovation but wide, strong and long-term protection rather has opposite results. P. MOSER, "Patents and Innovation in Economic History", 2016, available at SSRN: <http://ssrn.com/abstract=2754342> or <http://dx.doi.org/10.2139/ssrn.2754342>

¹⁵⁴⁶ J. BOYLE, 2003, "The Second Enclosure Movement and the Construction of the Public Domain", *op.cit.*.

genetic diversity – remaining outside of the system (i.e. China, Russia or the US). This allows for stakeholders to continue free-riding the system.

Regarding the first issue, the difference in scope leads to an overall dysfunction in the implementation of Treaty and MLS obligations by Contracting Parties. Having a MLS functioning only for 64 crops and forages significantly complicates the governing rules of the system. Indeed, in designing the tools and instruments to implement these obligations, it has led Contracting Parties to create tracking and identification obligations (not foreseen in the Treaty) which constitute heavy administrative burdens, complicating the implementation of the system. Examples of such administrative burden are the difficulty for many Contracting Parties to designate to the Treaty Secretariat what PGRFA are under their management and control, and the resulting SMTA tracking obligation. Indeed, the Treaty requires for the access to seeds to be “accorded expeditiously, without the need to track individual accessions and free of charge”. However, the SMTA creates a tracking obligation by the need to list the material provided in an annex to the SMTA and to report systematically to the Treaty secretariat. Therefore, there is a contradiction between the initial obligation (expeditious access without tracking), and the resulting instrument designed by the Governing Body to implement that obligation (which creates tracking). It is therefore crucial to resolve this conflict of obligations between provisions of the Treaty and the MLS and those of the SMTA.

The second issue related to the scope deals with the boundaries of the Treaty memberships. The fact that the China, Russia or the US are not yet Contracting Parties allows for an easy free-riding of the system, i.e. PGRFA can be accessed in genebanks from non-member countries without using the SMTA. Indeed, the US for example detains the largest genebank in the world. China and Russia also have very large collections of PGRFA. If these three nations were Contracting Parties to the Treaty, the boundaries of the global seed commons would be geographically much closer to being truly global and free-riding would be much more difficult.

It was shown above that in order to have an effective global seed commons, the underlying principles of interdependence and anticommons dilemma have to be taken into account in the institutional design. Widening the scope of the MLS to all PGRFA¹⁵⁴⁷ and

¹⁵⁴⁷ However, this solution alone would not be sufficient. It would need to be coupled with a review of the payment scheme funding the MLS, which is under review by the Governing Body. Indeed, access is currently related to the payment of monetary

expanding the membership boundaries of the Treaty would allow for these underlying principles to be respected. Indeed: 1) interdependence requires collaboration and exchanges between all countries and for all PGRFA; 2) resolving the anticommons dilemma for seeds requires an easy access and use by as many users as possible.

Recommendation 2: harmonize the scope of the MLS with that of the Treaty to include all PGRFA and expand the boundaries of the Treaty to make it truly global

§ 3 Farmers' Rights

The conceptual constraint related to this third Treaty topic is certainly one of the most important resulting from the overall analysis of the Treaty: there is no real recognition of FRs at the international level while there is a very strong recognition of IPRs. There is recognition of the role farmers played for millennia in conserving and developing PGRFA diversity, but this recognition is not accompanied by actual *de jure* rights protected at the level of international law. This creates a strong imbalance in rights penalizing farmers. This imbalance in rights is entrenched in the Treaty's tools and instruments, i.e. the MLS and SMTA, which recognize innovation as being the role of breeders and not of farmers. This reflects the strong beliefs that technological innovation is the only relevant innovation apt to end hunger and biodiversity erosion, thereby ignoring the relevance of different, informal innovations by farmers.¹⁵⁴⁸

The Treaty provides only a weak recognition of Farmers Rights to be implemented at the national level. The Treaty does not provide for facilitated access to PGRFA for direct use by farmers and it does not facilitate access to improved seeds and technology particularly to small-holder farmers of the South. This represents a major contradiction with the fact that those farmers are feeding the world (70 percent of plant food is produced by small-holder farmers).¹⁵⁴⁹ With major climatic hazards likely to arise more often and more severely in the future, it is imperative that they be able to access seeds and relevant technology, enabling

benefits to the BSF, under specific conditions (see text of the SMTA in Appendix 2 of the online PDF file of this thesis, available on my ResearchGate profile). Access to PGRFA and payment should be dissociated in order for the proposal to include all PGRFA in the MLS to constitute an effective answer to the problem of dichotomy of scope and free-riding.

¹⁵⁴⁸ É. DEMEULENAERE AND F. GOULET, 2012, "Du Singulier Au Collectif. Agriculteurs Et Objects De La Nature Dans Les Réseaux D'agricultures "Alternatives"", *Terrains & travaux*, Vol., (1); O. T. COOMES *et al.*, 2015 *op.cit.*; E. DEMEULENAERE, 2014 *op.cit.*; M. PAUTASSO *et al.*, 2013 *op.cit.*.

¹⁵⁴⁹ FAO, "Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture", 2010; FAO, 2014.

them to continue to innovate and adapt in order to face these risks and to continue feeding the world population.

Furthermore, there is a major discrepancy between the intended beneficiaries of the MLS and those who really benefit. The benefit-sharing clause (Plant Treaty Article 13) focuses on farmers as main beneficiaries. But the first benefit, i.e. the facilitated access, is essentially directed towards breeders, while farmers clearly still do not benefit directly from this facilitated access, which is limited to research, breeding and training purposes.¹⁵⁵⁰

FRs should be formally recognized at the international level, on the same level as IPRs so as to re-balance rights and to stop penalizing farmers. One way of formalising this recognition is to grant direct access to farmers to MLS seeds for their direct use, exchange, etc. Doing so would allow for a sort of “renewed farmers’ exemption” to exist for PGRFA covered by the MLS.¹⁵⁵¹ A complementary way is to include farmers in the decision-making process, not only at the national level (and encourage this through sharing of experience, help in design of national legislations and policies etc.), but also at the international level in the management of the Treaty, the MLS and the Benefit-sharing Fund.¹⁵⁵²

Doing so would resolve the anticommons dilemma by allowing for maximum users of PGRFA diversity to access, sustainably use and conserve seeds. It would also safeguard the interdependence link binding all PGRFA users, thereby increasing communities’ self-determination in producing their own food (i.e. enhancing sustainability and reaching food security). Finally, it would expand the sense of belonging to one same global community that is composed of different heterogeneous communities, instead of ostracizing farmers from the community of Treaty stakeholders.

Besides, it is the right moment to recognize Farmers’ Rights at the international level. Indeed, progress is made on the implementation of the right to food, on the “Zero Hunger” sustainable development goal, and on the negotiation of the UN Declaration on the Rights of Peasants and other People Working in Rural Areas. Now is the moment to progress on this

¹⁵⁵⁰ At the last Governing Body, during a side event session, Eng Siam Lim had launched the idea that “a MLS for farmers” should be created.

¹⁵⁵¹ See below §4 on access.

¹⁵⁵² See below in §8 on participation and governance.

fundamental issue. Let us see whether to forthcoming consultation on Farmers' Rights will be able to seize this moment.¹⁵⁵³

Recommendation 3: Formal recognition of Farmers' Rights at the international law level and commitment to implement these rights at the national level.

§ 4 Facilitated access

One of the key innovations of the MLS is the design of a collective mechanism to facilitate access to PGRFA. It is the fourth Treaty topic covered in Chapter 4. The main conclusion resulting from its analysis is that facilitated access functions for specific Treaty users (i.e. breeders and researchers) but that it fails to benefit the supposedly primary beneficiaries of the MLS (i.e. farmers), thereby creating an unequal dual system. Two conceptual constraints explain this situation: A) Farmers are relegated to a role of beneficiary of the MLS, but the first benefit (accessing seed) is not recognized for them. This is at odds with their fundamental role in feeding the world and conserving PGRFA sustainably. B) Hyper-ownership through expanded IPRs has almost suppressed farmers' exemption in accessing protected (improved) PGRFA.

A. The issue of PGRFA access by farmers for direct use

When integrating the commons underlying principles most relevant to the question of facilitated access to seeds (anticommons dilemma, community, and interdependence), the need to recognize that access should first and foremost be facilitated for farmers (i.e. for all their needs, not just for breeding, research and training purposes) appears clearly as a necessity. Treaty provisions dealing with conservation and sustainable use activities create a first set of obligations in which farmers play a central role; the MLS, which aims at promoting breeding and research activities to develop improved varieties, constitutes a separate set of obligations, in which breeders and researchers are the main actors. These two sets of obligations stress the fact that different PGRFA communities are expected to play different

¹⁵⁵³ As requested by the Governing Body, to follow up the implementation of Resolution 5/2015, the Secretariat has prepared an electronic survey which is aimed to gather views, perceptions, options and approaches and possible strategies and options for the implementation of Farmers' Rights. The survey is also aimed to gather inputs for the preparation of a study on lessons learned. The results and outcomes of the electronic survey will be presented at the Global Consultation of Farmers' Rights in September 2016, hosted and organized by the Governments of Indonesia and Norway. See http://www.planttreaty.org/sites/default/files/008_GB7_NCP_FRE en.pdf

roles. This leads to two main questions: first, what about the primary role of a farmer, i.e. producing food? Should this role not be recognized and integrated in the Treaty system? Second, why dissociate the roles and sets of obligations (farmers conserving and using sustainably / breeders improving PGRFA)? Doing so recognizes only modern technology as valuable innovation and negates informal innovation by farmers. However, these different sets of obligations are all inter-related. There may be no efficient conservation and sustainable use of PGRFA without access to as wide a diversity as possible of PGRFA varieties, and without use of that diversity by as many different stakeholders as possible. It is unrealistic to imagine that conservation and sustainable use of PGRFA will be achieved as long as these activities are dissociated from the primary activity of farming and seed “commoning”¹⁵⁵⁴: producing food. This is directly linked to the issue of the objectives of the Treaty (above in §1), where it is recommended that sustainable agriculture and food security be recognized as direct objectives of the Treaty. Furthermore, it is unrealistic to imagine that conservation and sustainable use of PGRFA will be achieved as long as these separate communities (farmers vs. breeders and researchers) are kept separate.

Acknowledging this state of facts, the CGIAR centres have always provided access to PGRFA for farmers, whether for research and breeding, or for direct use for cultivation, and whether regarding unimproved or improved material.¹⁵⁵⁵

Yet, this practice has not been recognized as official interpretation of the related Treaty obligations by Contracting Parties.¹⁵⁵⁶ Therefore in 2010, the *Ad Hoc* Technical Advisory Committee on the SMTA and the MLS was requested to examine the issue, which was addressed at its second and third meetings.¹⁵⁵⁷ The Committee contends that there is no problem with providing PGRFA for direct use for farmers where the material is not received under an SMTA.¹⁵⁵⁸ The main difficulty lies with PGRFA received under an SMTA, “since the terms of the SMTA require that the use of the material be restricted to research, breeding and training. If material acquired from the Multilateral System under the SMTA is to be made

¹⁵⁵⁴ D. BOLLIER, “*Think Like a Commoner: A Short Introduction to the Life of the Commons*”, *op. cit.*

¹⁵⁵⁵ The material provided to farmers was transferred under favourable conditions, avoiding excessive cost and stringent IP conditions. However, this takes place for a relatively limited number of species and for pure varieties, while small-holder farmers are more interested in heterogeneous varieties.

¹⁵⁵⁶ See Chapter 4 above when explaining the relationship agreements signed in 2006 between the CGIAR centres and the Governing Body.

¹⁵⁵⁷ IT/AC-SMTA-MLS 2/10/Report at §§ 52-60 and Appendix 7; IT/AC-SMTA-MLS 3/10/Report, Appendix 3; IT/AC-SMTA-MLS 2/10/7 and IT/AC-SMTA-MLS 3/12/3.

¹⁵⁵⁸ IT/AC-SMTA-MLS 2/10/7, at §§ 9-13.

available for direct use for cultivation, this would require the express permission of the provider that included the PGRFA in the Multilateral System.”¹⁵⁵⁹ The Committee specifies that making PGRFA available for direct use for cultivation should not be made under the SMTA.

The question was first explicitly limited to the transfer for direct use by the CGIAR centres, but was then expanded to transfers for direct cultivation by Contracting Parties too.¹⁵⁶⁰ While it is encouraging that this issue was raised explicitly during an inter-sessional process, shedding more attention on farmers’ needs, a more progressive position could have been taken by Contracting Parties. Explicitly recognizing the legality of transferring Annex I material for direct use for cultivation would be a manner of recognizing and implementing part of the obligations covered under Article 9 on Farmers’ Rights. Doing so without using the SMTA would not increase administrative burden.

B. Over-IPRization and the disappearance of the farmers’ exemption

At the frontier of this issue of access to PGRFA by farmers, several problems remain, one of which relates to the intellectual protection of improved varieties.¹⁵⁶¹ Indeed, how to provide access to PGRFA when more and more improved varieties are protected by strong patents with no farmers’ and limited breeders’ exemption? Correa has attempted to provide a solution by proposing the development of a *sui generis* system for plant variety protection as an alternative to UPOV 1991 obligations. This *sui generis* system would be compatible with existing international obligations (WTO, TRIPS, but also CBD, Nagoya Protocol and the Treaty). It would counter balance the “over-IPRization” process occurring with the expansion of the boundaries of patents over plants. The general idea would be to create a system close to the UPOV 1978 convention (i.e. plant variety protection for new uniform plant varieties with clear breeders’ and farmers’ exemptions), complemented with a protection for “new farmer and other heterogeneous varieties” as well as a recognition for “traditional farmers’ varieties” in order to prevent misappropriation of varieties developed by farmers and farmers’ communities. This is also a means to recognize farmers’ role in the breeding innovation process. The purpose of the present work is not to dig into these technical issues but rather

¹⁵⁵⁹ IT/AC-SMTA-MLS 3/10/Report at § 23.

¹⁵⁶⁰ IT/AC-SMTA-MLS 3/12/3 § 33; IT/AC-SMTA-MLS 3/10/Report at §§ 22-25.

¹⁵⁶¹ F. GIRARD AND C. NOVILLE, 2014, “Propriété Industrielle Et Biotechnologies Végétales: La Nova Atlantis”, *Revue internationale de droit économique*, Vol. 28, (1).

analyse its impact on the conceptual constraint related to access; further information on this interesting proposal can be found in Correa's latest publication on the issue.¹⁵⁶²

At the conceptual level, would this *sui generis* plant variety protection system mitigate whole or part of the access problem in the Treaty implementation? If the designed *sui generis* system enables farmers to be integrated in the breeder / research community at the same level (i.e. have their PGRFA protected at the same level, have their rights recognized at the same level; and have their role in the innovation process recognized at the same level), then one can believe that such a system may significantly improve the Treaty implementation and contribute to reaching its objectives and overall goals. However, this means adapting the existing plant protection system (which equates to remaining in the dominant appropriation scheme),¹⁵⁶³ and not questioning its utility and reason to exist (i.e. moving towards inappropriability of seeds). Perhaps this should be questioned, but at this stage I do not have a firm opinion on this matter.

The above argument emphasises why facilitating access to seeds is so crucial, but even more, why it is necessary to effectively allow for all stakeholders (not only breeders and researchers, whether from public or private institutions) to use the global seed commons: farmers should not only be "passive beneficiaries" of financial and non-monetary benefits, but active "co-managers" in the design and implementation process.

Recommendation 4: Recognise a direct facilitated access to PGRFA for farmers; promote sui generis PVP systems to recreate an effective farmers' exemption.

§ 5 Benefit-sharing and the Benefit-sharing Fund

For this fifth Treaty topic, there are two conceptual constraints related to benefit-sharing. The foremost issue obviously relates to the lack of funding impeding the realization of benefit-sharing activities through the BSF.¹⁵⁶⁴ The conceptual constraint identified here is that

¹⁵⁶² C. M. CORREA, "Plant Variety Protection in Developing Countries: A Tool for Designing a Sui Generis Plant Variety Protection System: An Alternative to Upov 1991,". More generally on *sui generis* PVP see A. P. SINGH, P. MANCHIKANTI, AND H. S. CHAWLA, 2011 *op.cit.*. On the interaction between UPOV and the Plant Treaty on this issue, see also C. SAEZ, "Plant Variety Protection to Meet Food Security Plant Treaty, but Where Are Farmers' Rights?", at p.2.

¹⁵⁶³ In particular, it means restricting the ever-wider patent scope, and perhaps, as Van der Kooij suggests, create a breeders' exemption in patent law? See P. VAN DER KOOIJ, 2010 *op.cit.*

¹⁵⁶⁴ The need to review the funding mechanism is already taken on board in the Treaty review process and constitutes a technical constraint. This falls outside the scope of these recommendations and is therefore only superficially covered. However, finding sufficient money to fund the system remains of course a crucial element.

the financial trigger is linked to accessing the material included in the MLS. The Treaty analysis in Chapter 4 showed that the SMTA money triggering clause is not effective because of the time scale in innovation processes and because the SMTA is not used by those breeders who have money and detain IPRs. Besides, the voluntary contributions to the BSF is almost inexistent (with the exception of less than a handful of cases, by states or other stakeholders i.e. recently the European seed industry). Too little money is coming into the Benefit-sharing Fund. Finding funding that does not derive from the compulsory benefit-sharing obligation as foreseen in the SMTA might be a more viable option.

Along that line, the review process currently underway seeks to secure more stable and long-term funding means. When trying to implement the underlying principles of interdependence and anticommons dilemma in finding a solution to this conceptual constraint, one should keep in mind the need to protect the interdependence link between all PGRFA stakeholders and resources and to promote the widest use and involvement as possible. One way would be to obtain money from other stakeholders¹⁵⁶⁵ such as the food industry (i.e. through the implementation of Article 13.6 dealing with voluntary contributions to the MLS by the food-processing industries)¹⁵⁶⁶ or consumers. Up to now, neither consumers nor the food industry have been much included in the discussions between the various Treaty stakeholders.¹⁵⁶⁷ This is surprising if one considers that we are all consumers, whereas in developed countries farmers represent only three percent of the population, and that the food-processing industry is economically strong and financially flourishing (i.e. they have the financial means to contribute to the system).¹⁵⁶⁸ However, to take this path, there needs to be strong and determined political will. Apart from some rare countries which have adopted alternative modes of voluntary payment (notably Norway), it seems that the momentum has

¹⁵⁶⁵ Resolution 1/2006, point 11 “[i]nvites Contracting Parties, the private sector, *including the Food Processing* and other value-added Industries, non-governmental organizations, and all other interested parties, to make voluntary contributions to the Funding Strategy.” (Emphasis added).

¹⁵⁶⁶ Resolution 1/2006, point 11 “[i]nvites Contracting Parties, the private sector, *including the Food Processing* and other value-added Industries, non-governmental organizations, and all other interested parties, to make voluntary contributions to the Funding Strategy.” (Emphasis added).

¹⁵⁶⁷ This had already been mentioned in a previous publication in 2011, but little progress has taken place unfortunately. See C. FRISON, F. LÓPEZ, AND J. T. ESQUINAS-ALCÁZAR, *op. cit.*, at pp. 273-274.

¹⁵⁶⁸ Therefore, it is vital to raise awareness among consumers, to identify and encourage the food industry to contribute to the MLS and to design mechanisms for this purpose, as their future food supply depends on the continued availability of PGRFA. Strong incentives for the food industry to contribute to the Benefit-sharing Fund are required. An example could be to create a “green tag” for products coming from these industries contributing to the Fund. With this label consumers would be able to decide to buy products that contribute to the conservation and sustainable use of PGRFA. But for this to happen, consumers should be conscious that their choices regarding food products provide them with considerable leverage to influence the food industry’s economic and policy choices. Contracting Parties should therefore target consumers as well as farmers’ organizations in their public awareness programs. See C. FRISON, F. LÓPEZ, AND J. T. ESQUINAS-ALCÁZAR, *op. cit.* at pp. 273-274.

not come yet where Ministries of agriculture would take such politically committed engagements within their governments.¹⁵⁶⁹

The second conceptual constraint related to benefit-sharing deals with the position of farmers in the access / benefit-sharing relationship, that is to say their role and position within the Treaty community. Benefit-sharing provisions, including the BSF round of calls for funding benefit-sharing projects, put farmers in the position of beneficiaries, i.e. passive receivers. Notwithstanding the fact that the reduced funding of the Benefit-sharing Fund does not allow farmers to benefit from the Treaty, that the Benefit-sharing Fund procedure only allows to fund a limited number of selected projects following selective criteria (vs. benefiting all farmers), and that direct access to seeds is not formally recognized for farmers, this passive position contrasts with their ancestral role of main actors in the seed and food chain. It also departs from the community underlying principle which advocates for an active participation of all stakeholders in the commons. The Treaty and its MLS were designed for researchers, breeders and trainers, as bridging elements between the commercial stakeholders (seed industry) and the main users of seeds (farmers). Analysis of the Treaty implementation shows that the MLS is not a global seed commons (i.e. for all) but a researcher/breeder seed commons, where farmers are relegated to a passive position in the exchange of seeds. However, if one wants the Treaty to reach its objectives, farmers and other relevant stakeholders, will have to be included in the game as active participants to the management of the system. The redesign of the MLS should focus on farmers as primary stakeholders of the system.

Recommendation 5: Benefits of the Treaty should reach all beneficiaries and farmers should be repositioned as active stakeholders in the Treaty, MLS and BSF management.

§ 6 Information and knowledge

For small-holder farmers, seeds (the material) and traditional knowledge (the related information) are indissociably linked. This type of information is crucial for the conservation and sustainable use of PGRFA as a seed without its associated information and traditional

¹⁵⁶⁹ M. PETIT *et al.*, "Why Governments Can't Make Policy: The Case of Plant Genetic Resources in the International Arena", 2001

knowledge is of no use.¹⁵⁷⁰ Therefore, information and (traditional) knowledge should be protected from misappropriation;¹⁵⁷¹ their access should be promoted and made available to all seed stakeholders, along with the material (and the adequate technology to handle it). Traditional knowledge is considered as “information” relating to PGRFA. The Treaty provides for an instrument to address information: the Global Information System (GLIS), which is aimed at enhancing the documentation of PGRFA, (that include crop wild relatives, on-farm and *in situ* material), as well as promoting its exchange (Plant Treaty Article 17).¹⁵⁷²

The conceptual constraint related to this topic lies in the inadequate (or at least incomplete) tools developed by Contracting Parties¹⁵⁷³ to facilitate access to information that is most relevant to farmers, in particular traditional knowledge. Therefore there is no efficient mechanism protecting traditional knowledge from misappropriation, which then hinders access. The tools that are proposed to contribute to the GLIS (*inter alia* the DivSeek Initiative¹⁵⁷⁴ or the Global Open Genome Sequence Data Framework¹⁵⁷⁵) respond to experts’ requirements, far from a majority of farmers’ knowledge, needs and practices at local levels. It is understood that the end-beneficiary of this type of initiative is to be the farmer, but it does not recognize the fact that the majority of seeds used by smallholder farmers does not originate from commercial breeders but from informal seed exchange systems between farmers. This confirms the fact that the Treaty system is designed for breeders and researchers

¹⁵⁷⁰ This is recognized in Treaty Article 9.2 which stipulates that “(...) each Contracting Party should (...) take measures to protect and promote Farmers’ Rights, including: a) protection of traditional knowledge relevant to plant genetic resources for food and agriculture (...)” Traditional knowledge is an important question to further seek.

¹⁵⁷¹ Current negotiations on an international legal instrument to ensure the effective protection of TK, traditional cultural expressions and genetic resources are taking place within the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (WIPO-IGC). See <http://www.wipo.int/tk/en/igc/>

¹⁵⁷² See Chapter 4 Section 6 for details.

¹⁵⁷³ The Governing Body adopted a Vision paper which states that the “development of a truly effective Global Information System as foreseen in the International Treaty involves, *inter alia*: strengthening existing systems and, where gaps remain, establishing new systems and initiatives; promoting inter-connectivity among systems; and providing overarching mechanisms to ensure ready access to the information and services provided.” See IT/GB-6/15/Report, Appendix A, Resolution 3/2015, Annex “Vision for the Global Information System on PGRFA”.

¹⁵⁷⁴ The objective of this community-driven initiative is to bridge the gap between the information requirements of genebank curators, plant breeders and more targeted upstream biological researchers, in order to support applied germplasm curation, forward-looking breeding programs and strategic research. DivSeek, “Harnessing the power of crop diversity to feed the future”. White Paper, available at <http://static1.squarespace.com/static/537207e3e4b0d4555960edfd/t/53b08ea6e4b0efba71ed6fbc/1404079782586/White+Paper+DivSeek.pdf>

¹⁵⁷⁵ The Global Open Genome Sequence Data Framework pledge for a “universal access to genome information, needing nothing more than a web browser” in order to “transform plant breeding (...) [and] spawn innovation around the world”. Warthmann and Chiarolla propose to establish a “public license for genomic information on crop germplasm” as the first mechanism to ensure that “such data will be systematically treated as a public good for the benefits of mankind.” N. WARTHMANN AND C. CHIAROLLA, 2015 *op.cit.* at p. 2; available at <https://sustainabledevelopment.un.org/content/documents/5934Thinking%20a%20global%20open%20genome%20sequence%20data%20framework%20for%20sustainable%20development.pdf>

and fails to integrate farmers' role and needs in that system, thereby failing to develop means to reach the Treaty overall goals of food security and sustainable agriculture. This reflects again the imbalance in the Treaty between breeders and farmers. Addressing issues related to traditional knowledge through the GLIS could be a way to provide the most relevant information and knowledge to farmers and to limit misappropriation, which have enflamed polemics about cases of biopiracy.¹⁵⁷⁶

Therefore, measures should be enforced to re-establish a true public research, which aims are to serve the public interest (i.e. reach food security and sustainable agriculture) and the needs of smallholder farmers and which funding does not depend on private interests.¹⁵⁷⁷ The GLIS should include information systems that allow sharing of traditional knowledge while protecting it from misappropriation. One way to limit misappropriation could be to transfer the burden of proof on the patent or the PVP owner. When applying for a patent or a PVP, the applicant should demonstrate that the innovation does not originate from a misappropriated material / knowledge.

Recommendation 6: Develop the GLIS keeping in mind the overall goals of the Treaty, by rendering available, visible and accessible information relevant for all stakeholders in particular farmers; seek means to turn the MLS / global seed commons into a space where traditional knowledge would be protected from misappropriation.

§ 7 Third Party Beneficiary

The seventh Treaty topic deals with the legal mechanisms to enforce Treaty rights. These rules and procedures intervene at two levels: 1) at the level of the MLS and its SMTA, where PGRFA users may act; and 2) at the level of the Treaty, where Contracting Parties are the major stakeholders at play. The focus will be placed on the most innovative part of the system: the Third Party Beneficiary (3PB). The analysis in Chapter 4 showed that the 3PB concept bridges the gap between the private contractual law relationship between parties to the SMTA and the public international law setting where Contracting Parties to the Treaty are anchored.

¹⁵⁷⁶ See above Chapter 2. See also G. E. ISAAC AND W. A. KERR, 2004, "Bioprospecting or Biopiracy?", *The Journal of World Intellectual Property*, Vol. 7, (1); and C. M. Ho, 2006, "Biopiracy and Beyond: A Consideration of Socio-Cultural Conflicts with Global Patent Policies.", *University of Michigan Journal of Law Reform*, Vol. Vol. 39; and V. SHIVA, "Biopiracy: The Plunder of Knowledge and Nature," (Boston: South End Press, 1997).

¹⁵⁷⁷ This would mean *inter alia* refocus public research on traditional varieties (with intra-variety genetic heterogeneity). See for example C. BONNEUIL *et al.*, 2006, "Innover Autrement? La Recherche Face À L'avènement D'un Nouveau Régime De Production Et De Régulation Des Savoirs En Génétique Végétale", *Dossiers de l'environnement de l'INRA*, Vol., (30).

It creates a triangular relationship between Contracting Parties, stakeholders, and the MLS, in which every participant (whether directly involved in the SMTA contractual relationship or not) may trigger the 3PB when suspecting a breach of rights in an SMTA. Indeed, the 3PB is the virtual entity (materialized by FAO) representing the MLS, designed to assert its rights and to allow for enforcement of SMTAs.¹⁵⁷⁸ It functions as a warrant to the respect of the MLS' collective rights and obligations, which can be triggered by “any natural or legal person”; even those not party to the contractual agreement (SMTA) at the origin of the breach of right.¹⁵⁷⁹

The conceptual constraint related to the 3PB lies in the lack of transparency and advertising of the system at two levels: prior to a case and once a case is triggered. Indeed, to be fully effective, advertising and informing members of the Treaty community on the existence of the 3PB and its procedure in the widest and most transparent manner is crucial. The 3PB webpage briefly explains the procedures under its scope. However, the Plant Treaty website does not explicitly mention the first 3PB case that occurred in 2012-2013,¹⁵⁸⁰ nor does it publish a specific report of the case on the 3PB webpage. The information published is limited and can only be found in the documents of the Governing Body session (if one is aware that a case has occurred), not on the 3PB webpage. Besides, no action is taken by the Governing Body or the 3PB to advertise and inform the public on its role and procedures. There could be an “Easy-3PB” online tool, similar to the “Easy-SMTA” online tool, to facilitate triggering the 3PB procedure.

Furthermore, once the 3PB is triggered, information on the resolution of the case should be more transparent. Article 9 of the 3PB Procedures provides that the 3PB shall submit a report to the Governing Body at every Regular Sessions. Such report¹⁵⁸¹ should contain information on a number of items regarding its operations¹⁵⁸² in the biennium.¹⁵⁸³ At the last

¹⁵⁷⁸ The Plant Treaty website states that’s the “Third Party Beneficiary is an entity designated by the Governing Body of the International Treaty and which acts on behalf of the Governing Body itself and the Multilateral System to ensure observance of the contractual terms and conditions of the SMTA by the individual providers and recipients.” <http://www.planttreaty.org/content/what-third-party-beneficiary>

¹⁵⁷⁹ Procedures for the Operation of the Third Party Beneficiary, Article 4.2; see also Resolution 11/2013, para. 4.

¹⁵⁸⁰ For details see chapter 4, Section 7, §1.

¹⁵⁸¹ By Resolution 5/2009 and Resolution 5/2011, the GB requested the Secretary to provide such report in accordance with Article 9 of the 3PB Procedures.

¹⁵⁸² Article 9 of the 3PB procedures states that the report should contain information on: “a) the number, and a summary, of cases where it received information regarding noncompliance with the terms and conditions of a Standard Material Transfer Agreement; b) the number, and a summary, of cases where it initiated dispute settlement; c) the number, and a summary, of disputes settled through amicable dispute settlement, mediation or arbitration; d) the number, and a summary, of pending disputes; e) any legal questions that appeared in the context of dispute settlement and that may require the attention of the Governing Body; f) the expenditure from the Third Party Beneficiary Operational Reserve; g) any estimate of the needs of the Third Party Beneficiary Operational Reserve in the forthcoming biennium; h) any other relevant non-confidential information.”

session of the Governing Body, a “Report on the Operations of the Third Party Beneficiary” was submitted to the Governing Body, but its summary of the first case was very limited,¹⁵⁸⁴ and access to direct information on the case is not possible. In the 2013-2014 case, the situation seems to have been swiftly solved, *inter alia* because the CGIAR centres involved were embarrassed with the publicity that the ETC-group had made on these cases. Reputation is a strong motive for complying with the rules. This is why transparency is so important.

Finally, Contracting Parties have refused to expand the scope of action of the 3PB to compliance issues (and have consequently developed a parallel compliance mechanism), limiting the 3PB scope of action the breaches in SMTAs. While this is understandable from a political point of view during the Treaty negotiation, one could question this decision. Indeed, expanding the 3PB’s action to situation of non-compliance outside the SMTA contractual relationship could enhance implementation of major Treaty obligations. Reputation is a good incentive for respecting the rules of the game. Enlarging the role of the 3PB would trigger this reputational spectrum. However, the Governing Body might not be ready yet for opening such a debate...

Recommendation 7: Advertise on the 3PB’s role and procedures to the Treaty community and the public and deal with 3PB cases in a more transparent way; eventually, expand the 3PB’s competency to situations of non-compliance with Treaty provisions outside the SMTA contractual relationship.

§ 8 Participation and governance

In the Treaty analysis, information on the rules and procedures for the governance of the Treaty showed that there is little space for other actors than States and international organizations to govern the PGRFA issues at stake. This is consistent with international law. However, the arguments made in this chapter emphasise why it is indispensable to effectively allow all stakeholders to participate in the governance of the global seed commons. In particular, farmers should not only be passive beneficiaries of financial and non-monetary benefits, but active co-managers in the design and implementation process. The conceptual

¹⁵⁸³ That is to say for the part of year 2011 that was not covered by the previous report to the Governing Body, and for the biennium 2012-2013.

¹⁵⁸⁴ IT/GB-6/15/10.

constraint related to this Treaty topic deals with involving all stakeholders in the governance of the Treaty, in particular *de facto* holders of seeds (i.e. farmers) along with breeders, researchers or the seed industry.¹⁵⁸⁵ Taking such a multi-stakeholder approach to governing the Treaty,¹⁵⁸⁶ inspired from the functioning of the FAO Committee on World Food Security,¹⁵⁸⁷ could contribute to designing an effective global seed commons through the current MLS review process.

Chapter 5 has shown that many different stakeholders, with diverse (and sometimes opposing) interests are involved with the Treaty. However, the number and heterogeneity of these actors makes it difficult for the Treaty to be effectively implemented.¹⁵⁸⁸ The lack of stakeholders' participation is problematic at different levels: the needs and specificities of all stakeholders are not reflected in the system as designed; it poses the question of lack of trust between stakeholders¹⁵⁸⁹ and of legitimacy in governing the resource (i.e. are public institutions, breeders and researchers more legitimate to manage PGRFA than farmers, who have acted as stewards during millennia?).¹⁵⁹⁰ What role is left for informal dialogues¹⁵⁹¹ and informal networks within the formal system?¹⁵⁹²

NGOs and farmers' organisations have demonstrated that they are able to provide concrete, useful, important information on the conservation and sustainable use of seeds.¹⁵⁹³ As primary actors, smallholder farmers in particular (in number, they are the

¹⁵⁸⁵ In some developed countries' delegation, representatives from the seed industry are often participating as "experts" to the delegation, thereby constituting an officially invisible presence of the sector to the negotiations, but officiously actively participating to the process. This reflects once again, the imbalance of powers between stakeholders.

¹⁵⁸⁶ N. NASIRITOUSI, M. HJERPE, AND K. BÄCKSTRAND, 2015, "Normative Arguments for Non-State Actor Participation in International Policymaking Processes: Functionalism, Neocorporatism or Democratic Pluralism?", *European Journal of International Relations*, Vol. ; K. BÄCKSTRAND, 2006, "Democratizing Global Environmental Governance? Stakeholder Democracy after the World Summit on Sustainable Development", *ibid.* Vol. 12, (4).

¹⁵⁸⁷ The Committee on World Food Security (CFS) defines itself as "the foremost inclusive international and intergovernmental platform for all stakeholders to work together to ensure food security and nutrition for all. The Committee reports to the UN General Assembly through the Economic and Social Council (ECOSOC) and to FAO Conference." See <http://www.fao.org/cfs/cfs-home/en/>

¹⁵⁸⁸ G. D. LIBECAP, *op. cit.*.

¹⁵⁸⁹ B. SIX *et al.*, 2015 *op.cit.*; see also A. D. HENRY AND T. DIETZ, *cit.*.

¹⁵⁹⁰ In particular, when taking into account such important data as the fact that small-holder farmers produce 70 percent of our world's food, one may wonder how come their expertise, needs, and solutions are not officially included in the governance system of the Treaty.

¹⁵⁹¹ With the Crucible Group and Keystone Dialogue initiatives, History has shown the utility of involving stakeholders in discussing problems and imagining solutions that would contribute to collectively face major future challenges. Indeed, such informal dialogue constitutes a good place to tackle highly technical issues (and take these issues far from the political sphere for a while), by those very persons who deal with these aspects in their everyday work (contrary to negotiators in official GB meetings who are generally representatives of ministries and not direct users of PGRFA). See Chapter 5, Section 8.

¹⁵⁹² The tentative informal multi-stakeholder dialogue held in 2013-2014 aborted. See Chapter 4, Section 8.

¹⁵⁹³ See all the information documents and reports sent to the Treaty Secretariat upon request from the Governing Body at various Governing Body meetings.

majority group of seed users; and as food producer, they feed 70 percent of world population), should be able to participate in the international management of seeds. They should collaborate in the identification of what material / technology should be researched or developed.¹⁵⁹⁴ Recognizing their needs and practices, their modes of functioning, their networks, would be a way to implement Ostrom's eighth design principle on nested enterprises. It would allow to respect the heterogeneous, complex and diverse characteristics of the plural seed commons within the global seed commons. It would also fit quite well with recent studies demonstrating the need to shift from a uniform, industrial agricultural mode of production to diversified agroecological systems.¹⁵⁹⁵

Smallholder farmers or farmers more generally as well as breeders and researchers should be formally invited to take part of the global seed commons. As main game player of the agricultural input market, the Big-Six should also be part of the debate. The several multi-stakeholders dialogues which occurred during the negotiation of the Treaty, and recently during its implementation, showed that having all stakeholders sitting at the same table at the same time could favour a constructive dialogue between historically opposed groups, and eventually unblock difficult negotiations.

Finally, should other stakeholders at different levels of the food chain be involved: consumers and the food-processing industry? Consumers certainly have a say in what they want to eat (healthy, diverse, local food?) and hence they could influence the type of research activities funded by public research organizations. Citizen initiatives are also active in promoting the recognition of a right to exchange and grow traditional seeds.¹⁵⁹⁶ As for the food-processing industry, The Treaty highlights their role and responsibility in the food chain (Article 13.6) and identifies them as potential financial contributors to the MLS. Furthermore, to what degree should these stakeholders be involved in the governance of such multi-stakeholder process? Schlager and Ostrom distinguish “between rights at an operational-level¹⁵⁹⁷ and rights at a collective-choice level”¹⁵⁹⁸ that is to say it is “the difference between exercising a right and participating in the definition of future rights to be

¹⁵⁹⁴ The CGIAR already builds significant partnerships with local organisations and universities in developing countries.

¹⁵⁹⁵ IPES-FOOD, 2016.

¹⁵⁹⁶ Which is contrary to EU seed legislation. For details see T. WINGE, *op. cit.*. For examples of such citizens' initiatives see Chapter 3, Section 3.

¹⁵⁹⁷ Rights at an operational level are access and withdrawal to a CPR. See E. SCHLAGER AND E. OSTROM, 1992 *op.cit.*

¹⁵⁹⁸ Rights at a collective-choice level are management, exclusion and alienation. E. SCHLAGER AND E. OSTROM, 1992 *op.cit.*

exercised.”¹⁵⁹⁹ These issues should be further discussed in order to reinvent how to govern the Treaty and its instruments.

However, rather than conceptual constraints, these are technical challenges regarding the governing mechanism of the Treaty (i.e. adapt rules and procedures of the Governing Body to create decision-making space for all Treaty stakeholders). Concretely modifying the general governance mechanism of the Treaty so as to better reflect the reality of the PGRFA field (in terms of heterogeneity of actors and their needs, of networks and of institutions) falls outside of the direct scope of this thesis. Notwithstanding the fact that this would necessitate quite some courage and creativity in changing universally recognized international law of treaty rules, the present author believes there is hope in this regard. Indeed, the Treaty forum has undoubtedly demonstrated its capacity to be creative and innovative in designing new concepts and instruments under international law. Moreover, there are examples of such evolution in international governing systems from which the Governing Body could be inspired for its renovation, notably the reform of the Committee on World Food Security.¹⁶⁰⁰ It could even go further by establishing voting rights to each stakeholder groups, not only to Contracting Parties. Adapting the Treaty governance mechanisms towards an inclusive multi-stakeholder approach might contribute to resolve constraints identified in the Treaty analysis, *inter alia* by resolving political power balance. In order to build a system which all stakeholders will abide by and will implement, a rebalance of powers needs to take place in the Governing Body, through the recommended inclusive multi-stakeholder approach. The recognition of FRs and the farmers’ participation in the decision-making process are pre-conditions for this rebalancing of powers to take place.

Recommendation 8: Allow all stakeholders to effectively participate in the global seed commons governance.

¹⁵⁹⁹ E. SCHLAGER AND E. OSTROM, 1992 *op.cit.* at p. 251.

¹⁶⁰⁰ Using a multi-stakeholder, inclusive approach, CFS develops and endorses policy recommendations and guidance on a wide range of food security and nutrition topics. These are developed starting from scientific and evidence-based reports produced by the High Level Panel of Experts on Food Security and Nutrition (HLPE) and/or through work supported technically by The Food and Agricultural Organization (FAO), The International Fund for Agricultural Development (IFAD), World Food Programme (WFP) and representatives of the CFS Advisory Group. CFS holds an annual Plenary session every October in FAO, Rome. For a review of this mechanism see O. DE SCHUTTER, "The Reform of the Committee on World Food Security: The Quest for Coherence in Global Governance,".

Conclusion

Implementing these eight recommendations are first steps towards constructing a political commons and towards addressing the difficult issue of PGRFA management with an “ecology of law” perspective. Indeed, establishing the conditions for a real dialogue to take place and a collective decision-making space between all involved stakeholders is the first step towards constructing the political global seed commons.

1) Formally recognize food and nutrition security and sustainable agriculture as direct objectives of the Treaty would be a strong political signal, shifting the purpose of the MLS from being a tool that upholds seed commodification to a tool enhancing seed commoning. This would reset sustainability at the heart of the global seed commons’ project, and recognize food production as the core of farmers’ role.

2) Harmonizing the scope of the MLS with that of the Treaty to include all PGRFA and expand the boundaries of the Treaty to make it truly global would respond to the anticommons dilemma. A sustainable PGRFA management functions like a virtuous circle where the more the seed and its related information is used and shared the more the seed and its related information develops, expands and gains value. Therefore, a wide community of users for a wide spectrum of resources is crucial.

3) and 4) Formally recognizing Farmers’ Rights at the international law level and committing to implement these rights at the national level is a *sine qua non* condition for an effective global seed commons to function and reach its objectives. This recommendation goes hand in hand with the fourth one recognizing a direct facilitated access to PGRFA for farmers and promoting *sui generis* PVP systems to recreate effective farmers’ exemption. They both necessitate strong political will to formalize *de facto* rights into internationally recognized *de jure* rights.

5) Benefits of the Treaty should reach all beneficiaries and farmers should be repositioned as active stakeholders in the Treaty, the MLS and the BSF management. This fifth recommendation resonates with the role of each stakeholder in a community, and hence in a network of related communities. Farmers are those tilling the land, sowing the seeds, harvesting the fruits of their labour, producing our food. They cannot be relegated to

passive beneficiaries in the Treaty system, when they are the ones with their hands in the earth. Farmers' knowledge, needs and practices are valuable. Humanity is benefiting from them. Implementing an "ecology of law approach"¹⁶⁰¹ to the MLS requires this move to happen.

6) Develop the Treaty's Global Information System keeping in mind the overall goals of the Treaty, by rendering available, visible and accessible information relevant for all stakeholders in particular farmers participates to the rebalancing of powers that needs to take place. Similarly, seeking means to transform the global seed commons into a space where seeds and traditional knowledge would be protected from misappropriation is an important element for the MLS to function effectively. Enlarging the Annex I list of crops to all PGRFA will not happen as long as the rights of *de facto* right holders are not protected from the excesses of the "second enclosure movement". However, this enlargement has to take place, to respect the underlying principle of sustainability, interdependence, and anticommons dilemma.

7) In order to contribute to the rebalancing of power between stakeholders, the potential of the innovative Third Party Beneficiary instrument has to be unlocked. Advertising on the 3PB's role and procedures to the Treaty community and to the public and dealing with 3PB cases in a more transparent way are first steps in that direction. Envisaging to expand the scope of the 3PB to situations of non-compliance would be a second step in that direction.

8) Finally, allowing all stakeholders to effectively participate in the governance of the global seed commons is the last but not least recommendation that results from this work. As Mattei puts it "each individual's survival depends on its relationship with others, with the community, with the environment."¹⁶⁰² Constructing a political global seed commons taking this into account imposes "commoning",¹⁶⁰³ or, as Dardot and Laval formulate it, "agir commun".¹⁶⁰⁴ According to them, participating to an activity constitutes the basis of all

¹⁶⁰¹ F. CAPRA AND U. MATTEI, "The Ecology of Law: Toward a Legal System in Tune with Nature and Community", *op. cit.*.

¹⁶⁰² U. MATTEI, 2011, "The State, the Market, and Some Preliminary Questions About the Commons", *Paper presented as part of the project "Human Rights of People Experiencing Poverty" at the University of Turin as part of the DGIII Social Cohesion of the Council of Europe. Accessed Feb*, Vol. 5 at p. 12. See also U. MATTEI, "Beni Comuni-Un Manifesto (in Italian)", *op. cit. inter alia* at p.p. 101-102.

¹⁶⁰³ D. BOLLIER, "Think Like a Commoner: A Short Introduction to the Life of the Commons", *op. cit.*

¹⁶⁰⁴ P. DARDOT AND C. LAVAL, "Commun: Essai Sur La Révolution Au Xxie Siècle", *op. cit.* at p. 580.

political obligations, i.e. from “coactivity results coobligation”.¹⁶⁰⁵ The political obligation then “tire toute sa force de l’engagement pratique liant tous ceux qui ont élaboré ensemble des règles de leur activité,”¹⁶⁰⁶ thereby imposing a multi-stakeholder approach to any political common governing system. Rebalancing the economic and political powers within the Treaty forum is crucial to allow for a democratic governance to take place.¹⁶⁰⁷ Only then can adequate political and governing decisions be taken that will address the issue at stake in responding to all its aspects and to all stakeholders needs. Only then can the collective interest (i.e. sustainable agriculture and food security) be safeguarded and expressed in public policies.¹⁶⁰⁸

Throughout these eight recommendations, there is one important cross-cutting aspect that appears in almost every topic: the lack of recognition of the role and rights of smallholder farmers. By lack of recognition, the author means the lack of translation of their role and *de facto* rights into concrete obligations, instruments and procedures in the Treaty implementation, i.e. *de jure* rights. This participates in the identified imbalance of rights between Treaty stakeholders; imbalance of rights which has to be rebalanced in order to effectively implement a global seed commons and eventually reach the Treaty’s objectives.

To conclude, unlike Dardot and Laval, the present author would not go as further as affirming that inappropriability is the only possible normative political construct for “the common”¹⁶⁰⁹ to happen. To suggest that the MLS should be a space for inappropriability of seeds and making a normative statement as this being THE solution to the constraints identified in the PGRFA management system would presume from stakeholders’ discussions and decisions. Indeed, perhaps other solutions could be envisaged and lead to an effective politically constructed global seed commons. For such a political decision to be taken, it can only be the result of the collective debate and choice between all stakeholders. This decision could therefore only be taken once the above recommendations have been implemented and once the balance of powers in the Treaty forum is re-equilibrated, thereby allowing for an equitable and fair discussion and decision-making process between all stakeholders.

¹⁶⁰⁵ P. DARDOT AND C. LAVAL, “*Commun: Essai Sur La Révolution Au Xxie Siècle*”, *op. cit.*

¹⁶⁰⁶ P. DARDOT AND C. LAVAL, “*Commun: Essai Sur La Révolution Au Xxie Siècle*”, *op. cit.*

¹⁶⁰⁷ A. LUCARELLI, “*La Democrazia Dei Beni Comuni*”, *op. cit.*

¹⁶⁰⁸ A. LUCARELLI, 2011, “Note Minime Per Una Teoria Giuridica Dei Beni Comuni”, *op.cit.*; A. LUCARELLI, “*Beni Comuni. Dalla Teoria All’azione Politica*”, *op. cit.*

¹⁶⁰⁹ P. DARDOT AND C. LAVAL, “*Commun: Essai Sur La Révolution Au Xxie Siècle*”, *op. cit.*, at p. 583.

Overall conclusion and further developments

Synthesis

Access to seeds for farmers (like access to land or to water) is an essential component for reaching food security and sustainable agriculture. However, there are several impediments to easy access including: erosion of agrobiodiversity; legal and technological tools enclosing PGRFA; political hurdles. These impediments are amplified by risks and hazards resulting from climate change. These are immediate challenges which Humanity has to address in the collective interest.

The present PhD thesis attempted to unravel some of the questions and difficulties related to these challenges by analysing in great detail the International Treaty on Plant Genetic Resources for Food and Agriculture, which aims at conserving, sustainably using and facilitating access to PGRFA. Implementing an unusual inductive research approach, where several disciplines, theories, concepts and methods are mixed, a thorough legal analysis of the Treaty was carried out and complemented by a stakeholders' analysis and a participatory observation-type field research within the Treaty's forum. This mixed method allowed to capture a 360° view and to understand the issues at stake in the international negotiations regulating access to seeds.

The research results showed that, although the Treaty and its instruments (Multilateral System of access and benefit-sharing, Third Party Beneficiary, Benefit-sharing Fund, etc.) are very innovative from an international law perspective, the in-depth study of their implementation revealed major dysfunctions. Their examination enabled to identify eight important conceptual constraints in the Treaty's structure, which hinder Contracting Parties to reach the set objectives. The theory of the commons has been identified as a useful theoretical framework to address these constraints. Six commons' underlying principles were set forward to mitigate these constraints, and eight recommendations were formulated in an attempt to improve the Treaty at the conceptual level. Table 6.2 below provides a summary of the conceptual constraints and recommendations.

Overall Conclusion

By transforming the current intergovernmental multilateral legal instrument into an effective and collectively constructed political *Global Seed Commons*, the overall objective of this work is to contribute to designing an alternative path to the current seed regulatory setting entangled in an out-of-date public/private good dichotomy appropriation scheme. One cross-cutting aspect that appears all along the analysis is the lack of recognition of the role and rights of smallholder farmers. Recognition of Farmers' Rights at the international level is promoted as a compulsory step in order to overcome the imbalance of rights pertaining to seeds and to reach the food security and sustainable agriculture overall goals of the Treaty.

Treaty topics	Conceptual constraints	Recommendations
1. Sustainable agriculture & food security	Overall goals of Treaty not reached <i>inter alia</i> because not recognized as direct objectives	Formally recognize food & nutrition security and sustainable agriculture as direct objectives of the Treaty
2. Scope	Difference between scope of Treaty and scope of MLS leading to dysfunction	Harmonize the scope of the MLS with that of the Treaty to include all PGRFA Expand the Treaty boundaries to make it truly global
3. Farmers' Rights	No recognition of farmers' role in PGRFA management and of their associated rights at the international level in the same terms as IPRs	Formally recognize Farmers' Rights at the international law level Commit to implement these rights at the national level
4. Facilitated access	Facilitated access is absent for the ultimate beneficiaries i.e. farmers	Recognize a direct facilitated access to PGRFA for farmers Promote <i>sui generis</i> PVP systems to recreate effective farmers' exemption
5. Benefit-sharing / Benefit-sharing Fund	Farmers are put in a passive situation of beneficiaries denying their <i>de facto</i> active role as main stakeholder in the food production chain	Benefits of the Treaty should reach all beneficiaries Reposition Farmers as active stakeholders in the Treaty, MLS and BSF management

<p>6. Information / knowledge</p>	<p>Appropriation, Protection</p> <p>Availability mainly of one type of information of interest to breeders</p>	<p>Develop the GLIS keeping in mind the overall goals of the Treaty and the needs of smallholder farmers</p> <p>Seek means to turn the MLS into a space where traditional knowledge would be protected from misappropriation</p>
<p>7. Third Party Beneficiary</p>	<p>Preservation of MLS rights, but not preservation of all stakeholders' rights.</p> <p>Lack of system to balance powers</p>	<p>Advertise on the 3PB's role & procedures to the Treaty community and the public</p> <p>Deal with 3PB cases in a more transparent way</p> <p>Expand 3PB's mandate to compliance</p>
<p>8. Participation / governance</p>	<p>Governance of MLS remains at state level</p> <p>Lack of inclusion of all stakeholders at all levels</p> <p>Problem of trust</p>	<p>Allow all stakeholders to effectively participate in the global seed commons governance</p>

Table 6.2: Summary table of recommendations

Future Developments

This doctoral thesis provides recommendations for the political construct of a global seed commons, which are hoped to be useful in the current review process of the Treaty. However, it does not provide all the answers, but rather opens many more questions. In the following last paragraphs, two kinds of further research are proposed: developments on the theoretical level and on the technical level.

On the theoretical level, several directions could be followed.

First, as a continuation to the present use of the theory of the commons, further work could be carried out with what has been called “the new vogue of the commons”.¹⁶¹⁰ Dardot

¹⁶¹⁰ See the above mentioned authors in Chapter 6 such as Ugo Mattei, Pierre Dardot and Christian Laval, Benjamin Coriat, etc.

and Laval¹⁶¹¹ question the notion of appropriation and promote the collective and political decision to design specific resources or services as not appropriable. Inappropriability is envisaged as a necessary new category, next to the public and the private ownership and management of resources or services, if the objective is to serve the collective interest and sustainability requirement. Could inappropriability be envisaged for governing PGRFA? Mattei and Capra¹⁶¹² call for a new vision of the role of Law, as an all-embracing science, an integral part of a whole, i.e. taking an ecological perspective of the Law. This is a seducing perspective for those observing the functioning of nature and humanity within nature as a “holistic system”. Applying this to PGRFA management would require to position ourselves differently; to rethink our approach to the farmer-seed (human-nature) relationship.

Second, the Treaty, and the present research findings, could be examined through the lens of the Global Public Goods (GPG) theory developed in the early 2000s by Inge Kaul *et al.*¹⁶¹³ The GPG theory attempts to provide answers to problems related to globalization. Kaul *et al* argue that many contemporary’s international crises – such as food crises – have their roots in serious Global Public Goods undersupply. They identify three policy gaps to be closed for their theory to reach normative and effective impacts on international legal regimes: a “jurisdictional gap”, a “participation gap”, and an “incentive gap”. The jurisdictional gap focuses on the “discrepancy between a globalized world and national, separate units of policy-making.” The participation gap highlights that today, international cooperation is still mainly an intergovernmental process, whereas important new global actors, such as international non-governmental organizations or citizens’ actions, have emerged. The incentive gap stresses the importance of promoting international cooperation in the implementation of international agreements. These gaps match quite well many of the Treaty constraints identified above. Further research could assess if and how mitigating these gaps would improve the effectiveness of the Global Seed Commons.¹⁶¹⁴ A general questioning of the role of States in international law would need to be addressed with regard to the necessary transition towards

¹⁶¹¹ P. DARDOT AND C. LAVAL, 2010, "Du Public Au Commun", *op.cit.* ; P. DARDOT AND C. LAVAL, "Commun: Essai Sur La Révolution Au Xxie Siècle", *op. cit.*.

¹⁶¹² F. CAPRA AND U. MATTEI, "The Ecology of Law: Toward a Legal System in Tune with Nature and Community", *op. cit.*.

¹⁶¹³ I. KAUL, I. GRUNBERG, AND M. A. STERN (eds.), "Global Public Goods - International Cooperation in the 21st Century", Oxford, Oxford University Press, 1999 ; I. KAUL *et al.*, "Providing Global Public Goods - Managing Globalization", ; I. KAUL AND P. CONCEIÇÃO, 2006, "The New Public Finance : Responding to Global Challenges", New York, Oxford University Press .

¹⁶¹⁴ This research is underway, with a preliminary study to be presented at the “3rd Thematic IASC Conference on Knowledge Commons” taking place next October in Paris. The paper to be presented with my colleague Charlotte de Callataÿ is entitled “Exploring the normativity and effectiveness of Global Public Goods with two case studies: the Global Seed Commons and the Convention on the Law of the Non-navigational Uses of International Watercourses”.

agro-ecologically sustainable systems.¹⁶¹⁵ Indeed, States ought to find a new role, responding to the challenges of our transitioning Anthropocene, different from the welfare state or the liberal State, and facilitating or even empowering citizens in their initiatives towards sustainable livelihoods.

Studying the Treaty through the lens of Human Rights could also complement the present work, in particular regarding the formal recognition of Farmers' Rights at the international level. Indeed, developments taking place in promoting and recognizing specific rights to seeds, to land, to water, to food, and all embracing peasants' rights¹⁶¹⁶ within different fora could greatly enhance the Treaty's implementation. Using the concept of "essential resource"¹⁶¹⁷ as a complementary concept promoting the common management of PGRFA could be one way to enter this human rights approach.

Several other theoretical frameworks could be useful to work on the Treaty. Behavioral studies could be an interesting field to research in order to unravel the delicate question of trust during Treaty negotiations and in collective management systems, especially within communities constituted by heterogeneous seed stakeholders. In international relations, studies could further build on the results of this thesis by digging the difficult question of designing horizontally coherent international policies. That is to say, to develop policies with a holistic view of the general system in which the policy is designed (i.e. relate it with neighboring policies). Applied to PGRFA management, this would mean to relate the international agricultural policy to a (currently inexistent) international food policy, involving health-, environmental-, and economic-related policies, etc...

Further research at a technical level could also supplement this work. While it is not the direct objective of this PhD to propose ready-to-implement solutions to the Treaty implementation constraints identified throughout the analysis, the overall objective is to serve the discussions of the Treaty review process, which aims at mitigating the said constraints. Along that line, several suggestions are made to propose additional technical investigations.

¹⁶¹⁵ O. DE SCHUTTER, "La Cage Et Le Labyrinthe : S'évader De La Religion De La Croissance," in *21ème Congrès des économistes belges de langue française* (Liège2015), at pp. 9-10.

¹⁶¹⁶ *Draft Declaration On The Rights Of Peasants And Other People Working In Rural Areas*, Advanced Version 27/01/2015, Discussed at the Third Session of the Open-ended Intergovernmental Working Group of the United Nations Human Rights Council, which took place from 17 to 20 May 2016, in Geneva, available at <http://www.ohchr.org/en/hrbodies/hrc/ruralareas/pages/3rdsession.aspx>

¹⁶¹⁷ K. PISTOR AND O. DE SCHUTTER, *cit.*.

First, in the IP field, further exploration on how to (re-)design a farmer's exemption in the MLS in relation to the existing legislation on plant variety protection and patents is greatly needed, in furtherance of Correas' proposal.¹⁶¹⁸ Could the MLS coupled with *sui generis* plant variety protection laws recreate an effective farmer's exemption? Additionally, a clearer understanding and vision of how to protect PGRFA-related traditional knowledge is required. Besides, further work is needed to mitigate the impediments of access to PGRFA due to national seed laws. Digging into the technicalities of intellectual property protection legislation and seed laws is therefore crucial.

In addition, in international relations studies and public international law, further exploration is needed to review the governance systems in the Treaty. Would an adaptation of the Governing Body rules allow for a FAO Committee on World Food Security-type of multi-stakeholder governance? How could participatory democracy¹⁶¹⁹ be mobilized to promote an effective multi-stakeholders governance in the Treaty?

Additionally, highly technical issues have been raised regarding the administrative burden of PGRFA management and exchanges between stakeholders. A deeper examination of the SMTA technical rules regarding tracking and identification would be useful in order to facilitate the access to Annex I PGRFA. Financial issues are also key to the dysfunction of the Treaty. Different means of funding the Treaty ought to be envisaged and tested, etc. The list of technical developments could be quite long.¹⁶²⁰

These theoretical and technical developments provide interesting avenues for further investigation.

¹⁶¹⁸ C. M. CORREA, "Plant Variety Protection in Developing Countries: A Tool for Designing a Sui Generis Plant Variety Protection System: An Alternative to Upov 1991,".

¹⁶¹⁹ L. BLONDIAUX, 2008, "*Le Nouvel Esprit De La Démocratie: Actualité De La Démocratie Participative*", Seuil Paris ; and moving towards a deliberative democracy, see C. GIRARD AND A. LE GOFF, 2010, "*La Démocratie Délibérative: Anthologie De Textes Fondamentaux*", Hermann.

¹⁶²⁰ Not to mention biodiversity-related studies, where innovative strategies and technologies for conservation and sustainable use of PGRFA would benefit the implementation of the Treaty, and in particular focus on *in situ* and on-farm conservation and sustainable development strategies. N. MAXTED, B. V. FORD-LLOYD, AND J. G. HAWKES, 2013, "*Plant Genetic Conservation: The in Situ Approach*", Springer Science & Business Media; E. DULLOO, "Conservation and Availability of Plant Genetic Diversity: Innovative Strategies and Technologies" (paper presented at the IV International Symposium on Plant Genetic Resources, Acta Horticulturae 2015,

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II. Ad Hoc Advisory Committee on the Funding Strategy

THIRD MEETING

- Report

Treaty Secretariat, "Report", Third Meeting of the Ad Hoc Advisory Committee on the Funding Strategy, Doc. IT/ACFS-3/08/Report, Rome, Italy, 16-17 October 2008.

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Treaty Secretariat, "Report related to the Implementation of the Funding Strategy from International Organisations", Third Meeting of the Ad Hoc Advisory Committee on the Funding Strategy, Doc. IT/ACFS-3/08/Inf.1, Rome, Italy, 16-17 October 2008.

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FOURTH MEETING

- Report

Treaty Secretariat, "Draft Strategic Plan for the Implementation of the Benefit-Sharing Fund of the Funding Strategy", Fourth Meeting of the Ad Hoc Advisory Committee on the Funding Strategy, Geneva, Switzerland, 12-13 March 2009.

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FIFTH MEETING

- Report

Treaty Secretariat, "Report of the Fifth Meeting of the Ad Hoc Advisory Committee on the Funding Strategy", Fifth Meeting of the Ad Hoc Advisory Committee on the Funding Strategy, Doc. IT/ACFS-5/10/Report, Geneva, Switzerland, 26-27 May 2009.

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Treaty Secretariat, "Operation of the Benefit-sharing Fund: Institutional Arrangements and procedures", Fifth Meeting of the Ad Hoc Advisory Committee on the Funding Strategy, Doc. IT/ACFS-5/10/5 Add.1, Geneva, Switzerland, 26-27 May 2009.

Treaty Secretariat, "Business Plan of the Governing Body - ACFS5", Fifth Meeting of the Ad Hoc Advisory Committee on the Funding Strategy, Doc. IT/ACFS-5/10/6, Geneva, Switzerland, 26-27 May 2009.

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Treaty Secretariat, "Information Note for Participants", Fifth Meeting of the Ad Hoc Advisory Committee on the Funding Strategy, Doc. IT/ACFS-5/10/Inf.2, Geneva, Switzerland, 26-27 May 2009.

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Treaty Secretariat, "Policy Seminar on The International Treaty: Global Challenges and Future Direction", Fifth Meeting of the Ad Hoc Advisory Committee on the Funding Strategy, Doc. IT/ACFS-5/10/Inf.4, Geneva, Switzerland, 26-27 May 2009.

Treaty Secretariat, "Expert Advice on the Second Call for Proposals, Including a Strategy and Programme for The Benefit-Sharing Fund Rev 1", Fifth Meeting of the Ad Hoc Advisory Committee on the Funding Strategy, Doc. IT/ACFS-5/10/Inf.5, Geneva, Switzerland, 26-27 May 2009.

SIXTH MEETING

- Report

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Treaty Secretariat, "Resource mobilisation: Implementation of the Strategic Plan for the Implementation of the Benefit-sharing Fund", Sixth Meeting of the Ad Hoc Advisory Committee on the Funding Strategy, Doc. IT/ACFS-6/10/3, Rome, Italy, 13-15 October 2010.

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Treaty Secretariat, "ACFS update: Resource mobilisation", Sixth Meeting of the Ad Hoc Advisory Committee on the Funding Strategy, Doc. IT/ACFS-6/10/Inf.2, Rome, Italy, 13-15 October 2010.

SEVENTH MEETING

- Report

Treaty Secretariat, "Report of the Seventh Meeting of the Ad Hoc Advisory Committee on the Funding Strategy", Seventh Meeting of the Ad Hoc Advisory Committee on the Funding Strategy, Doc. IT/ACFS-7/12/Report, Geneva, Switzerland, 18-20 September 2012.

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Treaty Secretariat, "Development of Partnerships architecture for the Benefit-sharing Fund", Seventh Meeting of the Ad Hoc Advisory Committee on the Funding Strategy, Doc. IT/ACFS-7/12/7, Geneva, Switzerland, 18-20 September 2012.

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- Report

Treaty Secretariat, "Resumed Seventh Meeting of the Ad Hoc Advisory Committee on the Funding Strategy", Resumed Seventh Meeting of the Ad Hoc Advisory Committee on the Funding Strategy, Doc. IT/ACFS-7 RES/13/Report, Geneva, Switzerland, 26-27 March 2013.

III. Ad Hoc Technical Advisory Committee on the Standard Transfer Agreement and the Multilateral System

FIRST MEETING

- Report

Treaty Secretariat, "Report of the First Meeting of the Ad Hoc Technical Advisory Committee on the Standard Transfer Agreement and the Multilateral System", First Meeting of the Ad Hoc Technical Advisory Committee on the Standard Transfer Agreement and the Multilateral System, Doc. IT/AC-SMTA-MLS 1/10/Report, Rome, Italy, 18-19 January 2010.

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Treaty Secretariat, "Creating legal space for the Implementation of the Treaty in the Context of Access and Benefit-sharing", First Meeting of the Ad Hoc Technical Advisory Committee on the Standard Transfer Agreement and the Multilateral System, Doc. IT/AC-SMTA-MLS 1/10/3, Rome, Italy, 18-19 January 2010.

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Treaty Secretariat, "Legal and Administrative Measures to Encourage Natural and Legal Persons to Voluntarily Place Material in the Multilateral System", First Meeting of the Ad Hoc Technical Advisory Committee on the Standard Transfer Agreement and the Multilateral System, Doc. IT/AC-SMTA-MLS 1/10/5, Rome, Italy, 18-19 January 2010.

Treaty Secretariat, "Practical and legal implications for natural and legal persons putting material into the Multilateral System", First Meeting of the Ad Hoc Technical Advisory Committee on the Standard Transfer Agreement and the Multilateral System, Doc. IT/AC-SMTA-MLS 1/10/6, Rome, Italy, 18-19 January 2010.

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Treaty Secretariat, "Transfer and use of PGRFA under the SMTA", First Meeting of the Ad Hoc Technical Advisory Committee on the Standard Transfer Agreement and the Multilateral System, Doc. IT/AC-SMTA-MLS 1/10/8, Rome, Italy, 18-19 January 2010.

SECOND MEETING

- Report

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Treaty Secretariat, "The reporting obligations of parties under the SMTA", Second Meeting of the Ad Hoc Technical Advisory Committee on the Standard Transfer Agreement and the Multilateral System, Doc. IT/AC-SMTA-MLS 2/10/3, Brasilia, Brazil, 31 August-2 September 2010.

Treaty Secretariat, "Draft outline of options and guide on practices, procedures and measures for the implementation of the Multilateral System", Second Meeting of the Ad Hoc Technical Advisory Committee on the Standard Transfer Agreement and the Multilateral System, Doc. IT/AC-SMTA-MLS 2/10/10, Brasilia, Brazil, 31 August-2 September 2010.

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Treaty Secretariat, "Restrictions on further transfer of PGRFA under Development", Second Meeting of the Ad Hoc Technical Advisory Committee on the Standard Transfer Agreement and the Multilateral System, Doc. IT/AC-SMTA-MLS 2/10/5, Brasilia, Brazil, 31 August-2 September 2010.

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- Information Documents

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- Report

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Treaty Secretariat, "Transfer and use of Plant Genetic Resources for Agriculture under the SMTA: transfer to farmers for direct use for cultivation", Third Meeting of the Ad Hoc Technical Advisory Committee on the Standard Transfer Agreement and the Multilateral System, Doc. IT/AC-SMTA-MLS 3/12/3, New Delhi, India, 26-28 June 2012.

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Treaty Secretariat, "Miscellaneous Questions for in-session Consideration", Third Meeting of the Ad Hoc Technical Advisory Committee on the Standard Transfer Agreement and the Multilateral System, Doc. IT/AC-SMTA-MLS 3/12/8, New Delhi, India, 26-28 June 2012.

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Treaty Secretariat, "Handbook to the Implementation of the Multilateral System of the International Treaty", Third Meeting of the Ad Hoc Technical Advisory Committee on the Standard Transfer Agreement and the Multilateral System, Doc. IT/AC-SMTA-MLS 3/12/Inf.22/Inf.2, New Delhi, India, 26-28 June 2012.

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FOURTH MEETING

- Report

Treaty Secretariat, "Report of the Fourth Meeting of the Ad Hoc Advisory Technical Committee on the SMTA and the MLS", Fourth Meeting of the Ad Hoc Technical Advisory Committee on the Standard Transfer Agreement and the Multilateral System, Doc. IT/AC-SMTA-MLS 4/12/Report, Rome, Italy, 6-7 November 2012.

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Treaty Secretariat, "Recent Policy Developments of Relevance to the Implementation of the Multilateral System and the Standard Material Transfer Agreement", Fourth Meeting of the Ad Hoc Technical Advisory Committee on the Standard Transfer Agreement and the Multilateral System, Doc. IT/AC-SMTA-MLS 4/12/2, Rome, Italy, 6-7 November 2012.

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Treaty Secretariat, "Collection, Conservation and Distribution through the SMTA of samples of Plant Varieties Protected by Plant Breeder's Rights", Fourth Meeting of the Ad Hoc Technical Advisory Committee on the Standard Transfer Agreement and the Multilateral System, Doc. IT/AC-SMTA-MLS 4/12/6, Rome, Italy, 6-7 November 2012.

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RESUMED FOURTH MEETING

- Report

Treaty Secretariat, "Resumed Fourth Meeting Of The Ad Hoc Advisory Technical Committee On The Standard Material Transfer Agreement And The Multilateral System", Resumed Fourth Meeting of the Ad Hoc Technical Advisory Committee on the Standard Transfer Agreement and the Multilateral System, Doc. IT/AC-SMTA-MLS Res4/13/Report, Rome, Italy, 12 April 2013.

IV. Ad Hoc Technical Committee on Sustainable Use of Plant Genetic Resources for Food and Agriculture

FIRST MEETING

- Report

Treaty Secretariat, “Report of the First Meeting of the Ad Hoc Technical Committee on Sustainable of Plant Genetic Resources for Food and Agriculture”, First Meeting of the Ad Hoc Technical Committee on Sustainable of Plant Genetic Resources for Food and Agriculture, Doc. IT/ACSU-1/12/Report, Rome, Italy, 8-9 November 2012.

- Working Documents

Treaty Secretariat, “Electronic Stakeholders Consultation for the Programme of Work on Sustainable Use”, First Meeting of the Ad Hoc Technical Committee on Sustainable of Plant Genetic Resources for Food and Agriculture, Doc. IT/ACSU-1/12/3, Rome, Italy, 8-9 November 2012.

Treaty Secretariat, “Elements for the Definition of the Programme of Work on Sustainable Use of PGRFA (POW)”, First Meeting of the Ad Hoc Technical Committee on Sustainable of Plant Genetic Resources for Food and Agriculture, Doc. IT/ACSU-1/12/4, Rome, Italy, 8-9 November 2012.

Treaty Secretariat, “Development of a toolbox on Sustainable Use of PGRFA”, First Meeting of the Ad Hoc Technical Committee on Sustainable of Plant Genetic Resources for Food and Agriculture, Doc. IT/ACSU-1/12/5, Rome, Italy, 8-9 November 2012.

Treaty Secretariat, “Farmers’ Rights - Compilation of Submissions Received and Report of the Regional Workshop”, First Meeting of the Ad Hoc Technical Committee on Sustainable of Plant Genetic Resources for Food and Agriculture, Doc. IT/ACSU-1/12/6, Rome, Italy, 8-9 November 2012.

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Treaty Secretariat, “Compilation of Views and Experiences on the Implementation of Farmers’ Rights submitted by Contracting Parties and relevant Organizations”, First Meeting of the Ad Hoc Technical Committee on Sustainable of Plant Genetic Resources for Food and Agriculture, Doc. IT/ACSU-1/12/Inf.3, Rome, Italy, 8-9 November 2012.

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SECOND MEETING

- Report

Treaty Secretariat, “Report of the Second Meeting of the Ad Hoc Technical Committee on Sustainable of Plant Genetic Resources for Food and Agriculture”, Second Meeting of the Ad Hoc Technical Committee on Sustainable of Plant Genetic Resources for Food and Agriculture, Doc. IT/ACSU-2/15/Report, Rome, Italy, 2-3 March 2015.

- Working Documents

Treaty Secretariat, “Implementation of the Programme of Work on Sustainable Use of Plant Genetic Resources for Food and Agriculture and Supporting Initiatives”, Second Meeting of the Ad Hoc Technical Committee on

Sustainable of Plant Genetic Resources for Food and Agriculture, Doc. IT/ACSU-2/15/3, Rome, Italy, 2-3 March 2015.

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Treaty Secretariat, "The Platform for Co-Development and Transfer of Technologies (Platform)", Second Meeting of the Ad Hoc Technical Committee on Sustainable of Plant Genetic Resources for Food and Agriculture, Doc. IT/ACSU-2/15/Inf.2, Rome, Italy, 2-3 March 2015.

Treaty Secretariat, "Input Paper from Bioversity International, CIAT, CIP and GBIF: Global Information System for In situ Conservation and On-farm Management of PGRFA", Second Meeting of the Ad Hoc Technical Committee on Sustainable of Plant Genetic Resources for Food and Agriculture, Doc. IT/ACSU-2/15/Inf.3, Rome, Italy, 2-3 March 2015.

Treaty Secretariat, "The Contribution of the Benefit-sharing Fund Projects to the Sustainable Use of PGRFA Second Meeting of the Ad Hoc Technical Committee on Sustainable of Plant Genetic Resources for Food and Agriculture, Doc. IT/ACSU-2/15/Inf.4, Rome, Italy, 2-3 March 2015.

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Treaty Secretariat, "Note for participants", Second Meeting of the Ad Hoc Technical Committee on Sustainable of Plant Genetic Resources for Food and Agriculture, Doc. IT/ACSU-2/15/Inf.7, Rome, Italy, 2-3 March 2015.

V. Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System of Access and Benefit-sharing

FIRST SESSION

- Report

Treaty Secretariat, "Report of the First Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System", First Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-1/14/Report, Geneva, Switzerland, 14-16 May 2014.

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Treaty Secretariat, "Background on the Work Undertaken by the Ad Hoc Advisory Committee on the Funding Strategy, and its Further Development", First Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-1/14/3, Geneva, Switzerland, 14-16 May 2014.

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Treaty Secretariat, "Preparations for Future Meetings of the Working Group", First Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-1/14/5, Geneva, Switzerland, 14-16 May 2014.

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Treaty Secretariat, "Preliminary Considerations on Possible Procedures to Amend the Treaty", First Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-1/14/Inf.5, Geneva, Switzerland, 14-16 May 2014.

- **Invitations and Notifications**

Treaty Secretariat, "Information Event on 13th May: History and existing work on Innovative approaches to mobilize income to the Benefit-sharing Fund: outcomes of the work undertaken by the Ad Hoc Advisory Committee on the Funding Strategy", First Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-1/14/Event, Geneva, Switzerland, 14-16 May 2014.

- **Others**

Treaty Secretariat, "Implementation of the Funding Strategy of the International Treaty - Resolution from GB5", First Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. Resolution 2/2013, Geneva, Switzerland, 14-16 May 2014.

Treaty Secretariat, "Report of the Fourth Meeting of the Ad Hoc Technical Advisory Committee on the Standard Material Transfer Agreement and the Multilateral System", First Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/GB-5/13/Inf.3, Geneva, Switzerland, 14-16 May 2014.

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SECOND SESSION

- **Report**

Treaty Secretariat, "Report of the Second Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System", Second Meeting of the Ad Hoc Open-ended Working Group to

Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-2/14/Report, Geneva, Switzerland, 9-11 December 2014.

- **Working Documents**

Treaty Secretariat, "Synoptic Study 1: Estimating Income to be Expected from Possible Changes in the Provisions Governing the Functioning of the Multilateral System", Second Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-2/14/3, Geneva, Switzerland, 9-11 December 2014.

Treaty Secretariat, "Synoptic Study 2: Policy and Legal Study on the Feasibility and Effects of Changes to the Multilateral System", Second Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-2/14/4, Geneva, Switzerland, 9-11 December 2014.

Treaty Secretariat, "Synoptic Study 3: an Analysis on how to Enhance Mechanisms for Capacity-Building, Technology-Transfer and Information-Exchange", Second Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-2/14/5, Geneva, Switzerland, 9-11 December 2014.

Treaty Secretariat, "Synoptic Study 4: Consultation with Stakeholder Groups", Second Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-2/14/6, Geneva, Switzerland, 9-11 December 2014.

- **Information Documents**

Treaty Secretariat, "Information Note for Participants", Second Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-2/14/Inf.2, Geneva, Switzerland, 9-11 December 2014.

Treaty Secretariat, "The Current Status Of The Multilateral System Of Access And Benefit-Sharing", Second Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-2/14/Inf.3, Geneva, Switzerland, 9-11 December 2014.

Treaty Secretariat, "Facilitator's Summary: Informal Stakeholder Workshop on Multilateral System of the International Treaty – Meridian Institute", Second Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-2/14/Inf.4.1, Geneva, Switzerland, 9-11 December 2014.

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- **Background Study Papers**

MOELLER N.I. and STANNARD C., "Estimating Income To Be Expected From Possible Changes In The Provisions Governing The Functioning Of The Multilateral System", Second Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, IT/OWG-EFMLS/Background Study 1, Geneva, Switzerland, 9-11 December 2014.

GUIRAMAND M., "An in-depth analysis of the factors that influence the willingness of stakeholder groups to make contributions to the Benefit-sharing Fund and to access plant genetic resources for food and agriculture from the Multilateral System", Second Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS/Background Study 4, Geneva, Switzerland, 9-11 December 2014.

THIRD SESSION

- **Report**

Treaty Secretariat, "Report of the Third meeting of the Ad Hoc Open-ended Working Group", Third Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-3/15/Report, Brasilia, Brazil, 2-5 June 2015.

- Working Documents

Treaty Secretariat, “Draft Resolution for Consideration by the Governing Body, At Its Sixth Session: Measures To Enhance The Functioning of the Multilateral System of Access and Benefit-Sharing”, Third Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-3/15/3, Brasilia, Brazil, 2-5 June 2015.

- Information Documents

Treaty Secretariat, “Information Note for Participants”, Third Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-3/15/Inf.2, Brasilia, Brazil, 2-5 June 2015.

Treaty Secretariat, “Additional Submissions Received from Working Group Members and Others”, Third Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-3/15/Inf.3 Add.1, Brasilia, Brazil, 2-5 June 2015.

Treaty Secretariat, “Expansion of the Access and Benefit-sharing Provisions of the International Treaty: Legal Options”, Third Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-3/15/Inf.4 Rev.1, Brasilia, Brazil, 2-5 June 2015.

Treaty Secretariat, “Development of a Subscription System for users of Plant Genetic Resources for Food and Agriculture under the Treaty (Measure III): Background Information”, Third Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-3/15/Inf.5, Brasilia, Brazil, 2-5 June 2015.

Treaty Secretariat, “Improving the Standard Material Transfer Agreement to Increase User-Based Payments and to Make it More User-Friendly (Measure IV): Background Information”, Third Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-3/15/Inf.6, Brasilia, Brazil, 2-5 June 2015.

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Treaty Secretariat, “The Benefit-sharing Fund and the Global Crop Diversity Trust: Succinct Analysis of Targets, Contributions and Resource Mobilization Strategies and other Relevant Information”, Third Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-3/15/Inf.8, Brasilia, Brazil, 2-5 June 2015.

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Treaty Secretariat, “Twenty five years of international exchanges of plant genetic resources facilitated by the CGIAR genebanks: a case study on international interdependence”, Third Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-3/15/Research Paper 9, Brasilia, Brazil, 2-5 June 2015.

FOURTH SESSION

- Report

Treaty Secretariat, “Consolidated Report on the Deliberations of the Ad Hoc Open-Ended Working Group to Enhance the Functioning of the Multilateral System, during the 2014–2015 Biennium”, Fourth Meeting of the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System, Doc. IT/OWG-EFMLS-6/15/6 Rev.2, Rome, Italy, 5-9 October 2015.

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