

Are We Doing the ‘Right’ Things the ‘Right’ Way?
**Discourse and Practice of Sustainability Assessment in North
and South**

Jean Hugé

Vrije Universiteit Brussel
Université Libre de Bruxelles

Thesis submitted in fulfilment of the requirements for the award of the degree of Doctorate in
Sciences

Brussels, May 2012

Supervisors: Prof. Nico Koedam & Prof. Farid Dahdouh-Guebas

Print: Silhouet, Maldegem

© 2012 Jean Hugé

2012 Uitgeverij VUBPRESS Brussels University Press
VUBPRESS is an imprint of ASP nv (Academic and Scientific Publishers nv)
Ravensteingalerij 28
B-1000 Brussels
Tel. +32 (0)2 289 26 50
Fax +32 (0)2 289 26 59
E-mail: info@vubpress.be
www.vubpress.be

ISBN 978 90 5718 118 4
NUR 900
Legal deposit D/2012/11.161/054

All rights reserved. No parts of this book may be reproduced or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the author.

'Science sans conscience n'est que ruine de l'âme.'

Rabelais

'The essence of ultimate decision remains impenetrable to the observer - often, indeed, to the decider himself.'

J.F. Kennedy

Members of the exam committee:

Chair

Prof. dr. L. Triest

Vrije Universiteit Brussel

Supervisors

Prof. dr. N. Koedam

Vrije Universiteit Brussel

Prof. F. Dahdouh-Guebas

Université Libre de Bruxelles

Jury members

Prof. T. Block

Universiteit Gent

Prof. E. Corijn

Vrije Universiteit Brussel

Prof. M. El-Jaziri

Université Libre de Bruxelles

Prof. V. Joiris

Université Libre de Bruxelles

Dr. A. Jones

European Commission

TABLE OF CONTENTS

BIOGRAPHIC NOTE	8
ACKNOWLEDGEMENTS	10
ABSTRACT (E)	11
RESUME (F)	12
SAMENVATTING (NL)	13
LIST OF ACRONYMS	14
GLOSSARY	16
CHAPTER 1: INTRODUCTION	19
Section 1.1 Positioning the research	19
Section 1.2 Structure of the thesis	20
CHAPTER 2: SUSTAINABLE DEVELOPMENT, KNOWLEDGE & GOVERNANCE	23
Section 2.1 Sustainable development: an introduction	23
2.1.1 History and milestones of sustainable development	24
2.1.2 Perspectives on sustainable development: an analysis	27
2.1.3 The interpretational limits of sustainable development	34
2.1.4 Critique on sustainable development	36
2.1.5 The implementation challenge: sustainable development as a decision-guiding strategy	37
Section 2.2 Knowledge for sustainable development	40
2.2.1 The context: complexity, uncertainty and values	40
2.2.2 Science for sustainable development	42
2.2.3 Synthesis: science for sustainable development	46
Section 2.3 Governance for Sustainable Development	46
2.3.1 Governance: an introduction	46
2.3.2 Governance for sustainable development	48
2.3.3 Participation for sustainable development	50
CHAPTER 3: RESEARCH QUESTIONS	55

Section 3.1 Taking on the challenges of decision-making for sustainable development	55
Section 3.2 Research questions	55
CHAPTER 4: METHODOLOGY	57
Section 4.1 Methodological background: a discursive-institutional approach	57
4.1.1 Discourse analysis	57
4.1.2 Discourse analysis: a contribution to sustainability research	59
4.1.3 Discourse and the practice of sustainability assessment	60
4.1.4 A discursive-institutional approach to sustainability assessment	61
4.1.5 Case study research	62
Section 4.2 Methods	64
4.2.1 Outline	64
4.2.2 Data collection methods	65
CHAPTER 5: SUSTAINABILITY ASSESSMENT EXPLORED	67
Section 5.1 Sustainability assessment explored	67
Section 5.2 Functions of sustainability assessment in the decision-making process	72
5.2.1 Perspectives on policy-making define the functions of sustainability assessment	72
5.2.2 Learning through sustainability assessment	73
5.2.3 Functions of sustainability assessment	74
Section 5.3 Policy impact of sustainability assessment	77
Section 5.4 Sustainability assessment approaches	78
Section 5.5 Sustainability assessment tools	80
Section 5.6 Sustainability indicators	82
5.6.1 Defining sustainability indicators	82
5.6.2 Functions and use of sustainability indicators	83
5.6.3 Developing sustainability indicators	84
5.6.4 Case: Developing sustainability indicators for Clean Development Mechanisms in Vietnam	85
CHAPTER 6: THE PRACTICE OF SUSTAINABILITY ASSESSMENT	93
Section 6.1 Sustainability assessment in Flanders, Belgium	93
6.1.1 Converging impact assessment discourses for sustainable development: the case of Flanders, Belgium	93
6.1.2 Participatory sustainability assessment: rationale and pilot application in Flanders, Belgium	109
Section 6.2 Sustainability assessment for development co-operation	122
6.2.1 Sustainability assessment of Poverty Reduction Strategy Papers (PRSPs)	122
6.2.2 The greening of Poverty Reduction Strategy Papers: a process approach to sustainability assessment	134

Section 6.3 Impact assessment for a sustainable energy future – reflections and practical experiences	148
6.3.1 Introduction	148
6.3.2 Sustainable development and sustainable energy explored	149
6.3.3. Impact assessment for sustainable energy policy: theory & practice	153
6.3.4 Sustainability assessment for energy policy	156
6.3.5 Case Study: impact assessment and radioactive waste management in Belgium	158
6.3.6 Reflections on nuclear energy and the interpretational limits of sustainable development	162
6.3.7 Conclusion	163
 CHAPTER 7: CONCLUDING DISCUSSION	 165
7.1 Setting the stage	165
7.1.1 The sustainable development meta-discourse	165
7.1.2 Sustainable development: from concept to decision-guiding strategy	166
7.1.3 Understanding sustainability assessment: the dynamics of discourse and institutions	167
7.1.4 Theory of sustainability assessment	168
7.2 Zooming in: practice of sustainability assessment	169
7.2.1 Three case studies	169
7.2.2 Interpretation in practice: discourse & assessment	170
7.2.3 The information-structuring challenge: participation in practice	173
7.2.4 The influence challenge: from policy recommendations to discourse reflection	175
7.2.5 Synthesis: what factors shape sustainability assessment?	177
7.2.6 Synthesis: ‘What does sustainability assessment do?’	180
7.2.7 The ambiguity of an ad hoc approach to sustainability assessment	181
7.3 <i>Quo vadis</i> sustainability assessment?	182
7.3.1 Sustainable development in an era of global change	183
7.3.2 Power & politics of sustainable development: linking discourse and actors	185
7.3.3 Radical change versus prudent reformism embodied in the potential and the limitations of sustainability assessment	186
7.4 Recommendations	188
7.5 Epilogue	191
 BIBLIOGRAPHY	 193

BIOGRAPHIC NOTE

Jean Hugé (°1980, Oostende) holds a Master in Bio-Science Engineering and a Master in Conflict & Development from Ghent University.

He worked at the *Vrije Universiteit Brussel* in the Human Ecology Department and in the Biology Department from 2005 to 2011, and at the *Université Libre de Bruxelles* in the Systems Ecology & Resource Management Group in 2010-2011.

He currently (April 2012) works at the Centre for Sustainable Development (Ghent University) and at the Forest Ecology and Management Research Group of Leuven University (KULeuven).

Parts of this thesis have been published,

in international peer-reviewed journals:

- Hugé, J., Waas, T., Eggermont, G. & Verbruggen, A. 2011. Impact Assessment for a Sustainable Energy Future – reflections and practical experience. *Energy Policy* 39: 6243-6253. <http://www.sciencedirect.com/science/article/pii/S0301421511005477>
- Waas, T., Hugé, J., Wright, T. & Verbruggen, A. 2011. Sustainable development: a bird's eye perspective. *Sustainability* 3: 1637-1661. <http://www.mdpi.com/2071-1050/3/10/1637/>
- Hugé, J. & Waas, T. 2011. Converging Impact Assessment Discourses for Sustainable Development: the case of Flanders, Belgium. *Environment, Development and Sustainability* 13: 607-626. <http://www.springerlink.com/content/0817r60444268176/>
- Hugé, J., Hai, L.T., Hai, P.H., Kuilman, J. & Hens, L. 2010. Sustainability Indicators for Clean Development Mechanism projects in Vietnam. *Environment, Development and Sustainability* 12 (4): 561-573. <http://www.springerlink.com/content/r3343145823w1895/>
- Hugé, J. & Hens, L. 2009. Greening Poverty Reduction Strategy Papers: a process approach to sustainability assessment. *Impact Assessment and Project Appraisal* 27: 7-18. <http://www.ingentaconnect.com/content/beechn/iapa/2009/00000027/00000001/art00002>
- Hugé, J. & Hens, L. 2007. Sustainability Assessment of Poverty Reduction Strategy Papers. *Impact Assessment and Project Appraisal* 25: 247-258. <http://www.ingentaconnect.com/content/beechn/iapa/2007/00000025/00000004/art00001>

and as conference papers:

- Hugé, J., Van Opstal, M. & Waas, T. 2011. *Duurzaamheidsbeoordeling: reflecties over kennis, interpretatie en discours*. Paper presented at the seminar 'Over normativiteit, onzekerheid en complexiteit – reflecties bij duurzaamheidsonderzoek in Vlaanderen'. Universiteit Gent, 22 September 2011.
- Hugé, J., Waas, T., Eggermont, G. & Verbruggen, A. 2011. Impact Assessment for a Sustainable Energy Future – reflections and practical experience. Presentation given at the SKB Stockholm Spring Talks 'Societal Approaches to Nuclear Waste Management'. Stockholm, Sweden, 3 May 2011.
- Hugé, J. & Waas, T. 2010. Introducing Sustainability Assessment in a Crowded Institutional Landscape: the case of the Flemish Region of Belgium. EASY ECO Conference 'Sustainable Development Evaluations in Europe'. Université Libre de Bruxelles. Brussels, Belgium, 17-19 November 2010.

- Hugé, J. 2010. Achieving Synergy between competitiveness, good governance and sustainable development. Proceedings of the 16th Annual International Sustainable Development Research Conference. Hong Kong, China. 30 May - 1 June 2010.
- Hugé, J. 2009. Stakeholder Consultation in the Design of a Sustainability Assessment Framework for Flanders, Belgium. Proceedings of the 15th Annual International Sustainable Development Research Conference – Taking Up the Global Challenge. Utrecht, the Netherlands, July 2009.
- Hugé, J. & Hens, L. 2009. Idealism versus pragmatism in designing a customised sustainability assessment framework in Flanders, Belgium. Proceedings of the 29th Conference of the International Association of Impact Assessment. Accra, 16-22 May 2009.
- Hugé, J. & Hens, L. 2009. Greening the Benin Poverty Reduction Strategy: a process approach to sustainability. Proceedings of the 29th Conference of the International Association of Impact Assessment. Accra, 16-22 May 2009.
- Hugé, J. & Hens, L. 2008. Introducing Sustainability Assessment in Flanders, Belgium. Proceedings of the 2nd International Sustainability Conference, Basel, Switzerland.

ACKNOWLEDGEMENTS

Many people have contributed to this thesis by their comments, insights, critiques and encouragements.

Firstly I am grateful to my promoters: Nico Koedam, whose unlimited intellectual curiosity and pertinent comments greatly motivated me to delve deeper into what sustainability means; and Farid Dahdouh-Guebas, for his insights into sustainability science and systems thinking. They both welcomed me in their respective research departments at VUB and ULB and their views have undoubtedly enriched this work. I also want to thank Luc Hens, who gave me the opportunity to engage in academic research at the very start of this research journey.

I explicitly want to thank Gilbert Eggermont and Ann Van Herzele. Without all these constructive discussions we shared and without their pertinent feedback, I would not have discovered the many subtleties of respectively energy policy and discourse analysis. The stimulating atmosphere of exchange they created was highly motivating.

This work also benefited from the cross-fertilization between academic research and policy-making, and I want to express my gratitude to all the people who contributed to my understanding of the dynamics of sustainability assessment at some point in this research endeavour. These include the members of project steering groups, interviewees, policy-makers and fellow researchers in Belgium and abroad. A randomly ordered non-exhaustive list of people I would like to thank: Aviel Verbruggen, Arnold Jacques de Dixmude, Jan De Mulder, Frederik Vanlaere, Peter Van Humbeeck, Anne Van Lancker, Melissa Ceuterick, Emmanuel Boon, Marianne Fernagut, Dimitri Devuyst, Le Trinh Hai, Ludwig Triest, Maarten Van Opstal, Fre Maes, Bruno Verbist, Antoaneta Letsoalo.

International conferences and contacts, especially at the International Association for Impact Assessment, provided a great source of inspiration and exchange. Special thanks to Michal Sedlacko, Jenny Pope, Jean-Philippe Waaub, Tarah Wright and Joseph Yeboah. Furthermore the comments of anonymous reviewers were particularly helpful in enhancing the quality of my publications, as were the constructive critiques from the jury members.

The Flemish Government and the Flemish Inter-University Council (VLIR-UOS) funded most of the work in the frame of the *Steunpunt Duurzame Ontwikkeling*, BVO and KLIMOS projects. These projects, together with the SEPIA project funded by the Belgian Science Policy, and the highly appreciated support of the *Fondation Van Buuren* provided me the opportunity to study sustainability assessment in various contexts for many years.

This work would not have been completed without the lively discussions and fruitful academic collaboration with my ‘PhD-fellow’ and friend Tom Waas, with whom I shared thoughts, inspiration and occasional frustrations in Belgium and abroad.

I want to thank my colleagues at the Biology, Systems Ecology and Human Ecology Departments, as well as all my friends who occasionally –or regularly- have heard me mentioning my PhD project during the last few years and with whom I could discuss sustainability issues in non-academic settings.

Finally I want to thank my wife Sien, my daughter Anaïs, my parents Lucille and Albert and my brother Simon for their prudent yet regular enquiries about the progress of my thesis and for their enduring support and comprehension.

Ghent, April 2012

ABSTRACT (E)

Sustainable development is a ubiquitously used concept referring to a vision of society centred on the principles of global responsibility, integration, inter- and intra-generational equity, precaution, participation and a long-term time horizon. It is a contested concept that regroups various sub-discourses, which embody its constructive ambiguity. For sustainable development to become a decision-guiding strategy in public decision-making, adequate decision-supporting processes are required. This thesis reflects on the theory and on the practice of 'sustainability assessment' in various contexts by combining discourse analysis with a case-study approach.

The thesis builds on three case studies undertaken in different –institutional, geographical, thematic and research- contexts. The three cases (situated respectively in the realm of sub-national policies; development co-operation and energy policy) allow for different approaches to sustainability assessment to be applied and analyzed. The relative novelty of sustainability assessment created room for experimental participatory approaches and provided opportunities for combining various research methods. Understanding how sustainability assessment contributes to a shared interpretation of sustainability, to an enhanced structuring of information and to influencing policy decisions is key to develop and apply the approach in the future. A series of conclusions emerge from our research:

Sustainability assessment should be a forum for the interpretation of sustainable development in a particular context while respecting key sustainability principles. Sustainability assessment can have various other functions in the decision-making process, ranging from information generation to structuring complexity and fostering shifts in discourse and institutions. Notwithstanding this variety of functions, characteristics of an ideal-typical sustainability assessment can be identified: it should have a holistic perspective, foster sustainability objectives, it should be performed through a sustainable process and procedure and it should contribute to support decision-making.

Analyzing the practice of sustainability assessment by way of a discourse-analysis approach allows to identify which factors shape sustainability assessment in various contexts and to identify its indirect policy influence, such as policy-relevant learning. However sustainability assessment is mostly only a modest contributor to policy as it is embedded into a broader discursive-institutional framework. Similarly the focus on participation can yield interesting examples of participatory 'science for sustainable development' yet the organization and the success of participation in sustainability assessment should be considered critically. Keeping the limitations of sustainability assessment in mind, the case studies indicate that it can and should be a depolarizing process bringing the co-production of knowledge and decisions into practice. It requires scientists to play their role as honest brokers of policy alternatives by clarifying the scope of choice for decision-makers while at the same time warning for overstretched interpretations of the dynamic sustainability concept. This challenge demands a general critical stance towards sustainable development discourse and institutions as well as case-specific applied knowledge. This thesis aims to contribute to this endeavour.

RESUME (F)

Le développement durable est un concept populaire qui reflète une vision de société centrée sur les principes de la responsabilité globale, l'intégration, l'équité intra- et intergénérationnelle, la précaution, la participation et le long terme. Il s'agit d'un terme contesté englobant plusieurs discours, qui constituent son ambiguïté constructive. Afin d'ancrer le développement durable comme stratégie d'aide à la prise de décision dans les politiques publiques il est impératif d'appliquer des processus qui permettent de réaliser cet objectif. Cette thèse combine l'analyse de discours avec une approche d'études de cas afin d'analyser la théorie et la pratique de l'évaluation des incidences pour le développement durable (EIDD) ou *sustainability assessment*.

Trois études de cas furent effectuées dans de différents contextes institutionnels, géographiques, thématiques et de recherche. Les trois cas (respectivement situés dans le domaine de la politique sub-nationale, de la coopération au développement et des politiques énergétiques) ont permis d'appliquer et d'analyser plusieurs approches d'évaluation des incidences pour le développement durable. L'émergence relativement récente de l'évaluation des incidences pour le développement durable crée un espace pour des approches participatives expérimentales et permet l'application de différentes méthodes de recherche. Il est important de comprendre comment l'EIDD contribue à une interprétation partagée du développement durable, à une meilleure structuration de l'information et à influencer les décisions de politique publique, afin d'améliorer les futures applications de l'EIDD.

Les résultats de nos recherches sont résumés ci-dessous.

L'EIDD est un forum pour l'interprétation du développement durable dans un contexte particulier, tout en respectant les principes clefs du développement durable. L'EIDD peut avoir plusieurs autres fonctions dans le processus de prise de décision allant de la création d'informations, de la structuration de la complexité et de la remise en compte de discours existants jusqu'à des réformes institutionnelles. Néanmoins des caractéristiques génériques d'une EIDD 'idéale' sont proposés: une perspective holistique ; l'appui à la réalisation d'objectifs de développement durable ; l'importance d'un processus et de procédures durables et l'appui à la prise de décision.

L'étude des pratiques d'EIDD par le biais d'une analyse de discours permet d'identifier les facteurs façonnant ces évaluations dans des contextes différents, et d'identifier leur influence indirecte tels les effets d'apprentissage des acteurs concernés.

Toutefois l'EIDD n'apporte généralement qu'une modeste contribution au développement des politiques publiques car l'exercice est incorporé dans un paysage institutionnel et discursif plus large. La participation du public est au centre de la pratique de l'EIDD et donne lieu à des expériences intéressantes de co-production de savoirs, mais l'organisation imparfaite et le succès inégal des exercices participatifs d'EIDD doivent être considérés d'un oeil critique. Tout en gardant à l'esprit les limites de l'EIDD, les études de cas démontrent que ce peut et doit être un processus de dépoliarisation qui a le potentiel de mettre en pratique la science et la gouvernance pour le développement durable. L'EIDD exige des scientifiques de jouer leur rôle de médiateurs en clarifiant et en élargissant les choix qui s'offrent aux preneurs de décisions. Dans le même temps il est indispensable de mettre en garde les preneurs de décisions quant à l'interprétation trop large et potentiellement abusive du concept dynamique qu'est le développement durable.

Ceci demande une attitude critique vis-à-vis du discours et des institutions du développement durable ainsi qu'une connaissance appliquée de cas spécifiques. Cette thèse vise à relever ce défi.

SAMENVATTING (NL)

Duurzame ontwikkeling is een veelgebruikt concept dat steunt op de principes van globale verantwoordelijkheid, inter- en intragenerationele billijkheid, integratie, voorzorg, participatie en een lange termijn-tijdshorizon. Het is een betwiste term die verschillende sub-discours groepeert en gekenmerkt wordt door constructieve ambiguïteit. Om duurzame ontwikkeling als beslissingsstrategie in openbaar beleid te verankeren is er nood aan beslissingsondersteunende processen die deze vertaalslag kunnen bewerkstellingen. Deze thesis combineert een discours-analytisch perspectief met een case-study benadering om de theorie en de praktijk van impactanalyse voor duurzame ontwikkeling (*sustainability assessment*) te onderzoeken.

Er werden drie case studies uitgevoerd, in een verschillende institutionele, geografische, thematische en onderzoekscontext. De drie cases (die respectievelijk gesitueerd zijn in subnationaal beleid; ontwikkelingssamenwerking en energiebeleid) laten toe om verschillende benaderingen van impactanalyse voor duurzame ontwikkeling toe te passen en te analyseren. De vrij recente opkomst van impactanalyse voor duurzame ontwikkeling creëert ruimte voor experimentele benaderingen en laat toe om verschillende onderzoeksmethodes te gebruiken. Een beter begrip van de wijze waarop impactanalyse voor duurzame ontwikkeling bijdraagt tot een gedeelde interpretatie van duurzame ontwikkeling, tot het structureren van informatie en tot uiteindelijke beleidsbeïnvloeding, is van belang voor toekomstige ontwikkeling en toepassing. De bevindingen van ons onderzoek worden hieronder kort weergegeven.

Impactanalyse voor duurzame ontwikkeling is een forum waar de interpretatie van duurzame ontwikkeling in een specifieke context vorm krijgt, terwijl algemene duurzaamheidsprincipes worden gerespecteerd. Impactanalyse voor duurzame ontwikkeling kan een aantal andere functies hebben in het beleidsproces, gaande van het genereren van nieuwe informatie tot het structureren van complexiteit en het aanmoedigen van veranderingen in discours en instituties. Ondanks deze verscheidenheid aan functies beantwoordt een ideal-typische impactanalyse voor duurzame ontwikkeling aan bepaalde generieke kenmerken: het draagt een holistisch perspectief uit; het bevordert de realisatie van duurzame ontwikkelingsdoelstellingen; het heeft aandacht voor duurzaamheid in process en procedure en het ondersteunt beleidsbeslissingen. De studie van de praktijk van impactanalyse voor duurzame ontwikkeling via een discours-benadering laat toe factoren te identificeren die impactanalyse voor duurzame ontwikkeling vormgeven in verschillende contexten, en maakt het mogelijk om de indirecte invloed van impactanalyse (zoals leereffecten) te analyseren. Toch levert impactanalyse voor duurzame ontwikkeling vaak slechts een bescheiden bijdrage aan beleidsvorming, aangezien het deel uitmaakt van een breder discursief en institutioneel kader. De participatieve benadering van impactanalyse voor duurzame ontwikkeling levert interessante voorbeelden op van 'wetenschap voor duurzame ontwikkeling' in de praktijk, maar de moeilijke organisatie en het ongelijke success van die participatieve oefeningen duiden op het belang van een kritische kijk. Ondanks de beperkingen van impactanalyse voor duurzame ontwikkeling tonen de case studies aan dat het een depolariserend proces kan zijn dat de co-productie van kennis en beleidsbeslissingen in de praktijk brengt. Wetenschappers dienen hun rol van facilitatoren te spelen door de waaier aan keuzemogelijkheden voor beleidsmakers te verduidelijken, maar ze dienen tegelijk te waarschuwen voor mogelijks te brede en triviale interpretaties van het dynamische duurzaamheidsconcept. Deze uitdaging vergt een kritische blik op het discours en de instituties van duurzame ontwikkeling. Deze thesis wenst hiertoe bij te dragen.

LIST OF ACRONYMS

ABE	Agence Béninoise pour l'Environnement
BFPB	Belgian Federal Planning Bureau
CBD	Convention on Biological Diversity
CDM	Clean Development Mechanism
DAC	Development Assistance Committee
DFID	Department for International Development (United Kingdom)
DGD	Directorate-General Development (Belgium)
EC	European Commission
ECI	Earth Charter Initiative
EIA	Environmental Impact Assessment
EU	European Union
EU SDS	European Union Sustainable Development Strategy
FAO	Food and Agriculture Organization of the United Nations
FSPS	Flemish Spatial Planning Strategy
GHG	Greenhouse Gas
HIA	Health Impact Assessment
IA	Impact Assessment
IA-FG	Impact Assessment Focus Group
IAIA	International Association for Impact Assessment
IFI	international financial institutions
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
ISA	Integrated Sustainability Assessment
ISDRS	International Sustainable Development Research Society
IUCN	International Union for Conservation of Nature
KLIMOS	Research Platform on Climate Change and Development Cooperation
LDC	Least Developed Country
MDG	Millennium Development Goal
MEA	Millennium Ecosystem Assessment
MTEF	Medium Term Expenditure Framework
NAPA	National Adaptation Programme of Action
NGOs	non-governmental organization
NIRAS	Belgian Institute for Radioactive Waste and Fissile Materials
OECD	Organization for Economic Cooperation and Development
PARPA	Mozambique Poverty Reduction Strategy
PEI	Poverty Environment Initiative
PPA	Participatory Poverty Assessment
PRS	Poverty Reduction Strategy
PRSP	Poverty Reduction Strategy Paper
RA	Risk Assessment
RIA	Regulatory Impact Assessment
SA	sustainability assessment
SD	sustainable development
SEA	Strategic Environmental Assessment
SEPIA	Sustainable Energy Policy – Integrated Assessment (research project)
SET	European Strategic Energy Technology Plan
SIA	Sustainability Impact Assessment
TEEB	The Economics of Ecosystems & Biodiversity
UNCED	United Nations Conference on Environment and Development (Rio, 1992)

UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
VLIR-UOS	Vlaamse Inter-Universitaire Raad - Universitaire Ontwikkelingssamenwerking
WCED	World Commission on Environment and Development
WRI	World Resources Institute
WSSD	World Summit on Sustainable Development (Johannesburg, 2002)
WWF	World Wide Fund for Nature

GLOSSARY

Delphi approach: method for structuring a group communication so that the process is effective in allowing a group of individuals as a whole to deal with a complex problem. It consists of an iterative, anonymous survey of experts.

Discourse: a specific ensemble of ideas, concepts and categorizations that are produced, reproduced and transformed in a particular set of practices and through which meaning is given to physical and social realities.

Environmental Impact Assessment (EIA): the systematic process of analysing the environmental (and sometimes broader sustainability) effects of projects.

Focus Group: planned discussion about a defined topic among a small group of people, facilitated by a moderator. It is designed to obtain information about people's preferences and values and why these are held.

Governance: the sum of many ways in which individuals and institutions, both private and public, manage their common affairs.

Least Developed Countries (LDC): low-income countries suffering from long-term handicaps to growth, in particular low levels of human resource development and/or severe structural weaknesses.

Impact assessment: the process of identifying the future consequences of a current or proposed action. The 'impact' is the difference between what would happen with the action and what would happen without it

Participation: any form of interaction between the government and non-state actors in a decision-making context.

Poverty Reduction Strategy Paper' (PRSP): strategy describing the macro-economic, structural and social policies and programmes that a country will pursue over several years to promote broad-based growth and to reduce poverty, as well as external financing needs and the associated sources of financing

Radioactive waste: waste containing ionizing radiation.

Regulatory Impact Assessment: decision-support process that mainly aims to assess the impacts of decisions on competitiveness and administrative burden, focusing on businesses and government as target groups.

Strategic Environmental Assessment (SEA): the systematic process of analysing the environmental effects of policies, plans and programmes in order to integrate environmental considerations into policy-making and planning

Sustainable development: a discourse and a decision-guiding strategy centred on the principles of global responsibility, integration, intra- and inter-generational equity, precaution, participation and on a long-term time horizon.

Sustainability assessment: a series of stepwise processes aimed at operationalizing sustainable development as a decision-guiding strategy, through the identification of the future consequences of current and planned actions.

Sustainability indicator: an operational representation of an attribute that defines the sustainability of a system, by way of a variable related to a reference value.

CHAPTER 1: INTRODUCTION

Section 1.1 Positioning the research

Sustainable development is perhaps one of the most ubiquitously used concepts in public decision-making as it refers in its broadest sense, to an ideal vision of global society where human development and environmental quality go hand in hand. Logically any decision-supporting process aiming at facilitating and steering humanity's journey toward a sustainable future will then seem desirable. Assessing the sustainability of policy decisions then becomes a reflection of 'common sense'. In reality things tend to be a lot more complex, as sustainable development is just one of the big ideas influencing society and as any other big idea, its pertinence depends on what it is believed to entail. Reflecting, developing and applying 'sustainability assessment' are actions that all depend on what sustainability 'actually means' in a given context.

This thesis reflects on the theory and on the practice of sustainability assessment approaches in various contexts. It aims to contribute to the theory building on sustainability assessment as well as to provide suggestions of how its practical application can be improved. The thesis builds on three case studies, undertaken in different –institutional, geographical, thematic and research- contexts. This work is rooted in real-life policy-making processes, mainly in Belgium and in Benin, yet the relative novelty of sustainability assessment in these two countries created room for open, experimental approaches and reflections thereby providing opportunities for policy-relevant learning. Learning involves increased understanding, and policy-relevant learning entails understanding why a particular institutional arrangement had the observed effect in a particular context. Understanding how context influences the theory and practice of sustainability assessment is at the centre of this work. We will use a discourse analysis 'lens' combined with a focus on institutions in order to understand sustainability assessment.

At the start of this research journey it is key to note that working on this thesis has been a learning journey for me too, as it allowed me to delve deeper into the core of sustainable development as a decision-guiding strategy. This thesis benefited from daily contact with policy-makers, both formally –through the projects' steering committees, through surveys and interviews and through long-term and *ad hoc* policy support- and informally. In order to suggest policy recommendations based on a detailed analysis, I immersed myself in the reality of policy-making and its many influencing factors and processes, with a focus on sustainability assessment. It is my hope that this approach combined with the inherent academic 'distance' yields a balanced view on the theory and practice of sustainability assessment.

The research journey that ultimately led to this thesis started in 2006 as the Belgian Development Co-operation (DGD) wanted to assess the sustainability of the Poverty Reduction Strategies of its Southern partner countries in order to use this information in its continuous policy dialogue with these countries. During the two-year research on the integration of sustainability issues at the strategic level of development co-operation policy dialogues, I had the chance to participate in the OECD's Development Assistance Committee Task Team on Strategic Environmental Assessment; and to interview actors involved in the 'greening' of the Benin Poverty Reduction Strategy. From 2009 on, the KLIMOS Research Platform on Climate Change and Development Co-operation allowed me to act and reflect further on sustainability assessment in a North-South context.

The research project I worked on in the Flemish Policy Research Centre for Sustainable Development (*Steunpunt Duurzame Ontwikkeling*) was a great opportunity to analyse the potential of sustainability assessment in Belgium's northern region. Within this project, I was asked to develop guidance on the development of a future sustainability assessment scheme for policy proposals, which at the time of writing (December 2011) seems to be gradually taken up by government

officials. This research generated new insights as well as stimulating debates with fellow researchers and officials. The third research project whose results fed into this thesis is the SEPIA (Sustainable Energy Policy Integrated Assessment) project, focussing on the role of ‘integrated’ assessment in fostering sustainable energy policies.

During my thesis years I had the chance to share my findings with an international audience and to bring back a lot of new ideas, mainly through my involvement in the International Association for Impact Assessment (IAIA) and in the International Sustainable Development Research Society (ISDRS). This involvement with international experts on assessment and sustainable development contributed to a maturing of my ideas on sustainability assessment.

Section 1.2 Structure of the thesis

While this introductory chapter sets the stage of the research endeavour, Chapter 2 explores the concept of sustainable development. Sustainable development –which is at the heart of any (analysis of) sustainability assessment- is not viewed as a ‘given concept’ but instead is viewed as a continuous collective confrontation of various interpretations (Andersson, 2008). This confrontation of views informs the research on the practice of sustainability assessment. Using sustainable development as a decision-making strategy requires knowledge as well as governance structures to allow that knowledge to feed into the decision-making process. Sustainability assessment can be viewed as a process aiming to organize the fruitful interplay between the intellectual capital (knowledge) and the institutional capital (governance) of sustainable development so as to turn the concept into a practical decision-making strategy.

As reflected in Figure 1.1 the overall objective of the thesis is to analyse sustainability assessment as a ‘bridge’ between the concept of sustainable development and the reality of public decision-making.

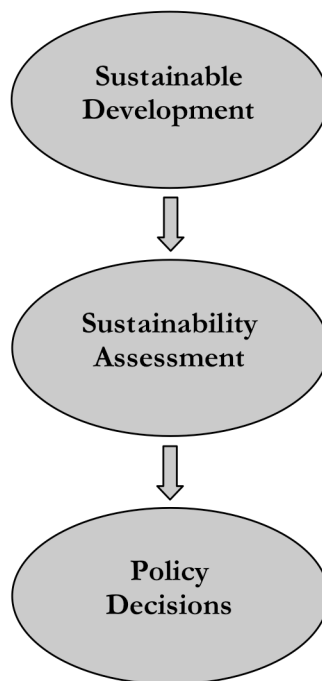


Figure 1.1: Schematic representation of sustainability assessment as a means to turn sustainable development into a decision-making strategy

Although Figure 1.1 might suggest a simple relationship, this thesis' approach focuses on the reality of sustainability assessment exercises through the analysis of a number of cases. Hence contextual elements are key in understanding how sustainability assessment 'works' in practice. Context can be broadly defined as the circumstances in which a sustainability assessment is performed. It refers to a range of factors that give meaning to and shape sustainability assessment. Context may refer to the characteristics of sustainability challenges (complexity, uncertainty, value-laden perspectives) and to the institutional and cultural environment in which a sustainability assessment is performed.

Through the use of discourse analysis this thesis aims to shed light on the importance of context for sustainability assessment. Analysing discourses –at this stage broadly understood as ways of seeing and talking about something- recognizes that sustainability assessment cannot be grasped outside its context, and that its function and meaning are intrinsically dynamic. Chapter 3 outlines the research questions, while Chapter 4 introduces the discursive-institutional approach.

Chapter 5 provides an overview of the concept of sustainability assessment including its characteristics, functions and approaches.

In order to understand the context-dependent practice of sustainability assessment Chapter 6 provides an analysis of three cases. We believe an analysis of sustainability assessment needs to build on practical experiences as the field is still developing and will benefit from a 'learning by doing' approach. This case study approach allows us to perform exploratory research in various contexts (with regard to issues, location, participants, institutions...), which will subsequently allow the emergence of key issues as well as enhance the understanding of the theory and practice of sustainability assessment. The cases are situated in Flanders, Belgium; in the field of development co-operation (through a case in Benin) and in the energy sector.

Chapter 7 reflects on the lessons learned in the analyzed cases (Chapter 6) and links these to the reflections of Chapters 2-5. Indicative recommendations are provided. A reflection on the future of sustainability assessment and sustainable development concludes this thesis.

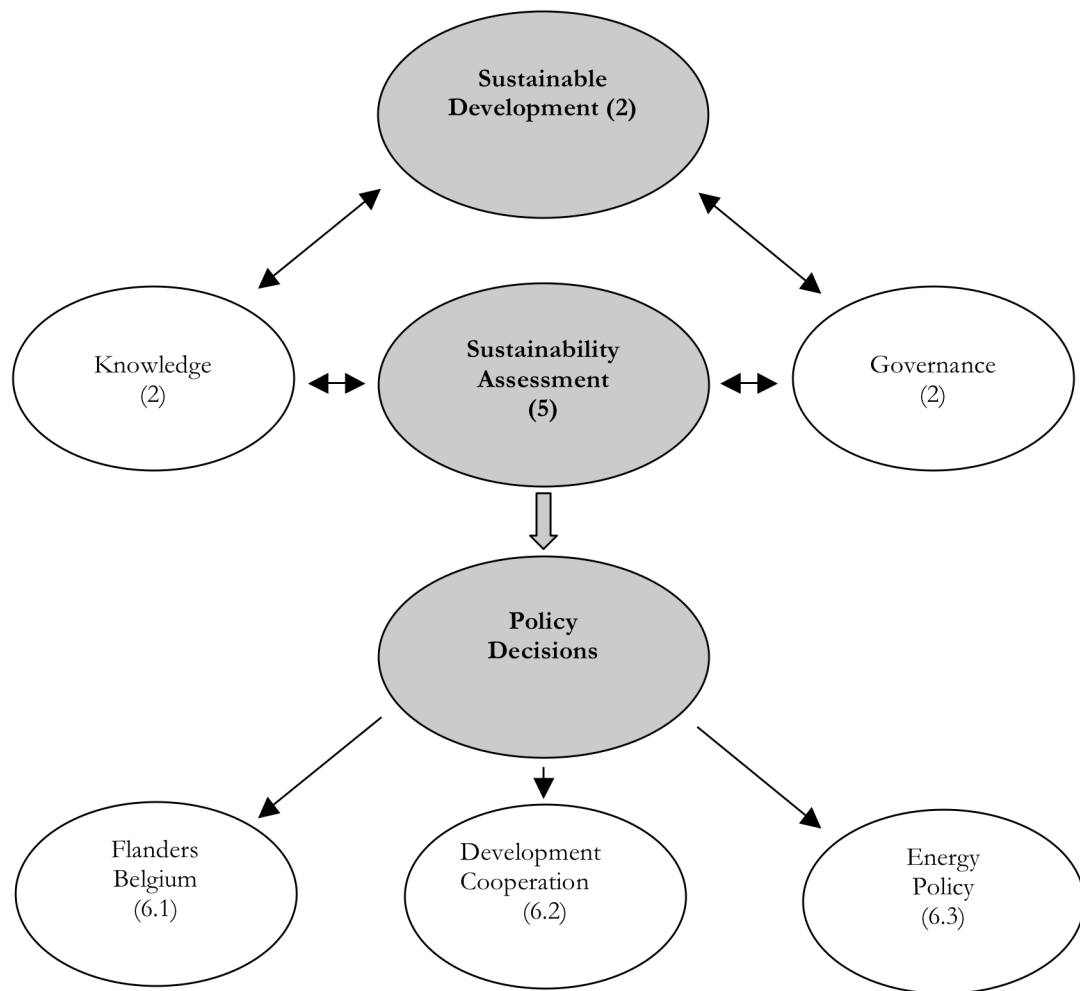


Figure 1.2: Schematic representation of the structure of the thesis. Each number stands for a respective chapter/section

CHAPTER 2: SUSTAINABLE DEVELOPMENT, KNOWLEDGE & GOVERNANCE

Section 2.1 Sustainable development: an introduction

Almost 25 years after the publication of ‘Our Common Future’ (WCED, 1987) the concept of sustainable development has become an overarching policy goal and has been presented as an action-guiding principle for decision-makers all over the world. Sustainable development is presented as an answer to the anthropogenic environmental problems that threaten the integrity of the planetary system, including current and future human livelihoods and wellbeing in its multiple dimensions: basic material for a good life, freedom and choice, health, good social relations and security (Chopra *et al.*, 2005). The concerns about these human-induced pressure are echoed in prominent international reports, such as the Global Environmental Outlook 4 (UNEP, 2007), the Millennium Ecosystem Assessment (MEA) (Chopra *et al.*, 2005) and the reports of the Intergovernmental Panel on Climate Change (*e.g.* IPCC, 2007).

Sustainable development is both an appealing and bewildering concept as there seem to exist a great number of different interpretations. The content of the founding documents of the modern (re-)emergence of sustainable development (*e.g.* WCED, 1987) represent a compromise that legitimizes different interpretations of sustainability (Söderbaum, 2007).

Although nobody seems to doubt that striving for sustainability is a good thing, there is no agreement on what it entails, let alone what concrete actions it demands. Huppes & Ishikawa (2007) see two causes for this: the multiplicity of goals and issues embodied in sustainable development and the limited insight into empirical relations between these issues. The plurality of perceptions of sustainable development is a logical consequence of its intentionally open-ended definition in *e.g.* ‘Our Common Future’ (WCED, 1987) and although the concept’s interpretation remains inherently controversial, the fact that current development paths are unsustainable and that urgent action is needed is increasingly recognised (Harding, 2006). Somewhat paradoxically there is an agreement that current development paths need to be changed to become sustainable, yet this dynamic and ever-changing sustainability goal encompasses many –often unclear and inarticulate– interpretations. In other words: the socio-ecological crisis is a reality yet the meaning of the concept to respond to the crisis remains contested. This is not necessarily bad news.

The array of sustainability interpretations reflects particular worldviews. When these particular perceptions are shared amongst a group of people and/or organisations, a series of ‘discourses’ emerges. Although we are well aware that sustainable development as such is seen by some as one environmentalist discourse amongst others (*e.g.* by Dryzek, 2005) we will delve deeper into the different discourses embodied *within* the sustainable development ‘meta-discourse’.

Sustainable development is thus characterised by ‘constructive ambiguity’ (Robinson, 2004; Sneddon *et al.*, 2006). It gathers many societal stakeholders behind the same broad objective(s) yet many interpretations co-exist. Moreover any attempt to define the concept precisely and definitely would exclude those whose views and interests are not expressed in the definition, undermining the constructive ambiguity itself (Robinson, 2004). Sustainable development’s ‘nebulousness’ is characteristic for young paradigms and although it seems to be a prerequisite for wide identification and distribution, it also carries a risk of terminological misuse (Bosshard, 2000).

At the start of this thesis it is a key premise to realize that sustainable development is a normative concept. Yet we still need to know what we are talking about, so this introduction provides a bird’s eye-view on topical issues related to the interpretation of sustainable development and proposes a ‘working interpretation’ of sustainable development in the framework of this thesis.

The roots of the concept and its various interpretations/perspectives will be introduced, and a categorization will be proposed. The section concludes with a reflection on the interpretational limits of sustainable development and a clarification of the concept within the frame of this thesis. A section on knowledge for sustainable development will be followed by an exploration of the issue of governance, which will then be the step stone to the next chapter. Throughout this work the terms 'sustainable development' and 'sustainability' will be used interchangeably despite the fact that a minority of scholars makes a distinction in meaning between them (Dresner, 2008). In that case 'sustainable development' is primarily about development and economic growth, whereas 'sustainability' gives priority to environmental protection (Dresner, 2008).

2.1.1 History and milestones of sustainable development

The roots of the problems, ideas and practices that we currently classify under the sustainability umbrella can be traced back thousands of years ago. The search for a balance between the demand for raw materials for food, clothing, shelter, energy and environmental limits is a constant concern throughout human history (van Zon, 2002; Ponting, 2007). Ancient Egyptian, Mesopotamian, Greek and Roman civilizations faced anthropogenic environmental problems, such as deforestation, accretion, lead pollution, salinity intrusion and loss of soil fertility. Several ancient philosophers such as Plato (5th century BC) and Aristotle (4th century BC) in Ancient Greek, Strabo (1st century BC) and Pliny the Elder (1st century AD) in Ancient Roman times, were not only aware of these problems but also recommended sustainable practices (van Zon, 2002; Du Pisani, 2006). The 'modern' idea of sustainable development / sustainability emerged (or re-emerged) gradually since the 1950s onwards. Soon after World War II industrial and commercial expansion paved the way for renewed optimism about the prospects of rising living standards worldwide. However it was during this period of unprecedented economic and demographic growth, coupled with widespread scientific innovations, that the global environmental crisis started looming larger on the horizon. (Parts of) Society became gradually aware of the environmental damage and the possible threats to human wellbeing. Some people started to *'change their basic views and assumptions about economic growth and development'* (Du Pisani, 2006). Expressions of an increased environmental concern include influential publications such as 'Silent Spring' (Carson, 1962), 'The Tragedy of the Commons' (Hardin, 1968), 'The Population Bomb' (Ehrlich, 1968), 'The Limits to Growth' (Meadows *et al.*, 1972), and 'Only One Earth' (Ward & Dubos, 1972). While increased environmental concerns led to the emergence of the modern sustainable development idea, the concept's resurgence should still be considered within a historical perspective. Zaccai (2002) warns not to overestimate the concept's originality and newness. Sustainable development grew out of the melting pot of different ideas about progress, environmental protection, economic growth and development which have developed over many years (Du Pisani, 2006).

In less than fifty years sustainable development grew from an alternative view on development towards a broadly acknowledged –yet debated and contested– and formally politically endorsed concept. Before turning to a deeper reflection on the conceptual roots of sustainable development, internationally endorsed milestones that dotted the modern re-emergence of sustainable development are presented here. Milestones in the renewed and explicit interest for sustainable development include the United Nations Conference on the Human Environment (1972), the World Conservation Strategy (1980), Our Common Future (WCED, 1987), the United Nations Conference on Environment and Development (1992) in Rio de Janeiro, the United Nations Millennium Summit (2000), the Earth Charter (2000), and the United Nations World Summit on Sustainable Development in Johannesburg (2002). While this selection is generally recognized as illustrative, it is not meant to be exhaustive (for an overview, see Quental *et al.*, 2011). Hens and Nath (2005) for instance, include both the 2001 Doha Declaration, which kicked off the ongoing negotiation round of the World Trade Organization; and the 2002 Monterrey Conference on Financing for Development in their overview of milestones for sustainable development. More recently, influential

reports such as the Millennium Ecosystem Assessment (Chopra *et al.*, 2005), the Stern Review (Stern, 2007), the work of the Intergovernmental Panel on Climate Change (IPCC, 2007) and the Report on The Economics of Ecosystems and Biodiversity (TEEB, 2008) all strongly reflected the sustainability agenda –although w.r.t. to the last reference Yung (2004) warns that the economic valuation of ecosystem services should be interpreted with caution.

However we chose to limit the discussed international milestones to the events and declarations that were explicitly focusing on sustainable development, although we recognize that sustainable development's inherent multidimensional nature may warrant many *de facto* linkages with other relevant international forums and events.

The United Nations Conference on the Human Environment was held in Stockholm in 1972. The conference put the environment on the international political agenda for the first time and recognized environmental issues as a critical development concern (Dresner, 2008). The conference adopted the Stockholm Declaration, which consists of 26 principles on the preservation and enhancement of the human environment and in addition produced 109 recommendations for action. The conference led to the establishment of the United Nations Environment Programme (UNEP).

The origins of the World Conservation Strategy – Living Resource Conservation for Sustainable Development (IUCN *et al.*, 1980), are rooted in an international partnership between the World Conservation Union (IUCN), UNEP, the World Wide Fund for Nature (WWF), the Food and Agricultural Organization of the United Nations (FAO) and the United Nations Educational, Scientific and Cultural Organization (UNESCO). The objective of the World Conservation Strategy was the integration of environmental protection with socio-economic development. It deals primarily with the environment as it aims at achieving sustainable development through the conservation of living resources (maintaining ecological processes and life-support systems, preserving genetic biodiversity and ensuring the sustainable utilization of species and ecosystems).

The famous report 'Our Common Future' (WCED, 1987) was published by the World Commission on Environment and Development (WCED), established in 1983 by the United Nations General Assembly and chaired by the former Norwegian Prime Minister Gro Harlem Brundtland, after whom the report is often called. The WCED was commissioned to formulate a 'global agenda for change' (WCED, 1987). 'Our Common Future' serves as a vital milestone in the current sustainable development debate for at least four reasons: 1) its famous mission statement, balancing the fulfilment of current human needs with the needs of future generations, is the trigger of the bulk of sustainability initiatives worldwide; 2) it established sustainable development as a substantial component of international development thinking and practice, 3) it initiated an explosion of work on the theme (Sneddon *et al.*, 2006) and 4) it represents the worldwide breakthrough and popularization of the sustainability concept (Waas *et al.*, 2011).

Picking up ideas from previous milestones, the report might be less intellectually innovative but it is remarkably so politically (Dresner, 2008). 'Our Common Future' succeeded to build a worldwide political partnership for sustainable development and provided the concept with a plausible content and legitimacy. Sustainable development was explicitly conceived as a bridging concept that could draw together apparently distinct policy domains, and unite often opposed views and interests of society's stakeholders behind a common agenda.

'Our Common Future' (WCED, 1987) paved the way for the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, in 1992. The conference represents the worldwide official political endorsement of sustainability as a new development model, through the adoption of AGENDA 21 and the Rio Declaration. The UNCED also approved the Statement on Forest Principles, the Convention on Biological Diversity (CBD) and the United Nations Framework Convention on Climate Change (UNFCCC). Ever since, AGENDA 21 remains the global plan of action for sustainable development and contains 40 'programme areas' outlined in

four broad action fields: social economic objectives, conservation and management of resources for development, strengthening the role of major groups and means of implementation. Although AGENDA 21 has lost some of its momentum at the time of writing, the contents and ideas that it carries are still as relevant as they were in 1992. Local Agenda 21 emphasises the key role of local authorities to implement sustainable development policies and this concept is still quoted regularly in the literature (Barrutia *et al.*, 2007). The UNCED's Rio Declaration consists of 27 sustainability principles, which should guide the societal transition towards sustainability.

The Millennium Declaration was adopted by the United Nations at the Millennium Summit in 2000. The Declaration reaffirms the support of the international community for AGENDA 21 and the Rio Declaration, and approves a set of guiding values for sustainable development. The declaration led directly to the formulation of the Millennium Development Goals (MDGs) – a series of time-bound targets, which should be achieved by 2015 to reduce extreme poverty and to meet the basic needs of the world's poorest (United Nations, 2010).

The *Earth Charter* was launched by the independent 'Earth Charter Commission' in 2000 after a decade-long, worldwide, cross-cultural dialogue on common goals and values, in which hundreds of organizations participated. The charter is a declaration of fundamental ethical principles for building a '*just, sustainable and peaceful global society in the 21st century*' (ECI, 2008). Originally the Earth Charter was a United Nations initiative, recommended by 'Our Common Future' (WCED, 1987). The report calls for a Universal Declaration and a Convention on Environmental Protection and Sustainable Development in the form of a new charter to "*consolidate and extend relevant legal principles [...]*", "*[...] guide state behaviour in the transition to sustainable development.*" and "*prescribe new norms [...] needed to maintain livelihoods and life on our shared planet [...]*" (WCED, 1987). Following this recommendation an Earth Charter was prepared for the UNCED but a political agreement could not be reached at the conference and instead the Rio Declaration was adopted. The Rio Declaration contains a valuable set of sustainability principles, but lacks an ethical vision that many people hoped to find in the Earth Charter (ECI, 2008). In 1994 a new Earth Charter initiative was launched, in this case as a global civil society initiative, which finally led to the establishment of an Earth Charter in 2000 which consists of sixteen sustainability principles (ECI, 2008). Nowadays the charter is looked after by the Earth Charter Initiative (ECI) and more than 4800 organizations signed it, including UNESCO, the International Union for the Conservation of Nature, local and national governments and ministries, NGOs, businesses, youth organizations and universities, and publicly supported by numerous heads of state (ECI, 2008).

The 2002 United Nations World Summit on Sustainable Development (WSSD) adopted the Johannesburg Declaration on Sustainable Development and the Johannesburg Plan of Implementation. The Declaration reaffirms –again– the international political commitment towards sustainable development, AGENDA 21 and the Rio Declaration and consists of 37 articles that outline the path taken from UNCED to the WSSD, highlights present challenges, expresses a commitment to sustainable development, underlines the importance of multilateralism, and emphasizes the need for action (Hens & Nath, 2005). Just as with the 1992 WCED, the 2002 WSSD led to a peak in political activity with regard to sustainable development, suggesting these Summits' major influence as catalysts of societal and political action (Quental *et al.*, 2011). For the sake of completeness, we mention the planned 'Rio+20 Summit' to be held in Brazil in 2012.

While these international milestones shaped and boosted the sustainable development debate, their final declarations and documents are consensual and do not always allow to trace back the conceptual roots of the modern sustainable development debate, nor do they necessarily make all relevant sustainable development discourses explicit. These so-called 'milestones' are actually the results of long-term processes of reflection. They reflect 'leading' values but they are also temporary, as they were all the results of a context-dependent consensus amongst nations and/or societal

stakeholders. Yet these milestones are important to anchor the debate: they indeed ‘ (...) represent the mainstream view of what sustainable development could reasonably be held to imply at the moment(s) when it was officially endorsed by the world nation states as a crucial objective of policy’ (Lafferty & Meadowcroft, 2000).

2.1.2 Perspectives on sustainable development: an analysis

The section proposes a simplified categorization of the shared perspectives or discourses that give body to the current understanding(s) of sustainable development. As the concept of sustainable development grew more popular, societal actors have endeavoured –with varying degrees of success– to include their views into ‘mainstream’ sustainability thinking, or to appropriate ‘the’ sustainability discourse to produce leading conceptions of sustainability. Hajer’s powerful image of sustainable development as ‘a stage in which an interpretive battle is to be fought’ (Hajer, 1995) illustrates the entangled influences embodied by the concept.

The roots of sustainable development cannot be retraced in an exact way, and the boundaries between the discourses presented in this section are not absolute. Indeed the modern re-emergence of the concept was not a centrally directed, clearly assignable process, yet some schools of thought and their respective discourses had and still have a key influence.

This critical categorisation of sustainable development discourses is based on a document analysis, which is an essential part of any discourse analysis (Hajer, 2006). Each discourse is analyzed through its constitutive elements (Dryzek, 2005):

- basic entities recognized or constructed;
- assumptions about natural relationships;
- agents and their motives;
- key metaphors and other rhetorical devices.

The documents are analysed through this lens, and summarized into synthetic coherent descriptions of the main discourses. As more than 3,000 papers are published in the field of sustainability annually (Kajikawa *et al.*, 2007), a fully exhaustive analysis is not possible.

The general approach to paper selection consisted of combining and confronting the perspectives of i. advocates of the different discourses discussed in section 2.1.2 and ii: the perspectives of scholars who provided a general overview –a bird’s eye view– of the conceptualization of sustainability (such as Cashmore, 2007; Du Pisani, 2006; Gibson, 2005; Harding, 2006; Hopwood *et al.*, 2005; Kidd, 1992; Lele, 1991; Qental *et al.*, 2011; Robinson, 2004; Sneddon *et al.*, 2006; Waas *et al.*, 2011).

We distinguish four ‘discourses’, or shared perspectives on sustainable development, whose boundaries are however not absolute:

- the first perspective views sustainable development as the integration of development and environmental goals;
- the second perspective emphasizes the idea of limitations on human activities;
- the third perspective emphasizes processes of change; and
- the fourth perspective interprets sustainable development as a philosophical and political consensus.

Sustainable development as the integration of developmental and environmental objectives

The first perspective on sustainable development focuses on the ‘integration of development and environmental goals’. It refers to the integration of environmental concerns in development thinking. It regroups various perspectives, ranging from mildly reformist views to emphasizing a shift in mindset for dominant ideologies such as *e.g.* (neo-liberal) capitalism. The idea of the integration of environment and society seems intuitively logical and at first sight, does not carry a skewed or biased connotation. Although immediately sparking questions with regard to applicability, it is a fairly

consensual approach to sustainable development. This perspective is central to the famous definition of the influential Brundtland Report 'Our Common Future': *'sustainable development is development that meets the needs of the present without compromising the abilities of future generations to meet their own needs'* (WCED, 1987). This often quoted sentence is actually the 'mission statement' of the Report, which points out that sustainable development contains two key concepts: the concept of 'needs', in particular the essential needs of the world's poor (= development), to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs (= environment) (WCED, 1987). Sustainability is thus seen as an overarching concept encompassing political, economic, social and cultural development. The dimensions of sustainable development are parallel, interdependent and mutually reinforcing processes aimed at raising the living standards and the wellbeing of all people (Mestrum, 2002). Hopwood *et al.* (2005) state that *'the concept of sustainable development is the result of the growing awareness of the global links between mounting environmental problems, socio-economic issues to do with poverty and inequality and concerns about a healthy future for humanity'*. In the same vein, Boulanger & Bréchet (2005) state that the interplay between environmental processes and human activity and the resulting possible conflicts are the main defining elements of sustainable development.

So sustainable development is above all centred on integration (Robinson, 2004): it aims at reconciling development and environmental objectives, views and interests of different stakeholders, and various temporal and spatial scales. The idea of the integration of development and environment has recently been 'translated' into a number of –mostly anthropocentric– frameworks such as the ecosystems services framework (Millennium Ecosystem Assessment, 2005) and the poverty-environment linkages (PEI, 2010), or the poverty-environment nexus (World Bank, 2005). The concept of 'ecosystem services' refers to the benefits that human society obtains from the environment (see Figure 2.1). Ecosystem services include supporting services, provisioning services, regulating services and cultural services. They influence human wellbeing in many ways including security, basic material for good life, health, good social relations and freedom of choice and action (Millennium Ecosystem Assessment, 2005). Besides their intrinsic value, the various ecosystem services should be preserved to meet human needs and aspirations. The value of the world's ecosystem services was estimated by Costanza *et al.* (1998) in a milestone publication.

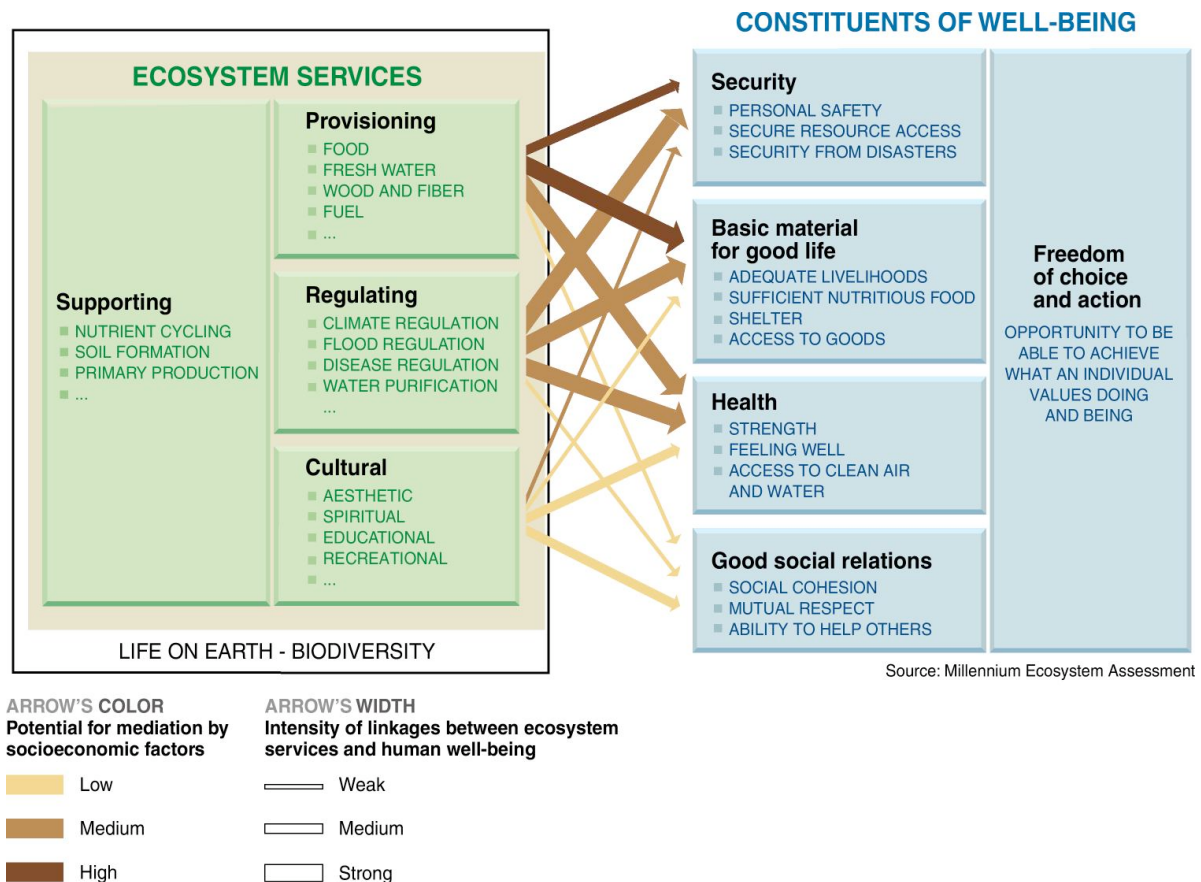


Figure 2.1: Ecosystem services and constituents of human wellbeing (Millennium Ecosystem Assessment, 2005)

All these frameworks are centred on the integration between the different dimensions of sustainable development: the human (including the economic, social, cultural and governance sub-dimensions) and the environmental dimension. Sustainable development is presented as a kind of ‘motherhood concept’ encompassing humanity’s major aspirations (Kemp & Martens, 2007). Many of the representations of sustainable development reflect its multidimensionality, based on the pragmatic split of the holistic concept of sustainability in environmental, social, economic and institutional ‘pillars’, which can also be visualised as forms of capital (Sedlako & Gjoksi, 2009) or assets (Hardi, 2007). Some authors (Mog, 2004; Verbruggen, 2008) consistently work with four pillars (with participation/governance being the fourth pillar (Verbruggen, 2008), or even culture (Nurse, 2006)), while others focus on three pillars - the environmental, social and economic pillars (Munasinghe, 1993). Basically the number of pillars reflects the number of key sustainability dimensions and essentially reflects emphasis (Gibson, 2000). Similarly, Hardi’s (2007) view of sustainability is related to the maintenance of capital assets: if humankind is able to manage the stocks of natural, human and social ‘capital’ so that they do not decline over time, then sustainability will be achieved. Within this pillars approach one can make a distinction between ‘weak’ sustainability, which allows substitutions between the different forms of capital and believes in technical solutions, and ‘strong’ sustainability (Dietz & Neumayer, 2007; Hardi, 2007), which states that every capital must be conserved. In other words, strong sustainability involves the simultaneous pursuit of ecological, economical and social goals and assumes behavioural and value changes and assumes no substitutability at all (Hardi, 2007; Lafferty & Meadowcroft, 2000). Of course in reality many situations are located between these two extreme ends. The concept of ‘critical natural capital’ emerged as a trade-off between both ends of the divide. It represents that part of the environment that performs important and irreplaceable (..)

environmental functions such as ecosystem services which cannot be substituted and should be conserved (Ekins *et al.*, 2003; Brand, 2009).

Although this interpretation of sustainability ranks amongst the most popular (as exemplified by the catchy ‘People-Planet-Profit’ slogan favoured by businesses and governments alike) some authors strongly criticise it, as that ‘triple bottom line’ approach emphasises competing interests rather than linkages and interdependencies, making the task of integration very difficult and promoting trade offs, often at the expense of the environment (Pope *et al.*, 2004). Gibson *et al.* (2005) add that the three pillars ‘*reflect more or less conventional modern disciplinary categories, whereas sustainability should be necessarily an attack on conventional thinking and practice*’.

This view on sustainability does not necessarily emphasize nor visualizes the interactions between sustainable development’s dimensions yet as Lehtonen (2004) states, the main challenge of sustainable development sits at the interfaces –synergies and trade offs- between these dimensions.

Nevertheless, the ‘pillars’ or ‘capital’ approach is popular as it allows to simplify the complexity of real socio-ecological systems. The valuation of the various dimensions of sustainable development is increasingly popular, as exemplified by the TEEB report (TEEB, 2010).

Sustainable development builds on the idea of limits

The second perspective on sustainable development emphasizes the relation between human society and nature through the idea of limitations. This idea is rooted in ecology and is linked with the spatially defined carrying capacity, expressing the population that can be supported by an ecosystem (Kidd, 1992). This ‘limits to growth’ (Meadows *et al.*, 1972) approach defines sustainable development as development within the Earth’s carrying capacity. It implies that levels of non-renewable resources need to be maintained so as to ensure the resilience of the socio-ecological system (Rockström *et al.*, 2009). Resilience is then defined as the system’s maintained dynamic capacity to respond adaptively to changes and disturbance (Folke, 2006; Hardi, 2007). Sustainability can hence be defined as a strategy to deal with resource scarcities and to make demand match supply (Spangenberg, 2010). This sustainability discourse is also inspired by an actualized version of Malthus’ predictions and deals with the collision between human population growth and resource availability. It reflects a broader, very topical debate about development and human nature (de Duve, 2011; Kennedy, 2003). One could see this as an elaboration of the possibly ‘utopian’ first discourse where no obvious concessions seem to be necessary (or at least are not made explicit).

Sustainability is conceptualized as respecting the ‘constraints’ on developmental activity that are embedded within the concept. These constraints are of two kinds: first, there is a limit to the burdens the environment can bear. Secondly there are ethical constraints rooted in the imperatives of social justice (Lafferty & Meadowcroft, 2000). These requirements establish limits to the forms of human activity that can be pursued today.

Linked to the concept of carrying capacity (Rees, 1992), the ecological footprint allows to visualize the idea of ecological limitations. The ecological footprint focuses on the human-environment relationship and measures how much land and water area are required to produce all the goods consumed and to assimilate all the wastes generated by a given population (Wackernagel & Rees, 1996). Ecological footprints are calculated on many scales (organizations, countries, households), products and activities (*e.g.* shrimp & salmon farming (Naylor *et al.*, 1998)). Related concepts such as the carbon footprint and water footprint have been developed (Ridoutt *et al.*, 2011).

The evolution of the world's global ecological footprint is worrying as in only a few decades humanity moved from an environmental credit to a major environmental deficit, whereby future generations will bear the environmental burden and costs of the vast environmental damage caused by present generations. Interestingly this interpretation of sustainability aims to be based more on 'scientific' evidence and less on 'subjective' values (Van Zeijl *et al.*, 2008) although Franz & Papyrakis (2011) point to methodological weaknesses such as *e.g.* the failure to distinguish between sustainable and unsustainable land use and technologies in ecological footprint calculations.

According to this interpretation of sustainability, human activity needs to be situated within the – dynamic- limits of the ecosystems. In the words of Brown (2011): *'we need an economy for the twenty-first century, one that is in sync with the earth and its natural support systems, not one that is destroying them'*. As a consequence, schematic representations reflecting this perspective of sustainable development include 'nested' models according to which human society is part of the natural environment (Giddings *et al.*, 2002). This means that the economy is a subsystem of the larger social system and the ecosystem: Daly (1991) launched the concept of the steady-state economy, which develops but does not grow. Prescott-Allen's (2001) 'egg of wellbeing' is another visualization, while Mauerhofer (2008) expresses this idea of limitations in his 3-D sustainability approach.

In its extreme manifestation this discourse encompasses eco-catastrophists, nowadays mostly focused on a 'single' event –climate change- that use apocalyptic views of a human-induced future global environmental disaster as an argument for respecting the earth systems' boundaries today, *i.e.* to 'achieve' sustainability.

Sustainable development as change

The third perspective on sustainable development is rooted in development critique and emphasises processes of –directed- change. Indeed sustainable development is a process of change, and not a fixed state of harmony nor a defined end-state, as society, the environment and their interactions are subject to a continuous flow of change. Change is inherent in the semantics of development, which through its future-orientation, is inherently subject to uncertainty. However it entails more than just change as the change should be sustainability-oriented, *i.e.* directed towards sustainability objectives (Lele, 1991). Sustainable development involves a transition towards a dynamic equilibrium. WCED (1987) states that it is: *'...a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations'*. Consequently, the critique on conventional ('business as usual') thinking and practice is inherent in the concept. Sneddon *et al.* (2006) present sustainable development as a *'redirection of the enlightenment project, a pragmatic response to the problems of the times'*.

Sustainable development is interpreted as a process of change in lifestyle (Hardi, 2007) and personal behaviour and hence also in socio-economic structure. The emphasis lies on human activities, which cause the current environmental crisis. Gibson (2006b) views sustainability as an attempt to push humanity on a different path and hence as an attack on entrenched habits and structures of decision-making.

This discourse stresses the need to change human lifestyles to avoid the irreversible depletion of natural resources. For some (such as Haque, 1999), especially the lifestyles encouraged by the neo-liberal market-driven development paradigm need to be changed. The idea is that human lifestyle is causing considerable damage beyond the carrying capacity of the world's socio-ecological system and sustainable development can provide the answer to this challenge. It is seen as a series of necessary changes or transitions (social transformation processes). A transition is defined as a process during which a phenomenon undergoes a shift from slow to rapid change, before returning to a different level of stability (Rotmans *et al.*, 2001). It entails a change from one state of a system to another and it is described using multi-actor, multi-level and multi-phase concepts spanning over several decades (Tukker & Butter, 2007).

Linking sustainable development to the transition idea and defining sustainability as a new dynamic equilibrium has a great innovative power to promote new types of learning and management

practices (networking, interactive governance), thus influencing the methods of assessment. In the same vein Grist (2008) makes a distinction between reformist and radical interpretations. Mainstream sustainable development interpretations are said to focus on inter-generational equity issues and on global environmental aspects such as climate change and biodiversity, while radical approaches incorporate shifts in wealth and power distribution and in social and industrial organisation. The ability of sustainable development to change *as a concept* is one of its key strengths explaining its lasting influence (Newman, 2006). Another important input to the sustainability debate is the ecosystem stewardship approach (Chapin III *et al.*, 2010), which stresses the need for adaptable socio-ecological systems and hence the importance of resilience (Brand, 2009) or adaptability (Hildén, 2011). Sustainable development then becomes a suited management framework to cope with ongoing and upcoming global change. Chapin III *et al.* (2010) suggest three main ecosystem stewardship strategies: reducing the magnitude of, and exposure and sensitivity to, known stresses; focusing on proactive policies that shape change, and avoid or escape unsustainable socio-ecological traps. By actively managing change, society will endure, which turns sustainable development into a principle of social continuity on earth (Sabau, 2010).

Sustainable development as consensus

A fourth perspective interprets sustainable development as both a philosophical and a political consensus. Sustainability is then seen as kind of compromise formula negotiated between stakeholders holding initially opposite views and interests. Nobody is ‘against’ sustainable development and antagonistic groups formulate their objectives within the concept of sustainability (Räthzel & Uzzell, 2009).

Similarly to Fukuyama’s (1992) view of ‘the end of history’, sustainability is seen as *the* goal of the post-Cold War ‘One World’ and includes the quest for participatory democracy. Although linked to the first discourse –referred to as the integration of environment and development– the emphasis lies on the political ‘use’ of sustainable development. Grist (2008) states that many development initiatives in North and South ‘*have focussed increasingly on the ‘meta-narrative’ of sustainable development’ since the 1990s as an answer to the renewed search for paradigms (...) without falling into post-development nihilism (...) such as the rejection of reason and any kind of theory, or pure relativism and the absence of social criticism*’. ‘Development’ as such has become a loaded term ever since President Truman used it in its famous 1949 speech (Esteve, 1992). Sustainable development might have dissolved the ‘(American) imperialism’-connotation of the term ‘development’ into a politically neutral (..) concept. Sustainable development has become accepted as a ‘Leitbild’ in the development debate (Söderbaum, 2007).

Sustainable development is a reform-oriented, inclusive discourse that aims to facilitate a non-adversarial approach to environmental politics (Hajer & Fischer, 1999). This consensus perspective makes a wide array of interpretations possible and plausible, sometimes leading to an *ad hoc* ‘cherry-picking’ of elements of the sustainable development discourse that suit the current purposes of the users. This political consensus interpretation is strongly criticized by Boehmer-Christiansen (2002): ‘*an operationally difficult concept became popular in the machinery of government less because of its technical virtues but because of its political utility*’. Sustainable development then indeed faces the risk of becoming ‘*a political platitude*’. The recent European Commission’s Green Paper on the European Union’s Development Policy (EC, 2010c) for instance, explores ‘*how to promote sustainable development as a driver for progress*’ yet fails to provide a tangible operationalization of the concept, thereby reinforcing this idea. Similarly, Van Zeijl *et al.* (2008) criticize the fact that sustainable development is often presented as ‘*a pathway to all that is good and desirable in a society*’.

On the other hand, the consensus interpretation may allow the bridging of differences or of major conflicts of interest, as traditional opponents come together to discuss under the broad –yet shared– banner of sustainability. This view is akin to Robinson’s (2004) ‘constructive ambiguity’ of sustainable development. The meaning of sustainable development becomes essentially a political decision (Hajer, 1995). An analysis of international sustainable development policy by Quental *et al.* (2011) reinforces this view by stating that the emphasis shifted from natural resources towards a

position that puts human development at the centre, reflecting the consensus-seeking debates on sustainability at an international level.

Concluding thoughts

Each of these four perspectives encompasses many (sub-)schools of thought and discourses, and these are not homogenous. The fourth perspective for instance might be interpreted by some as a manipulation or as a recuperation of the sustainability idea, yet we argue that the interest of interpreting sustainable development also lies in the reality of its actual understanding or use, despite the fact that some interpretations may not exactly ‘fit’ within the frame set by the discussed milestones for instance.

Furthermore many international organizations (multilateral organisations, governments, businesses, non-governmental organisations) advance their own interpretation of sustainable development that is often a blend of the perspectives outlined in the previous sections. The above section on various perspectives on sustainable development aimed at introducing some basics of sustainable development by delving into the genesis of the concept.

We present one graphical representation of the perspectives or interpretations outlined above, for illustrative purposes. Hopwood *et al.* (2005) situate sustainable development’s interpretations on two axes, explicitly reflecting the ‘integration perspective’ between environment and development (respectively the X and the Y axis), and they add a third dimension to the graph by categorizing the interpretations by the degree of societal change they embody, ranging from *status quo* to transformation (*cf.* perspective three). Although the concept of ‘limits’ is not made explicit in this graph, it is implicitly present on the X axis as an increasingly eco-centred view will increasingly take environmental limits into account.

Hopwood *et al.* (2005) make a distinction between an anthropocentric and an eco-centric view. Adherents of the anthropocentric view consider humankind to be the most important form of life. Other life forms are important only to the extent that they are useful for humanity. Within this view the environment requires moral considerations because deteriorating or protecting it can in turn harm or benefit humanity. For those who adhere to an eco-centric view the environment is central and has intrinsic value: the environment requires moral considerations because it has a non-utilitarian value, aside from its usefulness to humanity (Kortenkamp & Moore, 2001). An alternative and stimulating way to map out different visions on sustainability, as well as by acknowledging the need for cultural change is by referring to metaphors (*e.g.* ‘spaceship Earth’) (Princen, 2010).

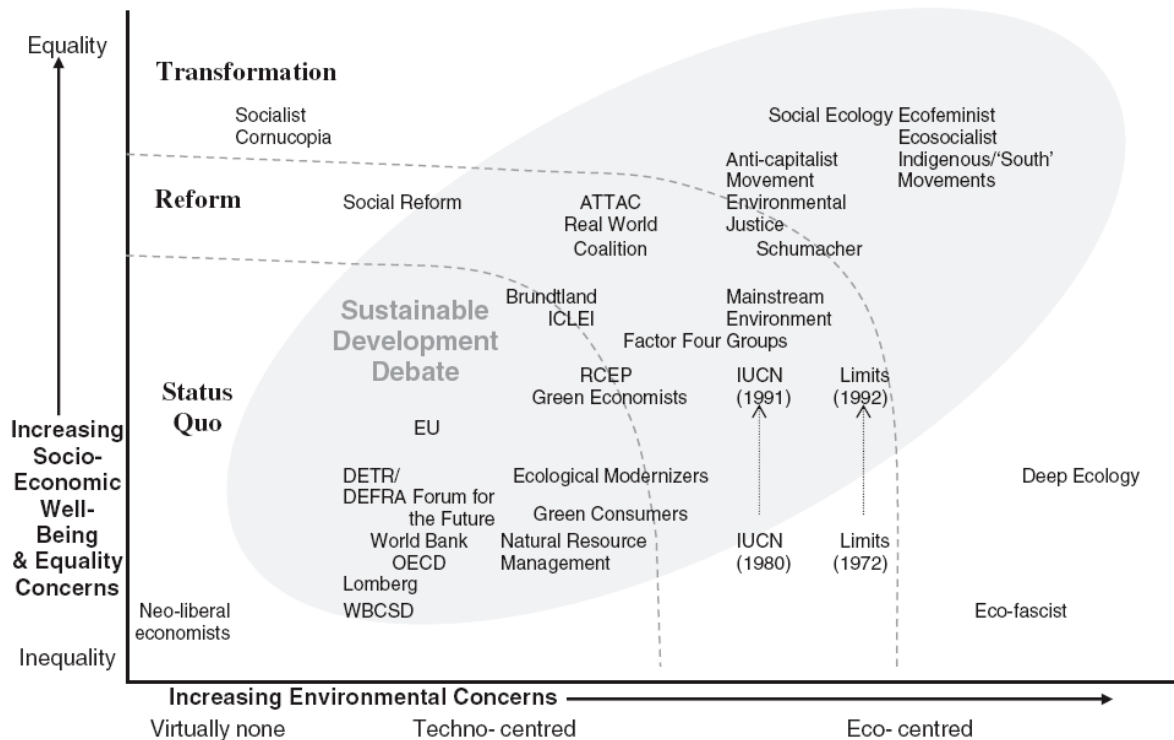


Figure 2.2: Mapping of interpretations of sustainable development (source: Hopwood *et al.*, 2005)

2.1.3 The interpretational limits of sustainable development

As one moves away from the conceptualisation and interpretation of sustainable development to sustainable development as a political reality, we agree with Lafferty & Meadowcroft (2000) when they state that the observed discursive and practical behaviour of political leaders should contribute to interpret sustainable development in accordance with a particular context. However this should happen without losing sight of ‘key principles’ characterising sustainable development.

When decision-makers have agreed to undertake something called ‘sustainable development’, the interest is in seeing what this actually implies (Lafferty & Meadowcroft, 2000), but one must acknowledge the defining principles of the concept to avoid talking in the void. This is to be the case no matter which interpretation of sustainability one amounts to as the interpretational limits of sustainable development cannot be stretched to infinity.

All successful concepts invoked in political life (are) subject to contrasting interpretations and (..) loaded with different meanings (Lafferty & Meadowcroft, 2000): it is the so-called ‘essential contestability’. This ‘*divergence of understanding is especially likely with highly charged normative concepts such as ‘democracy’, ‘freedom’ and ‘quality’.* Yet these ranges of understanding do not prevent the use of these contestable concepts in policies for social and economic change (Lafferty & Meadowcroft, 2000; Bruyninckx, 2006). In the same vein, Lele (1991) makes a useful distinction between trivial (mis-)interpretations and meaningful interpretations of sustainability. Interpreting sustainable development merely as ‘successful development’ is an example of such trivial interpretation.

In order to anchor the understanding of sustainable development in the frame of this thesis, a ‘working interpretation’ is proposed. Embedding the meaning of sustainable development in a single definition is difficult and poses the risk of advantaging one aspect of sustainable development over another as illustrated in the discourses outlined above. Moreover as sustainable development is a

dynamic concept, its content cannot be defined ‘once and for all’ (Christen & Schmidt, 2011). Despite the disagreements on ‘exact’ definitions, sustainable development does refer to a more or less stable set of characteristics (Laes, 2006) or to a ‘mainstream’ (Lele, 1991). These characteristics can be termed ‘principles’ that embody sustainable development, although this does not exclude fruitful discussion between potentially contrasting yet mutually enriching interpretations.

These principles ideally emphasise interconnections and interdependencies rather than promote conflicts and trade offs (Gibson *et al.*, 2005). These principles (or ‘component ideas’) can be defined in a variety of ways (see Gibson *et al.* (2005), Haughton (1999), Laes (2006), Lafferty & Meadowcroft (2000) and Pope *et al.* (2004) amongst others).

The 1992 Rio Declaration lists 27 widely known principles while the Earth Charter -which is the reflection of civil society voices- lists 16 principles. Governmental bodies such as *e.g.* the Belgian Federal Planning Bureau have their own set of principles (BFPB, 2007). All these sets of principles draw heavily on the same understanding of sustainable development and do not contradict each other. Laes (2006) states that anyone who justifies a line of action with an appeal to the concept of sustainable development ‘*can hardly do so without referring to a range of key characteristics*’, and states that these characteristics ‘*are needed to lay out the minimum common ground (...)*’.

Following this perspective, we propose the following list of principles, defined as ‘rules of action towards sustainable development’:

This means that sustainable development entails at least respecting the principles of:

- global responsibility (in tackling global socio-ecological issues);
 - integration (of ecological, social and economic impacts and their interactions);
 - intra- and intergenerational equity;
 - prospective, long-term time horizon;
 - precaution (in the face of uncertainty);
 - participation.
-
- *Global responsibility* (in tackling global socio-ecological issues) refers to international cooperation in a spirit of ‘shared but differentiated responsibility’.
 - *Integration* (of ecological, social and economic impacts and their interactions) refers to the reconciliation and integration of environmental and developmental objectives).
This implies that all sustainability principles should ideally be applied together, and that mutually supportive benefits should always be sought. ‘Integration’ contrasts with the idea of ‘balancing’ as sometimes argued. Whereas the former aims for mutually supporting gains, the latter suggests sacrifices between different sustainability objectives, which are not viable in the long term. Furthermore it is increasingly demonstrated that failures to achieve one or more sustainability objectives undermines the success of the other objectives (Gibson, 2000).
 - *Inter- and intragenerational equity* refers to the needs and preferences of current and future generations (inter-generational equity), and also includes geographical (global North-global South) and social intra-generational equity (Haughton, 1999).

Intergenerational equity refers to the long term or futurity aspect of sustainability, as the concept not only aims to meet present human needs and aspirations but also includes the right of future generations to meet their needs and aspirations. Intra-generational equity refers to contemporary social equity. Geographical equity stands for the interaction between different spatial scales, from the local to the global. Local sustainability problems should be viewed and tackled within a broader – global – perspective and vice versa, equally considering the different geographic spatial scales involved. Procedural equity refers to democratic and participatory governance systems, particularly essential because of the normative nature of sustainability. Interspecies equity demands environmental stewardship and refers to the survival of other species on an equal basis to human survival. It highlights the critical importance of preserving ecosystems integrity and maintaining biodiversity (Haughton, 1999).

- The *prospective, long-term time horizon* of sustainability refers to the dynamism of the concept. As society and the environment as well as their interactions are subjected to a continuous flow of change, there is no ‘fixed state of harmony’, but instead an ongoing evolutionary process in which people take action leading to sustainability (Hardi & Zdan, 1997). Sustainable development is a long-term process, fostering a better future for humanity.
- *Precaution* (in the face of uncertainty): the precautionary principle states that the lack of full scientific certainty shall not be used as a reason for postponing measures to prevent environmental degradation (Zaccai, 2002). It is embedded in the Rio Declaration on integrating environment and development. The Health Council of the Netherlands (2008) describes the precautionary principle as ‘a strategy to deal with uncertainties in an alert, informed, rational, transparent and situation-adapted way’.
- *Participation* refers to the involvement of all concerned stakeholders in decision-making for sustainable development. Linked to the equity principle, societal actors need to have the possibility to engage in decision-making processes. Sustainability’s normative base needs to be sensitive to the claims and values of all concerned societal actors (Christen & Schmidt, 2011). Participation aims at including the normative dimensions of sustainable development into decision-making. Normativity acknowledges the existence of alternative approaches to framing an issue as science is crucial for sustainable development but it cannot resolve the basic question of what is sustainable and what is not on its own (Robinson, 2004).

These principles anchor the interpretation of sustainable development while providing enough space for contextually adapted translations of the concept.

2.1.4 Critique on sustainable development

Despite –or should that be ‘due to’?- the emergence of consensual principles, the range of international political declarations, academic research, lobbying and the pressing reality of global change, the concept of sustainable development has been and is subject to a lot of -often pertinent- criticisms.

The fundamental contradictions between the call for economic growth and an enhanced ecological conservation, and the lack of attention for power relations and institutions supporting sustainable development have been mentioned since the early days of the concept’s popularization / resurgence (Carter *et al.*, 2011; Lele, 1991). Sneddon *et al.* (2006) state that the critics were more or less correct, as the primary drivers of ecological degradation (energy and material use) have greatly increased since the last two decades (International Energy Agency, 2008; World Resources Institute, 2008) and as global environmental governance regimes are not delivering the desired results (*cf.* the international climate negotiations such as the 2009 Copenhagen Conference (Carter *et al.*, 2011)). Does that mean that the concept is irrelevant, and not adapted to the challenges of our time? Not according to Sneddon *et al.* (2006) who still argue strongly in favour of sustainable development for three reasons: i. The issues of equity, development and environment and their relationship are still extremely

important; ii. Sustainable development gave rise to a whole new political debate and discourses involving all societal stakeholders and iii. The critics did not foresee the major shifts in some developments, such as *'the decline in legitimacy of authoritative science or the rise of a more discursive, democratic science'*. This last point will be dealt with in section 2.2. Similarly Hopwood *et al.* (2005) conclude their reflection on the mapping of different approaches to sustainability (see above) by reaffirming sustainable development's role as *'a useful framework to debate the choices for humanity'*.

Coming back to one of Lele's (1991) criticisms, power and politics have initially been underestimated in the sustainable development debate. Boehmer-Christiansen (2002) analysed the geo-politics of sustainable development, researching why bureaucracies were eager to adopt the term in the late 1980s. She states that those who can direct the conceptual discourse(s) manage to shape ideological hegemony by producing leading conceptions (of sustainable development). And by appropriating discourses, the interpreters and users of their leading concepts are themselves engaging in politics. Furthermore by stating that *'prevailing notions of sustainability are primarily arenas for policy contests and hence politics'*, Boehmer-Christiansen (2002) touches on a key topic of sustainable development governance. There is indeed a battle of influence over sustainability's meaning and the appropriate way to 'achieve' or 'implement' it. Societal stakeholders seek domination over the meaning of sustainable development, trying to mould it in favour of their interests and view (Hajer, 1995), an observation that justifies a 'sound' participatory approach. Alternative framings of sustainable development and the associated alternative solutions are key factors if governance mechanisms are to foster sustainable development. The focus of sustainable development lies in the relationships, often pre-structured owing to power balances, between social players (Petschow *et al.*, 2005). Power-based resistance is hence a key challenge for sustainable development, and Jänicke (2007) suggests multi-level governance as a solution to overcome this.

Robinson's (2004) first concern relates to the need to *'actively engage relevant interests and communities in thinking through and deciding upon the kind of future they want to try and create'*. He goes on by stating that *'there is a wide diversity of viewpoints as to what sustainability is and entails (...), and there is constructive ambiguity in keeping open some of these issues. The other side of that coin is that there is a need to develop processes that make use of that constructiveness, that allow diversity to be expressed without creating paralysis.'*

2.1.5 The implementation challenge: sustainable development as a decision-guiding strategy

So far we have seen that sustainability has gained acceptance amongst political leaders and civil society, but in reality, this is still mainly visible in the lip service paid to it. The popularization of sustainable development did not lead to a satisfactory implementation of its core principles. It seems that (any particular interpretation or part of) the sustainability discourse is pervading almost every policy makers' declaration, but it is as if its implementation remains in its infancy almost indefinitely. Discourses might become powerful and might initiate societal learning and eventually steer society towards sustainable development (Petschow *et al.*, 2005). Yet for now, there is still a great deal of work to be done to move from shared preoccupation to actual implementation.

The gap between the sustainability discourse and the implementation situation on the ground is gigantic, and growing.

When it comes to addressing this gap, clarifying terminology is key. Following the stance of Lafferty & Meadowcroft (2000), we think that one should not start from an *'autonomously derived (either logical or philosophical) interpretation of what sustainable development 'really' means'*. Instead Lafferty & Meadowcroft (2000) take sustainable development to be an expression whose sense is given by relevant usage: in this case *'the international discussions and accords through which it has become an accepted goal of international and national policy'* (see also section 2.1.1). This stance is underpinned by a sense of political realities yet we would like to broaden this view so as to include the interpretations of sustainable development as outlined in the four 'interpretations/discourses' outlined above. In order to respect the interpretational limits of the concept, we suggest keeping at least the six, abovementioned key

principles in mind (global responsibility, integration, equity, prospective horizon, precaution and participation). These principles are part of the Rio Declaration hence these link the discourses with the ‘relevant usage’ in international policy. The conflicts surrounding sustainable development are hardly about the key values as such, but these conflicts are centred on the interpretation of the implication of these values.

Before moving on, let us however keep in mind Bell & Morse’s (2008) statement ‘*the very action of trying to implement what one thinks is sustainability may change one’s vision of what it is*’.

Implementation means that ‘somebody’ needs to translate sustainable development discourse(s) into actions (Boehmer-Christiansen, 2002). This translation exercise starts with making decisions. A decision is then defined as a determination arrived at after consideration (Merriam-Webster English Dictionary), while decision-*making* is the cognitive process resulting in the selection of the course of action among several alternatives. Peterson & Bomberg (1999) define decisions as ‘*choices of solutions that end some uncertainty or reduce contention*’. They add: ‘*when any choice is made, the result is a decision*’.

Decision-making can also be seen as a matching (*i.e.* as a compatibility test) between an actor’s ideological orientation (*i.e.* the most influential discourse) and the expected impact profile of each alternative course of action (Söderbaum, 2007).

As policies are actions by public authorities between alternative courses of public action (Peterson and Bomberg, 1999), and are as such all a product of a decision, the link with ‘policy-making’ and governance *sensu lato* (see section 2.3) is made. Policy-making indeed requires to identify alternative actions; to choose relevant criteria on which to assess these alternatives; to assess the various alternatives with respect to these criteria, and to choose the best option amongst these alternatives (‘best’ ideally being defined in this context as ‘most sustainable’) (Boulanger & Bréchet, 2005). Policies are thus actions that result from decisions.

Hence if sustainable development is to be a useful and ‘implement-able’ concept, we believe it should be a strategy, defined as a way forward to make happen a desired future, *in casu* the achievement of sustainability objectives. This desired future takes place within a particular context, which can influence the way sustainability is actually interpreted. Sustainability principles are the guiding elements to make decisions and hence to realize the strategy, while processes fostering the decision-making are the so-called decision-supporting processes. Within this framework the ultimate choices are in hand of decision-makers who will need to decide upon solutions for the many societal challenges we face today. These decision-makers are individuals (everyone of us) yet also include political entities (states, regions, cities) and even the world community as sustainable development is to be implemented globally.

As sustainable development reflects –dynamic– social consensus it cannot be translated into a blueprint calling for unambiguous decisions (Kemp & Martens, 2007). Conceptualising sustainable development as a decision-making strategy allows to actually ‘use’ it, thereby moving beyond the rhetoric, and turning sustainable development into an action-generating concept.

We believe that sustainable development offers a framework for reflection and action on the human-environment relationship. Critiques on the –perceived or real– slow implementation, the interpretational cacophony or institutional inertia do provide valuable inputs in the debate, but do not allow us to discard the concept as whole. Although sustainable development is an inherently contested concept, its fundamentals are clear (as seen in the sustainability principles outlined above): they are summarized by Kemp & Martens (2007) as ‘maintaining the integrity of biophysical systems and reducing poverty and risks’.

The above reflection on the concept of sustainable development leads to the recognition of the concept’s constructive ambiguity, rooted in the history of its modern re-emergence and reflected in a series of clustered interpretations and discourses. Although presenting an absolute definition of sustainable development is neither feasible nor desirable, the end of section 2.1.2 provides a

workable basis of understanding to move to the next steps: the emergence and refinement of contextually adapted interpretations of sustainable development and its implementation as a decision-guiding strategy.

Section 2.2 Knowledge for sustainable development

2.2.1 The context: complexity, uncertainty and values

Knowledge is created by a flow of information anchored in the beliefs and commitments of its holder (Matzler *et al.*, 2008). Knowledge needs to feed into policy and this can only happen successfully if actors have knowledge about the policy process itself (Lasswell, 1971). This section focuses especially on the type(s) of knowledge required for sustainable development policy, while the policy process itself is extensively discussed in relation to sustainability assessment in Chapter 4.

Generating and managing knowledge is essential to realize the ambition of sustainable development as a strategy to guide decisions. A decision-guiding strategy gains its legitimacy through the knowledge that forms the base of the strategy itself. This knowledge should be able to deal with complexity, uncertainty and multiple legitimate value-laden viewpoints – as these can be considered key context-defining features of any sustainability issue. Knowledge for decision-making is made up of both facts and values, and there is sometimes no clear boundary between the two (Andersson, 2008).

For a better understanding of the type of knowledge (generation) needed to implement sustainable development one has to keep in mind features that define the context in which sustainability needs to be achieved.

Complexity

Sustainability issues are intrinsically linked to each other and the many interactions between social and natural systems are of high and increasing complexity. Complex issues concern a web of related problems, lie across or at the intersection of many disciplines and the underlying processes interact on various temporal and scale levels (van Asselt & Rijkens-Klomp, 2002). Complex issues involve a large variety of technical and scientific input as well as important value-laden and ethical aspects (Andersson, 2008). Indeed the interplay between environmental processes and human activity, and the values underlying the perspectives on this interplay are key in any sustainability issue.

Complexity applies to systems showing deep uncertainties and a plurality of legitimate perspectives (Funtowicz *et al.*, 1999). Studying sustainable development consequently entails studying non-linear causal networks, emerging issues and recognizing limitations in understanding (Ostrom, 2009; Sinclair *et al.*, 2007).

Complexity is present at various levels:

First, the intrinsic complexity of multidimensional societal challenges is creating an ever-growing need for information and debate (Funtowicz *et al.*, 1999). Complexity is closely related to the ever-increasing size and pace of information flows that submerge decision-makers. In other words, today's world is arguably '*messier (...) than it was in earlier decades*' (Rosenau, 2005b). Rosenau (2005b) speaks of 'fraggmegration' (a neologism combining fragmentation and integration) to denote today's world's complexity and identifies eight complexity-enhancing forces ranging from microelectronic technologies to authority crises and to economic globalisation.

Secondly, the institutional complexity arising from the new realities of multilevel governance networks blurs the boundaries between the responsibilities and competences of 'classical' jurisdictional entities such as the nation-state and –new- players such as regions, stakeholder groups and multilateral organisations. Complexity is now also a defining feature of sustainable development governance (Jänicke, 2007). This means that in order to understand the sustainability of complex systems, multilevel nested frameworks are needed. This is what Ostrom (2009) proposes with her sustainability assessment framework for socio-ecological systems, encompassing four subsystems (resource systems, resources units, governance systems and actors) as well as their interactions and outcomes.

Boulanger & Bréchet (2005) mention the existence of externalities as another key feature of the context in which sustainable development is to be realized. Sustainable development issues are then identified by the fact that some groups of actors do not bear the full cost of their production and consumption patterns. The negative consequences of these production and consumption patterns – or burdens – are transferred socially, geographically or temporally. We chose to lump these externalities with ‘complexity’, as what is at stake essentially concerns interactions between different subsystems and/or groups of actors.

As ‘the price of increased complexity is pervasive uncertainty’ (Gibbons, 1999) we will now delve deeper into the latter.

Uncertainty

Knowledge for sustainable development is needed because accelerating global change in environmental and socio-ecological systems demands a transformation in human perceptions and actions. Knowledge for sustainable development essentially needs to foster this change management in a context of high uncertainty (what will the future bring?). It needs to support actions that foster a diversity of future options and that provide resilience in the face of the unknown (Chapin III *et al.*, 2009). Yet the context into which that knowledge needs to be generated and used in order to cope with global change is characterized by inherent uncertainty. Uncertainty is a key feature of sustainability (Boulanger & Bréchet, 2005), which is by definition a future-oriented concept. Uncertainties have become more significant in recent times because of the growing scope, complexity and hazardous consequences of human activities (Beder, 2006).

Complex systems such as ecosystems and social systems are very difficult to predict. Beder (2006) makes a distinction between three levels of uncertainty *sensu lato*. Ignorance means that you do not know what you do not know; indeterminacy means that you cannot know what you need to know; and uncertainty *sensu stricto* means that you think you know what you don’t know. In the context of sustainable development, we are faced with what Newman (2006) calls ‘incredible uncertainty’: not only are we unable to predict the consequences of events, we are also unable to predict which events are the one that will lead to future change. Other categorizations of types of uncertainty exist: weak uncertainty or ‘risk’ refers to probability distributions based on a reliable classification of possible events, while strong uncertainty refers to events whose probability distribution is not definable (summarized in Faucheux & Forger, 1995). The interactions between the socio-economic system and the environment are mostly characterized by strong uncertainty as global sustainability problems have no historical precedent (Faucheux & Forger, 1995). A similar distinction is made between stochastic and fuzzy uncertainty. If the future state of a problem cannot be established precisely, we speak of stochastic uncertainty. Fuzzy uncertainty on the other hand, focuses on the ambiguity of information in the sense that the uncertainty does not concern the occurrence of the event but the event itself, which cannot be described unambiguously (Funtowicz *et al.*, 1999).

In addition uncertainty also challenges the formerly self-evident authority of knowledge providers (Funtowicz & Ravetz, 1993).

Uncertainty also lies at the source of one of the most often quoted sustainable development principles: the precautionary principle. Embedded in the ‘Rio Declaration’, the precautionary principle states that ‘*the lack of full scientific certainty shall not be used as a reason for postponing cost-effective (..) measures to prevent environmental degradation*’. The precautionary principle goes beyond the prevention of known risks, and aims at anticipating and preventing uncertain potential harm (Beder, 2006).

Generally three core elements are intertwined in the conceptualisation of precaution: uncertainty, risks and the complexity of the factors defining both uncertainty and risks.

The Health Council of the Netherlands (2008) describes the precautionary principle as ‘*a strategy to deal with uncertainties in an alert, informed, rational and transparent and situation-adapted way*’. Thus the precautionary principle can be linked to sustainable development’s appeal to ‘common sense’ or ‘planetary wisdom’, contrary to the ‘wait and see’ approach where policy makers wait till they have

more information before acting (Beder, 2006). In order to deal with uncertainty, a learning approach and a high adaptive capacity are required (Sinclair *et al.*, 2007). This will need to be taken into account in generating and using knowledge for sustainable development.

Values & multiple legitimate viewpoints

The existence of values and multiple legitimate viewpoints was introduced in section 2.12. referring to the interpretation of sustainable development. Indeed within the interpretational limits of sustainable development, many legitimate viewpoints exist, which often reflect particular values. Values are beliefs about goals in life that are desirable for an individual or for society (Andersson, 2008). Values lead to different perspectives, which differ between various actors. Some values are shared by almost everyone while others are cultivated within certain social groups (Andersson, 2008). These perspectives reflect personal agendas as well as particular political, cultural or historical sensitivities and materialize for instance through differences in emphasis regarding the dimensions of sustainability. Decision-making for sustainable development hence not only requires scientifically valid knowledge but also knowledge that is acceptable to various societal actors (Runhaar & Driessen, 2007). Hence stakeholder input is needed to provide knowledge (Runhaar, 2009).

Blanchard & Vanderlinden (2010) also refer to these multiple viewpoints from a disciplinary point of view: scientific disciplines have become so specialized that coherence is lost. *'No perspective is wrong by its own measures, however, they are all incomplete without the other perspectives'*. Knowledge for sustainable development needs to propose solutions to deal with these legitimate viewpoints (legitimate hereby refers to the interpretational limits of sustainability), as any decision-making for sustainable development takes form in a complexity of arguments with a mixture of facts and values (Andersson, 2008).

The recognition of the importance of the three context-defining characteristics described above has consequences for knowledge generation for sustainable development. It has even led to the emergence of 'new' forms of science, which we group under the heading of 'science for sustainable development'.

It should be mentioned here that some authors propose other key contextual features of sustainability decision-making. Boulanger & Br  chet (2001) mention externalities (which we propose to cluster with complexity), while Faucheux & Froger (1995) add irreversibility (next to complexity and uncertainty). Our choice for the three features outlined above is underpinned by its intellectual clarity and by the recognition of its pertinence by *e.g.* Funtowicz *et al.* (1999).

2.2.2 Science for sustainable development

After having introduced the context wherein knowledge for sustainable development is to be generated, this section introduces the characteristics of knowledge for sustainable development and the associated dynamics this triggers for the conduct of scientific work.

Sustainable development's normative character and its long-term horizon result in specific demands for science (Funtowicz & Ravetz, 1993). A new concept of science, different from disciplinary, normal science seems to be necessary (M  ller, 2003).

In the context of sustainable development *'knowledge creation (...) is far from the rational, cognitive and technical procedures of science as previously understood. Instead knowledge creation is perceived as a process or practice. Post-modern perspectives embrace an awareness of multiple knowledges, situated specificities, discourse and narrative analysis and complexities of actor-institutional interactions'* (Grist, 2008).

Types of knowledge for sustainable development then include: (Laes & Maes, 2007):

- diagnostic knowledge (with regard to the causes leading to 'un-sustainability');
- explanatory knowledge (with regard to the interactions between social activities and sustainability impacts);
- orientation knowledge (with regard to normative justification arguments);

- knowledge for action (with regard to finding solutions to ‘un-sustainable’ situations).

Knowledge for sustainability needs to analyse a system’s deeper-lying structures, (diagnostic and explanatory knowledge), it needs to project into the future (orientation knowledge), it needs to assess the impact of decisions (explanatory, orientation and action knowledge), and it has to lead to the design of new strategies for solutions (knowledge for action) (Clark & Dickson, 2003; Kemp & Martens, 2007; Waas *et al.*, 2010). We use the term science here in its broadest interpretation, as ‘the state of knowing’, referring to a contextually useful ordering of information flows.

Science for sustainable development is used here as a generic term to describe science performed in a solution-oriented context of social relevance (Müller, 2003) characterized by complexity, uncertainty and the importance of values.

Scholars have proposed specific terms & initiatives describing its characteristics:

- mode 2 science (Gibbons *et al.*, 1994);
- post-normal science (Funtowicz & Ravetz, 1993);
- sustainability science (Gibbons *et al.*, 1994; Boulanger & Bréchet, 2005; Kemp & Martens, 2007);

We agree with Müller (2003) that despite differences in formulation, these approaches essentially describe the same content included in the generic heading of ‘science for sustainable development’.

- *Mode 2 science*

Gibbons *et al.* (1994) speak of ‘traditional’ science as ‘mode 1 science’ being academic, mono-disciplinary, technocratic, certain and predictive; *versus* ‘sustainability science’ or ‘mode 2 science’ being academic and social, interdisciplinary, participative, uncertain and exploratory. Mode 2 science aims at producing useful knowledge and operates in the context of application. Müller (2003) cites the Kyoto process as an example. This process clearly produces knowledge, yet this knowledge is produced and stored within the concerned parties and will diffuse as its members turn their attention to other problems in other spheres. This is entailed in the ‘socially distributed knowledge’ and in Nowotny’s *et al.* (2001) ‘socially robust knowledge’. Gibbons (1999) proposes a new social contract between science and society, based on the joint production of knowledge between science and society thereby challenging the prevailing ‘contract’ where science was left to make discoveries and the make them available to society. Lubchenco (1998) similarly calls for a new social contract for science, but apparently does not go as far as Gibbons (1999) as she mainly advocates a focus of science on pressing sustainability problems, a better communication of results and humility, wisdom and good judgement. Similarly, Renn *et al.* (1993) suggest to integrate the social interests and advocacy of stakeholders, the experts’ technical knowledge and citizens’ knowledge.

- *Post-normal science*

Normal science describes science in the sense of puzzle solving, with separate disciplines designed to discover and apply facts in a well-defined setting- it is based on the search for the ‘objective truth’ (Funtowicz & Ravetz, 1991; Müller, 2003).

But contemporary sustainable development challenges are characterised by uncertainty, complexity, values in dispute –or multiple legitimate viewpoints. They are so-called ‘wicked problems’ (Frame & Cavanagh, 2009; Rittel & Webber, 1973) that challenge established institutions and means of governing. When facing the uncertainties characterizing post-normal problems, scientists are lay people as well (Funtowicz & Ravetz, 1993).

Normal science alone is not adequate to solve these challenges. In addition to normal science’s traditional disciplinary knowledge, post-normal science needs to take into account the knowledge and values of different actors. Post-normal science relies on an enriched cognitive basis of ‘extended facts’ an on an ‘extended peer community’ (Müller, 2003). The description of post-normal issues is not independent of the perspectives and values of the observer: differing perspectives thus lead to

different descriptions of the issue (Funtowicz *et al.*, 1999; Haag and Kaupenjohann, 2001). Values are hence an important element in knowledge for decision-making (Andersson, 2008).

The substantial content of sustainable development cannot be scientifically determined as ‘objective knowledge’ but will always incorporate normative valuations (Kemp & Martens, 2007). Stakeholder involvement will create ‘extended facts’ by bringing in new knowledge and perspectives on problems (Kloprogge & Van Der Sluijs, 2006). The importance of normative inputs and the centrality of the idea of co-production of knowledge has led to debate about the role of ‘traditional’ academic science in society. Rosenau (2005b) states: *‘For many experts the habit of positing scientific findings as more reliable than any other form of knowledge is a habitual perspective not easily abandoned. For many experts forsaking the habit is viewed as a capitulation to local pressures’*. Furthermore, the definition of expertise as such also depends on context and often knowledge claims by experts are not properly assessed (Burgman *et al.*, 2011).

On the other hand, Kennedy (2003), does not see the major problem in the changing knowledge production paradigm, yet implicitly identifies governance as the key issue to handle. *‘the big question in the end is not whether science can help. Plainly, it could. Rather, it is whether scientific evidence can successfully overcome social, economic and political resistance’*. This means that normal science has certainly a –key- role to play for sustainable development, yet, as Funtowicz & Ravetz (1991) state *‘it has to be done in an epistemological framework in which its narrowly defined problems are integrated into larger issues and thus they are provided with direction, quality assurance, and also the means for a consensual solution of policy problems in spite of their inherent uncertainties’*.

Adaptability –the capability to develop appropriate reactions in the face of uncertainties or surprises– is closely related to the idea of post-normal science, as wicked problems require –e.g. institutional–abilities to cope with uncertainties and to make decisions (Hildén, 2011).

- *Sustainability science and the systems approach*

Other authors elaborate on the term ‘sustainability science’ defined as an integrative science aiming at the integration of different disciplines, viewpoints and knowledge types (Kates *et al.*, 2001; Kemp & Martens, 2007; Martens, 2006).

Sustainability science demands a ‘systems’ approach, which emphasizes the primacy of the whole. A system is *‘a perceived whole whose elements hang together because they continually affect each other over time and operate toward a common purpose’* (Bell & Morse (2008)), or *‘an interconnected set of elements that is coherently organized in a way that achieves something’* (Meadows, 1998).

Any system is an intellectual construct imposed by some humans on a set of phenomena and their explanations. The boundaries of that system do not always coincide with the actual interactions relevant to a societal problem. Although this situation is unavoidable every decision-maker needs to be aware of it (Funtowicz *et al.*, 1999), as it has implications for governance and policy issues.

A systems approach is often compared to the contrasting reductionist approach where the well-defined problem is in the mind of the scientist and a part of a complex whole is analysed (*cf.* mode 1, normal science). In a systems approach the problem is shared by many actors, has flexible boundaries and is reviewed as a whole (*cf.* mode 2 science, post-normal science) (Bell & Morse, 2008). Box 1.1 provides a visualisation of the systems approach.

Box 2.1: Analysing Complex Systems or ‘Feeling the Elephant’ (source: Funtowicz *et al.*, 1999)

For policy purposes, a very basic property of observed and analysed complex systems might be called ‘feeling the elephant’, after the Indian fable of the five blind men. Each conceived the object after his own partial imaging process; it was left to an outsider to visualise the whole. This story reminds us that every observer and analyst of a complex system operates with certain criteria of selection of phenomena, at a certain scale-level, and with certain built-in values and commitments. The results of their separate observations and analyses are not at all purely subjective or arbitrary, but none of them singly can encompass the whole system. Looking at the process as whole, we may ask whether an awareness of their limitations is built into their personal systematic understanding, or whether it is excluded. When analysis is enriched by its presence, we have post-normal science.

A systems approach requires inter-disciplinarity (and other levels of cross-disciplinary interaction): a key characteristic of sustainability science. It aims to structure different sources of knowledge around a common topic. Sustainability science is ‘*an attempt to bridge the natural and social sciences for seeking creative solutions to complex –sustainability- challenges*’ (Jerneck *et al.*, 2011). It is an evolving process of knowledge construction requiring co-operation between disciplines to arrive at a shared understanding of issues at hand (Blanchard & Vanderlinden, 2010). As the ecological and social sciences historically developed independently, this can be challenging (Ostrom, 2009). Individuals within teams seek to integrate concepts and methodologies and the individual researchers are based primarily in one discipline but will have familiarity with at least a second discipline (Sumner & Tribe, 2008). Hulme & Toye (2006) speak of ‘knowledge communities’ instead of disciplines. They argue that what matters is consensus on aims and methods within the community.

Furthermore as knowledge will always be provisional and incomplete in its descriptive aspects, as well as depending on changing normative expectations, sustainability science needs to be reflexive, *i.e.* sensitive to the way in which knowledge was generated (and hence what the underlying uncertainties are for instance). Sustainability science’s key inter-disciplinarity feature implies that disciplines not only differ in subjects and methods, but also have different visions of the world (Blanchard & Vanderlinden, 2010). One has to transcend unconscious thinking processes by reflecting on one’s personal values, interests and representations so as to reconcile different worldviews and assumptions on reality (Sumner & Tribe, 2008).

In summary, sustainability science builds on both normative and positive inputs: the new scientific paradigm is no longer exclusively based on ‘objectivity’, but also incorporates normative elements (Luks & Siebenhüner, 2007). Alternative problem framings are an essential element of sustainability governance and can lead to ‘out of the box’ thinking and to the realisation of innovative solutions to respond to complex societal challenges. Adopting a level of ‘subjectivity awareness’ is key so as to make ‘careful and transparent knowledge claims, which do not specify absolute closure. Yet according to traditional views, scientists are supposed to search for ‘the’ truth, and to provide society with objective facts (Andersson, 2008). However Myrdal (cited by Andersson, 2008, p.28) states that ‘*there is an inescapable a priori element in all scientific work. Questions must be asked before the answers can be given. The questions are an expression of our interest in the world, they are bottom valuations.*’

2.2.3 Synthesis: science for sustainable development

Despite the differences in concrete formulations, the approaches outlined above amount to the same content and allow us to list key characteristics of science for sustainable development.

Table 2.1: Characteristics of science for sustainable development (own summary based on Baumgartner, 2011; Boulanger & Bréchet, 2005; Bell & Morse, 2008; Kastenhofer *et al.*, 2011; Kemp & Martens, 2007; Luks & Siebenhüner, 2007)

Inter- and intra-disciplinary research
Co-production of knowledge & Participation
Normative and positive inputs
Systemic integration
Exploratory character
Recognizing its own limitations and assumptions
Learning-oriented perspective
Production of socially robust and politically relevant knowledge
Attention to system innovation and transition

Key points in these approaches describing science for sustainable development include openness as well as the awareness of normative assumptions (Müller, 2003). Sustainable development policy needs to be designed and implemented using science (the most authoritative source of facts about reality) and deliberate human choices motivated by values (Sabau, 2010). However when science and policy are closely entangled, the boundaries between the two domains become contested: Gieryn (1983, in Klopprogge & Van Der Sluijs, 2006) speaks of boundary work: parts of a debate are depoliticised by defining them as belonging to the scientific domain or parts are politicised by defining them as belonging to the policy domain.

The rising recognition of the characteristics of science for sustainable development not only led to new concepts (mode 1-2 science; post-normal science; sustainability science) but also to new interdisciplinary academic fields such as ecological economics, technology assessment and science and technology studies (Kastenhofer *et al.*, 2011). In practice however these fields' research approaches do not always live up to the expectations regarding clear societal recommendations and the use of participatory methods (Kastenhofer *et al.*, 2011), indicating that 'performing' science for sustainable development is still a challenge.

The interface between science and society is the arena where knowledge for sustainable development will be generated. Yet knowledge alone is not enough. Institutions are needed to foster changes in human behaviour and to increase local appreciation of shared global concerns, as well as to correct collective action failures (Walker *et al.*, 2009). Only adapted 'institutional machinery' will ensure that knowledge will contribute to steer decisions towards sustainability.

Section 2.3 Governance for Sustainable Development

2.3.1 Governance: an introduction

Governance is key to steer society towards sustainability as '*sustainable development cannot be achieved without governance because of the nature of governance: to foster common –normative- goals by collective action*' (van Zeijl *et al.*, 2008). Governance is generally used to define 'a changed way of governing' (*i.e.* steering society (van Zeijl *et al.*, 2008)), and the term has captured the imagination of scholars and policy-makers especially since the 1990s (Arts & Van Tatenhove, 2004).

Petschow *et al.* (2005) cite the Commission on Global Governance (2005), which defines governance as *'the sum of many ways in which individuals and institutions, both private and public, manage their common affairs. It is a continuing process through which conflicting or diverse interests may be accommodated and a co-operative action may be taken. It includes formal institutions and regimes empowered to enforce compliance, as well as informal arrangements that people and institutions either have agreed to or perceive to be in their interest'*. The United Nations Development Programme (*in* Bachus, 2005) defines governance as *'the exercise of political, economic and administrative authority to manage a society's affairs; the term refers to the process by which society manages its economic, social and political resources and institutions – not only for development, but also for the cohesion, integration and well-being of its people'*.

So governance describes the processes of how government and other social actors interact. Even more than maybe any other 'issue' sustainable development is of interest to a wide range –actually to all- societal actors. Any policy system involving many non-state actors is referred to as a multi-actor governance system (Bachus, 2005). Generally authors agree that governance denotes the blurring boundaries between and within the public and private sector and between the various actors influencing each other (Vandenbrande, 2008). This means that other actors besides government are included in societal steering processes (Petschow *et al.*, 2005) and that steering society is seen as a shared responsibility (van Zeijl-Rozema *et al.*, 2008). This is a logical consequence of the acceptance of the existence of multiple perspectives (Söderbaum, 2007) and it materializes in a trend towards networked, pluri-centric and process-oriented forms of governing (Derkzen, 2008). Governance does not necessarily denote a weakening of the state – as Brown (2011) warns for the risks posed by failed states to successful global environmental governance – but it emphasises changing relations between the state and non-state actors. Multi-level governance produces new power relations, which empower or dis-empower the state in one case or another (Arts *et al.*, 2006). Governance is part of political modernisation (Arts *et al.*, 2006), which denotes the structural processes of changing interrelations between state, market and civil society.

Governance is considered to be a discursive or deliberative act (referred to as 'governance on the inside' by Smith & Stirling (2007) and as 'policy as discourse' by Paredis (Paredis *et al.* 2006)). This implies the lack of a neutral position from which a societal issue can be observed. A common framework – if any – will only emerge after intensive negotiations between different actors holding different perspectives. This conception amounts to the perspectives on 'governance' outlined above. On the contrary, Smith & Stirling's (2007) 'governance on the outside' and Paredis *et al.*'s (2006) 'policy as calculus' assume that knowledge-based decision support can be conceptualised as a separate domain from the issue on which its interventions are aimed at. Consequently in this latter view the policy-making realm does not necessarily need to be opened up to external actors.

Rosenau (2005) allows us to make the link between governance and the equally important –yet equally widely discussed - concept of institutions. He makes a distinction between government and governance according to their 'rule systems'. Whereas both government and governance enable citizens to pursue their preferences through rule systems, these differ between government and governance. In a government context, rule systems are formal structures or institutions (*e.g.* laws), whereas governance can entail informal or formal rule systems (informal agreements, shared premises, successful negotiations, (public-private) partnerships..) carried out by public or private actors. These formal rule systems are termed 'institutions'. Following Connor & Dovers (2004), we agree that Douglass North's definition is clear and concise: *'Institutions are the rules of the game in a society, or, more formally, are the humanly devised constraints that shape human interactions. (...)... they define the incentive structure of societies and specifically economies'*. Phillips *et al.* (2004) describe institutions as involving mechanisms that associate nonconformity with increased economic, cognitive and social costs.

As for the realization of any broadly interpreted 'big idea', sustainable development needs to be realized through forms of societal steering which we regroup under the heading of 'governance', and which materialize through institutions.

2.3.2 Governance for sustainable development

Governance for sustainable development requires a special kind of decision-making, which will influence the governance models and their accompanying institutions. The growing complexity of the world's challenges as well as the proliferation of new actors are two features that need to be dealt with in governance for sustainable development (Haas, 2004). Moreover the patterns and processes of governance itself have come to be identified as challenges in working toward sustainability because they define the very capacities by which societies shape and transform themselves (Voss & Bornemann, 2011). Scholars agree on the need for new, specific governance structures for sustainable development (see *e.g.* Biermann's (2007) concept of 'earth system governance' for global stewardship).

The need for specific governance structures for sustainable development is underpinned by three reasons (Boulanger & Bréchet, 2005): First sustainability objectives are not given; defining them is an inherent part of the decision-making process. Second there is a plurality of decision-makers, each with their own '*preferences, objectives, expectations and beliefs*'. And third, assessing the impacts of decisions on sustainable development is notoriously difficult.

The plurality of decision-makers is arguably the key feature here, as it can probably be termed to be the ultimate reason underlying the two other features mentioned by Boulanger & Bréchet (2005). The governance vocabulary opens up cognitive commitments implicit in political decision-making and helps actors '*to unlearn embedded intellectual reflexes and break out of tacit patterns of thinking*' (Hajer & Wagenaar, 2003): much-needed characteristics in fostering sustainable development. Environmental issues –and by extension sustainability issues– are also often seen as a manifestation of and as a challenge for a different political and social capacity for change and steering (Arts *et al.*, 2006).

Next to the inherent and 'conceptual' necessity to consider governance and institutions for the implementation of sustainable development, democracy and civility have increasingly become part of the concept of sustainable development (Kemp & Martens, 2007). This is a consequence of the –relative– interpretative flexibility of sustainable development as outlined in section 2.1.2 and as discussed by *e.g.* Robinson (2004). Variation in the interpretation of the sustainability concept '*allows for a multitude of actors, possibly the whole of society, to be involved, encouraging local solutions*' (Kemp & Martens, 2007). Although this variation is essential to sustainable development, it makes operationalization difficult from a governance perspective. A clear requirement to manage sustainability includes an approach that can deal with multiple actors and multiple levels, and that is able to help create a –maybe temporary or context-dependent– common vision on sustainable development and contributes to resolving trade-offs (van Zeijl *et al.*, 2008). This common vision is to be embedded in a global sustainability commitment that materializes through decentralized governance networks. The interactive effects of these multiple actors would yield more effective global coordination and performance of major governance functions (Haas, 2004).

Various scholars have proposed typologies of governance for sustainable development.

Bachus & Spillemaeckers (2010) recognise types of governance for sustainable development which consider sustainable development as a integrating meta-concept and types which build on the idea that for sustainable development to happen, the environment needs to be preserved first. Van Zeijl *et al.* (2008) identify four different governance types for sustainable development, ordered on two axes, the hierarchical *versus* deliberative governance models, and the ecological *versus* well-being perspectives on sustainable development. Jänicke (2007) defines the 'Rio model of governance' underpinning the concept of sustainable development, as a knowledge-based model of steering, not based on power and legal obligation. This governance model has the following characteristics

(Jänicke, 2007): long-term horizon; integration; participation of external actors; cooperation and activated self-regulation; and multi-level coordination.

Sustainable development strategies are a way to turn such sustainable development governance models into tangible policy actions. They are referred to as cornerstones of the 'Rio model of governance' (Jänicke, 2007). Each United Nations member country committed to draft a national sustainable development strategy (NSDS), as this commitment was part of the Agenda 21 adopted at the 1992 United Nations Conference on Environment and Development. These strategies can take on many different shapes (Lafferty & Meadowcroft, 2000), and according to the United Nations (UNCED, 1992), '*their overall objective is to improve or restructure the decision-making process so that consideration of socio-economic and environmental issues is fully integrated and a broader range of public participation assured*'. However Pelletier (2010) is very critical about the current international governance framework for sustainable development and points to its persistent failure to halt the degradation of the global commons due to an insufficient consideration of global bio-capacity and its focus on a worldview of an industrial society. Again, the different interpretations of sustainable development will influence - one's stance towards- the design of governance structures.

Recently, the concept of sustainability transitions is gaining popularity and this has led to the blossoming of literature related to the governance of these transitions, which are to achieve society's shift towards alternative –sustainable- systems of production and consumption (Grin *et al.* 2010; Rotmans, 2006; Smith *et al.*, 2005; Tukker & Butter, 2007). As sustainable development requires innovation in governance institutions and in socio-technical systems, transition management comes in as a new governance model fostering sustainable development (Kemp & Martens, 2007). In essence, sustainable development governance models need to take the complex actor configurations into account (Jänicke, 2007).

Next to the overarching sustainable development strategies, a range of policy instruments exist – within and outside governmental departments- to allow this 'governance for sustainable development' to materialize at various levels:

- At the global level (*e.g.* through formal institutions such as the United Nations, as well as through international NGO advocacy);
- At the national level (*e.g.* through national sustainable development strategies);
- At the sub-national level (*e.g.* through regional sustainability visions and instruments);
- At the local level (*e.g.* through sustainable landscape governance (Southern *et al.*, 2011).

Sustainable development governance is a research topic in its own right, yet this introduction paves the way for the detailed analysis of a particular instrument of sustainable development governance – sustainability assessment- that will be introduced in the next chapter.

Sections 2.1 ad 2.2 dealt with the content and the process characterizing various interpretations of sustainable development, while this section (2.3) introduced institutional aspects. According to van Zeijl *et al.* (2008), these three aspects of sustainability (content, process and institutions) embody '*wicked problems, social complexity and weak institutionalization*' and hence undermine the rationale of traditional governing with governments as institutions with hierarchical power, and support the idea of governance as a shared responsibility of various societal actors. This underlines the importance of participation as a key element in governance for sustainable development.

2.3.3 Participation for sustainable development

2.3.3.1 Rationale for participation

Participation in the context of public decision-making for sustainable development amounts to the inclusion of non-governmental stakeholders in the public decision-making process. O’Faircheallaigh (2010) defines it as ‘*any form of interaction between government and corporate actors and the public*’. There is an overwhelming consensus among policy makers and stakeholders that more participation is needed in public decision-making processes (Kasemir *et al.*, 2003), especially in the case of complex issues and so-called ‘unstructured’ problems (van Asselt & Rijkens-Klomp, 2002). Unstructured problems are characterized by divergent norms and values amongst the involved actors and by high uncertainty about the causes of the policy problem and about alternative policy options (Hoppe, 2002). As a consequence, decision-making on these issues needs to encompass negotiation between public decision-makers and external stakeholders (Runhaar, 2009). Yet the question remains on how to realize participatory decision-making – there is obviously no blueprint to achieve that goal.

Jänicke (2007) puts participation at the centre of governance for sustainable development, and Andersson (2008) identifies three main rationales explaining this desirability of public participation: The substantial rationale concerns knowledge: it states that the public should be involved because citizens have knowledge, which differs from the knowledge of public decision-makers.

The political-institutional rationale states that public involvement strengthens the legitimacy of decisions, and that this will lead to better policy by providing control and feedback.

The ethical-normative rationale states that the public should be involved because they are the ultimate source of value within society, and these values should be expressed in decision-making. Similarly, O’Faircheallaigh (2010) proposes a categorisation of the purposes of public participation in decision-making and distinguishes different degrees of control over decisions by the public. A summary is provided in Table 2.2.

Table 2.2: Purposes of participation in public decision-making (adapted from Andersson, 2008 and O’Faircheallaigh, 2010)

Main purpose of participation	Secondary purposes of participation
Obtain public input into decisions taken elsewhere (substantial rationale)	• Provide information to the public • Integrate knowledge from the public to fill information gaps • Allow for information contestability • Problem solving and social learning
Share decision-making with the public (political-institutional rationale)	• Reflect democratic principles • Ensure legitimacy, control & feedback • Ensure pluralist representation
Alter distribution of power and structures of decision-making (ethical-normative rationale)	• Integrate values • Involve marginalised groups • Shift the locus of decision-making

The arguments pro participation are summarized in Table 1.2, yet we agree with Rowe & Frewer (2004) that the most persuasive argument for public involvement is that value judgements are at the centre of governance for sustainable development. Participation also assumes a prominent role in order to promote the use of scientific knowledge in policy-making (Mickwitz & Melanen, 2009).

2.3.3.2 Quality of participation

The importance of participation is now underpinned, yet the quality of the participatory process is another key element.

There exist a wide variety of evaluation criteria for public participation evaluation. Rowe & Frewer (2004) propose acceptance criteria and process criteria (which concern features that are liable to ensure it takes place in an effective manner) to evaluate public participation. Acceptance criteria include the representativeness of participants, the independence, early involvement, influence and transparency criteria. Process criteria include resource accessibility, task definition, structured decision-making and cost-effectiveness. Rozema *et al.* (2012) make a distinction between invited and uninvited spaces for participation, thereby stretching the interpretation of the concept. Invited spaces derive from institutions that grant access to the public in policy-making. Uninvited spaces for participation refer to social movements that run in opposition to these invited spaces and contest the official standpoint towards participation.

The nature of the public participation process used in any given context depends on the issue under investigation, making it difficult to provide generic guidance on which methods to use (Munton, 2003). Klopogge & Van Der Sluijs (2006) and Van Asselt & Rijkens-Klomp (2006) provide guidance on the choice of participatory methods (see Chapter 5).

2.3.3.3 Critique on participation

Hartley & Wood (2005) express concerns about the quality of the participatory process, as ‘badly managed’ participatory processes can have negative consequences: a –perceived– lack of participation leads to a sense of alienation between political decision-makers and citizens, who may feel unconvinced that their opinions were considered in decision-making. Similarly, participatory processes can be seen by the public as a sophisticated tool for those in power to reach their goals (Andersson, 2008), which needs to be avoided by a fair design and a trustworthy guardian of the participation process as the resources and the opportunities to influence decision-making vary widely between actors (Mickwitz & Melanen, 2009).

But participation is also criticized with regard to its very performance: does participation contribute to ‘better’ decision-making? Critics point to: the objective to reach consensus, which may favour dominant interests and actors over more peripheral ones; to perceptions about legitimacy and eligibility, which cannot be separated from power issues (Rozema *et al.*, 2012); and to the overly restrictive homogenization of various actors into a single ‘public’ (Cooke & Kothari, 2001). Moreover, the greater the number of participating actors, the smaller the role each plays and the lesser the importance of traditional actors/sectors w.r.t. a policy issue, giving rise to the so-called ‘participation paradox’, which has been criticized in fisheries governance for instance (Suarez de Vivero *et al.*, 2008).

In practice the ideal of participation is often not functioning as a tool for liberation and empowerment as suggested by rhetoric. Participation can act as a smokescreen masking and relabelling existing power relationships. This is termed the ‘tyranny of participation’, which has three levels according to Cooke & Kothari (2001): the enduring control of decision-making by powerful actors; the group dynamics, which maintains local power differentials and finally the dominance of the participatory method over other approaches.

Hickley & Mohan (2004) recommend that many forms of participatory practice adopt a more modest and gradualist rhetoric while focussing on best practices instead of on unifying theories. The agency of participants, instead of being viewed as distinct from other acts, is then to be situated within the wider array of actions of these individuals to gain control and self-determination (Christens & Speer, 2006). In the same vein, Tsouvalis & Waterton (2011) propose to use the critiques on participation as a guide to approach participation in a case-by-case approach.

Pragmatic solutions to deal with potential drawbacks of participation are centred on processes where scientific and public expertise comes together (Rozema *et al.*, 2012).

The critiques on participation should be kept in mind just like the ‘best practice’ examples and the lessons learned on participation in real-life sustainability assessment exercises. According to Runhaar & Driessen (2007) participation is still a success factor for *ex ante* assessments.

While O’Faircheallaigh (2010) cites examples of successful public participation in assessments (*e.g.* by the provision of figures on the projected impacts of energy development, that were subsequently used by decision-makers), Peterlin *et al.* (2008) and Sinclair *et al.* (2007) state that the provision of environmental information during an EIA process resulted in changes in public perceptions of environmental issues. Gauthier *et al.* (2011) provide an analysis of the implementation of participation in strategic environmental assessment exercises in Québec.

A critical stance towards the actual success of participation in sustainability assessment, and a realization of power relations at play, should however not discourage practitioners and scholars to perform and analyze participatory sustainability assessments on a case-by-case basis.

CHAPTER 3: RESEARCH QUESTIONS

Section 3.1 Taking on the challenges of decision-making for sustainable development

Chapter 2 provides insight into the interpretation of sustainable development, into the need for knowledge generation through adapted ‘science for sustainable development’ and into the governance aspects of sustainable development.

The above reflection albeit inspired by practical experience and fed by a review of the relevant literature, has been primarily theoretical until now.

If sustainable development is to be a decision-guiding strategy in practical situations, decision-makers need to know the answer to three main questions:

- How can sustainable development be interpreted as a practical decision-guiding strategy?
- How can knowledge flows be structured in order to feed the decision-making process?
- How can sustainable development influence decision-making?

These three questions can be reframed as three challenges as they represent opportunities to improve the understanding of the linkages between sustainable development and decision-making, and hence to improve the practice of sustainability assessment as a decision-supporting process.

1. The ‘interpretation challenge’ refers to the different conceptualizations of sustainable development held by various actors in various contexts.
2. The ‘information-structuring challenge’ refers to the translation of sustainable development into operational information units (*e.g.* indicators) through adequate processes (*e.g.* participatory techniques) and to the need to generate, summarize and present this information soundly (*e.g.* in systematic assessment schemes).
3. The ‘influence challenge’ refers to the influence of sustainable development on decision-making processes and on the implementation of decisions.

Section 3.2 Research questions

The research questions can be lumped in two clusters:

The first cluster concerns the role of sustainability assessment in knowledge for sustainable development, and is centred on the ‘interpretation’ and ‘information-structuring’ challenges.

- How can sustainability assessment contribute to a context-specific & participatory interpretation of sustainable development?
- How can sustainability assessment structure and summarize knowledge required for decision-making for sustainable development?

The second cluster concerns the role of sustainability assessment in governance for sustainable development, and is centred on the ‘influence challenge’.

- How can sustainability assessment contribute to bridge the gap between sustainability discourse(s) and implementation?
- What is the role of the institutional context in sustainability assessment’s contribution to sustainable development?

Although the questions are formulated separately here, during this thesis' research journey the answers did not pop up clearly after a hypothetical -social- experiment. Instead parts of the puzzle were solved gradually as conclusions emerged during the research. The questions as well as the answers are –partly- intertwined. However the articulation of clear research questions at the onset provides guidance throughout the research endeavour.

The 'use' of sustainable development as a decision-supporting strategy often amounts to the question of how knowledge *-sensu lato-* can contribute to sustainable decision-making processes and subsequent decisions (especially decisions by public authorities). Decisions, as we have seen (Peterson & Bomberg, 1999), are 'choices of solutions that end some uncertainty or reduce contention', and this choice is the result of a cognitive process of selection of the course of action among several alternatives. Understanding the sustainability implications of the different available policy options is therefore a much-needed task (Gasparatos *et al.*, 2008; Quental *et al.*, 2011).

Assessing sustainability demands a better understanding of public attitudes and opinions about complex issues. Sustainability assessments aim at *capturing values through the creation of small public spaces where citizens can discuss the issues with each other, scientists and decision-makers.*' (The British Economic and Social Research Council *in*: Andersson, 2008).

In this thesis impact assessment is defined as an *ex ante* process of identification of the future consequences of current and planned actions. This view is based on the definition given by the International Association for Impact Assessment (IAIA, 2009). It is a form of *ex ante* evaluation of decision options, and as such an essential element of the knowledge-based mode of steering inherent in governance for sustainable development (Jänicke, 2007). Impact assessment is a generic term encompassing sustainability assessment amongst others assessment approaches.

Although there has always been a general public debate and quasi-evaluation of many –legal-proposals (Jänicke, 2007), there is a need for an improvement of methods of critical inquiry involving the public, as societal issues are increasingly complex (Andersson, 2008). That's where sustainability assessment comes in: its underpinning theory and its practical applications put two major elements in societal decision-making central: science, which gives us facts, and values, which build our choices (Andersson, 2008). An implicit call for sustainability assessment (and other innovative policy-supporting practices) is also issued by Lubchenco (1998) when she talks about the new social contract for science: *'some of the most pressing needs include communicating the certainties and uncertainties and seriousness of different environmental or social problems, providing alternatives to address them, and educating citizens about the issues'*.

For now sustainability assessment is presented in this thesis as a generic term describing a series of stepwise umbrella processes aimed at operationalizing sustainable development as a decision-guiding strategy through the identification of the future consequences of current and planned actions. The next chapters (especially Chapter 5 & 6) deal extensively with this topic, exploring definition(s) of, and approaches to, sustainability assessment. The study of sustainability assessment allows to make the link between the interpretation of sustainable development, its governance and the knowledge needed to feed the governance processes.

CHAPTER 4: METHODOLOGY

Note: this Chapter introduces the general research approach of the thesis. The reader is referred to the case study accounts in Chapter 5 for a detailed outline of the materials & methods of every analysed sustainability assessment case.

Section 4.1 Methodological background: a discursive-institutional approach

4.1.1 Discourse analysis

The synthesis of Chapter 2's critical reflection on the concept of sustainable development is powerfully grasped by Dryzek (2005): *'Sustainable development refers not to any accomplishment, still less to a precise set of structures and measures to achieve collectively desirable outcomes. Rather, it is a discourse.'*

At the basis of this thesis' methodological approach lies discourse analysis.

A discourse is basically a shared, structured way of speaking, thinking, interpreting and representing things in the world (Dryzek, 2005). In other words, a discourse is 'a way of seeing and talking about something' (Barry & Proops, 1999).

Discourse *analysis* emphasizes that statements cannot be grasped outside their context of use and that their meaning evolves. Forming part of the interpretative tradition in the social sciences, discourse analysis assumes the existence of multiple socially constructed realities. The basic assumption underlying discourse analysis is that humans are not so much driven by objective interests, rational calculations, social norms or power struggles, but by knowledge production and (collective) interpretations of the world (Arts & Buizer, 2009). The starting point of discourse analysts is '*homo interpreter*', who, in contrast to '*homo economicus*' or '*homo sociologicus*', is not primarily driven by respectively rational calculations or social norms, but by ideas, interpretations, and meanings attached to (part of) the world (Arts & Buizer, 2009). Söderbaum (2007) speaks of the 'political economic person'.

Language is central in discourse, and it is seen not only as a means through which the world is described but instead as an integral part of reality which profoundly shapes our views about certain issues (Hajer, 1995; Van Herzele, 2006). This means that issues are discursively raised, related and combined in specific ways so that they become 'policy problems' (Van Herzele, 2006). The way people give meaning to certain aspects of life in society creates -a series of- discourses, which ideally reflect coherent -yet normative- worldviews.

There exist various approaches to discourse as summarized by Arts & Buizer (2009). Yet one has to keep in mind Fairclough's (2003) remark that 'textually oriented discourse analysis' (the first and second bullet below) and the 'socially constructive -or argumentative (Runhaar, 2009)- approach to discourse analysis' (the last bullet) are interrelated and cannot be entirely separated.

- Discourse as communication, refers to the fact that in daily life, discourse is linked to debate, discussion or exchange of views (Arts & Buizer, 2009). This view is linked to Habermas' (2006) deliberative democracy, a model built neither on liberal interest representation nor on a republican political moral, but on civil society involvement in 'power-free' deliberations, in which the best argument determines the outcome. Hence, deliberation ideally becomes a process of truth tracking (Habermas, 2006). The goal of public deliberation is to solve a problem together with others who have distinct perspectives and interests (Baber, 2004). Individual positions are realigned in the face of better-reasoned arguments, and self-interested ends of the various

participants are ‘flushed out’ by the transparent nature of the debate (Munton, 2003). In an ideal-type situation, such public discourses should then be the basis for the legal discourses, and for the law and administrative systems governing society. Deliberative democracy succeeds when it produces a shared intention that is acceptable to a plurality of the actors who do participate in the activity of forming it (Baber, 2004). Munton (2003) however states that power issues are always present and hence should also be considered.

- Discourse as text confines the study of discourse mainly to what is said and written, and focuses on the way in which language orders our perceptions and makes things happen (Potter & Wetherell, 1987). This linguistic perspective is the most narrow interpretation of discourse (Arts & Buizer, 2009).
- Discourse as frame and discourse as social practice are situated at the broad end of the discourse analysis spectrum (Arts & Buizer, 2009). Discourses are here seen as structured ways of representation that evoke particular understandings and may subsequently enable new types of actions to be thought about. This means that next to appreciating how ideas are framed in words, discourse also refers to the practices in which specific ways of looking at things are embedded (Buizer & Van Herzele, 2012). Although the two views (frame & practice) are closely related, the discourse as practice approach puts more emphasis on how discourses and social practices (including institutional arrangements) are intertwined. Different social understandings of the world thus lead to different social actions (Jorgensen & Philips, 2002).

Here discourse also refers to a policy process’ implicit context, deeply embedded in the institutional structure and taken for granted by actors in the policy process. Indeed language and actions are intrinsically linked, as people define themselves and their beliefs through both language and actions (Wilkins, 2003). Or in the words of Foucault (1972): ‘*discourses are practices that systematically form the objects of which they speak*’. This citation is an illustration of Foucault’s constitutive view of discourse, where discourse actively constructs society (Arts & Buizer, 2009). In summary, the assumption is that there is a mutually constitutive relationship among discourse and action: the meanings of discourses are shared and social, and at the same time, discourse gives meaning to actions, thereby constituting the social world (Phillips *et al.*, 2004).

In this thesis, we follow the ‘discourse as social practice’ strain. Hence discourse refers to how ideas are framed in words and to the practices in which specific ways of looking at things are embedded. We propose to use Hajer’s (1995) definition as a basis. It emphasises both text and practice:

Discourse is (...) a specific ensemble of ideas, concepts and categorizations that are produced, reproduced and transformed in a particular set of practices and through which meaning is given to physical and social realities (Hajer, 1995).

Decision-making is dominated by particular discourses that provide a bias both in conceptualizing a policy problem as well as in the solutions that can be conceived for those problems. The way particular issues are discussed defines the way in which these issues are experienced and thereby also defines ‘*the perceived possibilities to act*’ (Hajer & Versteeg, 2005). Discourses do not just describe things, they do things, as discourse both ‘rules in’ certain ways of talking about a topic and defines acceptable behaviour, yet it also ‘rules out’, limits and restricts other ways of talking, of conducting ourselves or constructing knowledge (Phillips *et al.*, 2004).

Now that the approaches to discourses are clarified, we explore discourse analysis.

Discourse analysis does not deal primarily with *e.g.* a sustainability issue as such, but it deals with the way in which society makes sense of that sustainability issue (Feindt & Oels, 2005; Hajer & Versteeg, 2005). This means that discourse analysis focuses both on the ways of thinking and arguing on specific issues as on the related practices, structures and institutions (Runhaar *et al.*, 2005).

Discourse analysis’ basic assumption is that language profoundly shapes one’s view of the world and reality, instead of being a neutral medium mirroring it (Hajer & Versteeg, 2005). Similarly, -

(un)consciously held- discourses determine how people and their actions are understood by others. Actors' respective affinities to particular discourses may lead to misunderstandings as there exist alternative and often competing discourses, associated with different groups of people in different social positions (Fairclough, 2003).

Discourse analysis aims at identifying what has influenced the way a problem is defined and will hence focus on contextual differences. The definition of problems is not taken for granted, and various problem perceptions are acceptable and need to be clarified.

A particular way of framing an issue may for instance become dominant while actors are unaware of why this should be so (Buizer & Van Herzele, 2010). Consequently discourse analysis will also shed light on the practices in which specific ways of looking at things are embedded.

4.1.2 Discourse analysis: a contribution to sustainability research

There are substantive arguments for the use of the 'discourse as practice' perspective in this thesis' research endeavour.

The concept of sustainable development is central in this thesis as it defines the very essence of sustainability assessments. But sustainable development cannot simply be imposed to citizens in a hypothetical top-down way - instead it is continuously contested in a struggle about its interpretation and implementation. Although sustainable development can be characterized by a set of general principles (see Chapter 2) it is not possible to refer to one absolutely correct interpretation or measure reflecting sustainability (Söderbaum, 2007).

Discourse analysis reveals the multiple contested interpretations of sustainability challenges and the embedding of these interpretations in practice. It also allows us to see how a diversity of actors actively tries to influence the definition of a problem (Hajer & Versteeg, 2005).

Discourse analysis is of special relevance for a better understanding of the theory and practice of sustainability assessment: it can trace how sustainable development emerged as a key policy principle in a particular context, and how its meaning evolved as it was moulded by institutional settings and through the application on particular cases (see e.g. Gordon & Berkovitch (2007) for a similar approach to the 'human rights' discourse).

Particular sustainability discourses shape patterns in social life, guide discussions and become institutionalized (Hajer & Laws, 2006) in practices such as sustainability assessment.

There exists a two-way relationship between discourse and sustainability assessment: -potentially competing- sustainable development discourses influence the -potentially competing- way in which sustainability assessments are performed, and *vice versa* (Runhaar, 2009).

First, discourses influence sustainability assessments, as particular sustainability discourses enable and constrain the consideration of available policy options to solve sustainability challenges (Feindt & Oels, 2005). This means that the range of alternative policy options assessed through sustainability assessment will be influenced by the dominant sustainability discourse(s) in a particular context (Philips *et al.*, 2004). Some options may not even be considered, as they do not 'fit' within the dominant context-specific sustainability discourse. The result of a particular sustainability assessment approach will depend on one's particular interpretation of sustainability.

If one is not aware of these potential risks of interpretive reductionism, the inherent bias of the results of sustainability assessments might not be clear which may then lead to a false reassurance regarding the sustainability of policy decisions.

Secondly, sustainability assessment may also impact upon dominant discourses, as the results of a sustainability assessment and the actors involved in the assessment process may gradually change the dominant sustainability discourses through the assessment practice and its outcomes.

Hence discourses both precede and follow sustainability assessment (Runhaar, 2009).

The potential contribution of discourse analysis to a better understanding of sustainability assessment can be summarized as follows (summarized from Hajer & Versteeg, 2005; Runhaar, 2009; and Runhaar *et al.* 2005):

- Discourse analysis explicitly appreciates sustainability as a contested notion.
- Discourse analysis allows to analyze bias in policy practice.
- Discourse analysis sheds light on what can and what cannot be ‘thought’, as discourses act as built-in filters that distinguish ‘relevant’ from ‘irrelevant’ data. Discourses delimit the range of policy options and thereby serve as precursors for policy outcomes.
- Discourse analysis sheds light on how knowledge generated by sustainability assessments is used in decision-making.
- Discourse analysis also sheds light on the influence that sustainability assessment has on the dynamics of discourse (adding elements to existing discourses, introducing competing discourses *etc.*).

We believe that a ‘discourse analytical lens’ can enhance the understanding of sustainability assessment practice and can hence contribute to enhancing the actual impact of sustainability assessment on policy decisions.

4.1.3 Discourse and the practice of sustainability assessment

Discourse not only determines which policy options can be considered in a sustainability assessment, its constitutive power goes beyond that as discourse enables and limits the range of practice and interactions in which actors can engage (Feindt & Oels, 2005). This means that discourse not only shapes the content of a sustainability assessment (which policy options can we assess based on which sustainability interpretation?), but also shapes the sustainability assessment process as a whole (how will we proceed? who is to be involved? *etc.*).

Sustainability assessment is a solution-oriented process seeking to generate an answer to policy problems, but it is also a forum where conflicts between discourses may be exacerbated or resolved (Hajer & Versteeg, 2005). Discourse is hence intertwined with the sustainability assessment practice.

The question then arises of how this practice (of sustainability assessment) can be organized: what institutional framework can be envisaged to conduct sustainability assessments in such a way that the construction of reality (*in casu* the contested interpretations of sustainability) can take place in *e.g.* a more democratic way (Hajer & Versteeg, 2005)?

Hence discourse is not only intertwined with practices but also with the institutional framework in which these practices happen (Feindt & Oels, 2005). Often institutional ambiguity prevails, as there are no generally accepted rules and norms according to which policy measures are to be agreed upon (Hajer & Versteeg, 2005). Yet these institutional questions become all the more pressing as the political field is evolving towards an increasingly multi-actor and multi-level setting (Arts & Van Tatenhove, 2005; Hajer & Versteeg, 2005).

In this thesis we use a discourse analysis perspective to better understand how the theory and the practice of sustainability assessment is influenced by discourses and how sustainability assessment in turn influences discourses. However we agree with Arts & Buizer (2009) that the analysis should – where possible- go beyond this stage: indeed it can be relevant to know how and to what extent discourses and associated practices become institutionalized and affect social processes and outcomes.

4.1.4 A discursive-institutional approach to sustainability assessment

Following these reflections, we chose to follow a discursive-institutional approach as a thread throughout this thesis. The theoretical basis of this approach is mainly inspired by the work of Arts & Buizer (2009), Dryzek (2005), Phillips *et al.* (2004) and Runhaar (2009).

The underlying idea of a ‘discursive institutional approach’ (Arts & Buizer, 2009) is that institutions are social constructions –partly- constituted through discourse, which is in itself closely linked to practice (Phillips *et al.*, 2004). Sustainability assessment is considered as a political rather than as an exclusively scientific and technical issue (Söderbaum, 2007), and discourse is recognized as a key element of policy influence (Lehtonen, 2009).

Although the discursive-institutional approach does not directly provide us with a blueprint method of analysis for sustainability assessment cases, the general idea it embodies helps to better understand sustainability assessment.

Sustainability assessment practice sits at the interface of discourses (which constitute institutional software including habits, styles, notions of legitimate reasoning (Healey, 1997)) and formal rules (which constitute institutional hardware) (Dryzek, 2005). In other words: discourses constitute the informal understandings that shape sustainability assessment practice together with formal institutional rules. Understanding sustainability assessment, and translating research findings into recommendations for policy-makers, hence requires insight in the dynamics generated by the interplay between discourse, institutions and practice (Arts & Buizer, 2009).

The interactions between discourse and institutions is relevant to understand sustainability assessment for two reasons:

First, as actors interact they may come to shared interpretations of reality, which are expressed in language and associated –sustainability assessment- practices (Phillips *et al.*, 2004). These shared interpretations of reality are discourses, which influence institutions and can lead to the institutionalization of sustainability assessment.

Institutionalization refers to the gradual adoption of a discourse and/or practice by different members of an organisation (*e.g.* policy-makers and other actors involved in public decision-making) until the practice is widely implemented and stabilized. It refers to the process whereby a practice passes from *ad hoc* application to general adoption and contributes to change a system/an organisation (Lozano, 2006). Arts *et al.* (2006) add that in the process of institutionalization, patterns of division of tasks and interaction develop between actors and that policy processes develop in accordance with more or less fixed rules.

Secondly, the existing institutional landscape (*e.g.* which impact assessment approaches are known/used/compulsory in a particular context; which participatory techniques are already used to inform decision-making; what is the institutional framework in support of sustainable development *etc.*) will influence the sustainability discourse and the practice of sustainability assessment in any particular context. Indeed sustainability assessment never emerges in a ‘virgin’ institutional environment (Hugé & Waas, 2010).

A discursive-institutional approach thus allows us to reflect on the bi-directional influences of sustainable development discourses on the institutional framework in which sustainability assessment is performed.

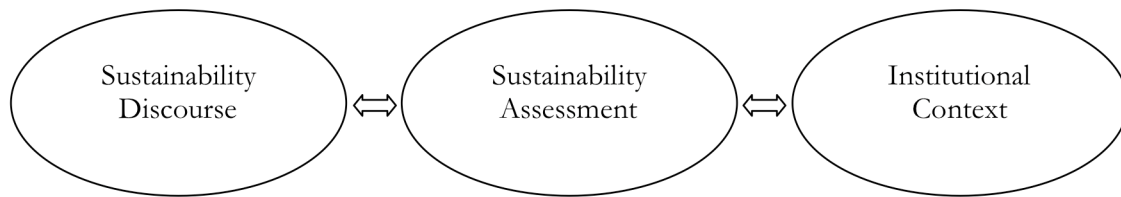


Figure 4.1: Schematic representation of the mutual interdependencies between discourses, sustainability assessment and institutional context

Throughout this thesis the interrelation between the discursive and institutional dimensions of sustainable development policy-making will serve as a guide to the analysis of sustainability assessment.

In summary, discourse analysis -which contributes to analyse and understand the social processes behind shifting shared interpretations of problems and approaches to solutions (Arts *et al.*, 2006)- is combined with a focus on the institutional context wherein sustainability assessment emerges and is performed.

In doing so this thesis aims at providing an additional lens through which sustainability assessment can be approached.

4.1.5 Case study research

4.1.5.1 Introduction on case study research

As illustrated in Figure 1.2, this thesis is a reflection on the theory and practice of sustainability assessment, and builds on three in-depth case studies. Building on case studies is one way to explore the practice of sustainability assessment, so as to gain insight into this thesis' main research objectives and to yield general recommendations on sustainability assessment approaches.

The case studies are analysed through a discursive-institutional lens.

Discourse analysis benefits from looking at what is actually done (rather than what should be done), and how these practices are influenced and influence the way an issue is defined (Buizer & Van Herzele, 2012). This focus on practice is in line with Lafferty & Meadowcroft's (2000) emphasis on analyzing what is actually meant by decision-makers when they have agreed to undertake something they term sustainable development and/or sustainability assessment.

A case study approach is well suited to perform this analysis. A discourse analytical lens does not preclude the emergence of eventual normative recommendations as such (*e.g.* on the characteristics of a 'good' sustainability assessment), but it does not start from a prescriptive perspective. Instead it focuses on the practices and their linked discourses.

A case study approach allows to analyze the theory and practice of sustainability assessment in various institutional settings: sustainability assessments are performed in crowded institutional landscapes and this shapes the way they are designed and applied. Focusing on institutions allows us to suggest adapted recommendations for public decision-makers.

Case study research is defined as an empirical inquiry that investigates a contemporary phenomenon within its real-life context -especially if the boundaries between phenomenon and context are not clearly evident (Yin, 2003). Context is key in this thesis' research, as it both shapes the practice of

sustainability assessment (through institutions and adapted –yet meaningful- interpretations of sustainable development) and as context itself is shaped by sustainability assessment (the very fact of performing sustainability assessments might influence actors' values as well as institutions for instance). As case study research is '*undertaken in contemporary real-life contexts where the phenomenon of interest is interdependent, or enmeshed with the context of study*' (Yin, 2003) and as case studies have the capacity to connect practical complex events to theoretical abstractions (Stake, 2000), this approach is well adapted to this thesis' objectives. Ragin (2000) claimed that '*virtually every social scientific study is a case study or can be conceived as a case study because it is an analysis of social phenomena specific to time and place*'. In this thesis, we follow Luck *et al.* (2006) and define a case study as a detailed, intensive study of a particular contextual phenomenon that is undertaken in a real life situation. The case study approach is relevant for this thesis, as we believe that learning about tangible policy-making practices is a first step in the exploration of sustainability assessment. There are indeed no mature solutions that fit for every purpose in the realm of sustainability assessment (Frame & Cavanagh, 2009).

4.1.5.2 Case studies

This thesis builds on three case studies of sustainability assessment, described and analyzed in detail in Chapter 6:

- The first case study focuses on the emergence, the development and the pilot application of sustainability assessment in Flanders, Belgium's northern region (Section 6.1).
- The second case study focuses on the sustainability assessment of national Poverty Reduction Strategies and consists of a descriptive, analytical section and of a detailed case study account in Benin, West Africa (Section 6.2).
- The third case focuses on the conceptualization and application of sustainability assessment for energy policy, in particular in the context of radioactive waste management (Section 6.3).

The choice for these case studies is motivated by:

- Our view on sustainable development as a political reality, going beyond a mere conceptual reflection. In agreement with Lafferty & Meadowcroft (2000), we believe that the observed discursive and practical behaviour of policy-makers should contribute to interpret sustainable development in a particular context. Indeed, '*when decision-makers have agreed to undertake something called 'sustainable development', the interest is in seeing what this actually implies*' (Lafferty & Meadowcroft, 2000), emphasizing the relevance of a case study approach.
- The importance of context in the followed discursive-institutional approach is key, as discourse analysis recognizes that sustainability assessments cannot be grasped outside their context because their function and meaning are intrinsically dynamic.
- In the same vein, 'the terms according to which specific issues are discussed, define the way in which a topic is experienced and thereby also defines perceived possibilities to act' (Hajer & Versteeg, 2005). As these terms differ between different settings, a case study approach is again considered to be a pertinent approach.
- Case studies underline the key importance of context.

Context is multi-dimensional and refers to differences in the geographic, cultural, socio-economic and institutional environment in which sustainability assessment is conceptualized and applied.

- The institutional context describes the characteristics of the decision-making process and the institutional setting, which influences the functions of sustainability assessment (Runhaar & Driessen, 2007), and which differs between the chosen case studies.
- The socio-economic and cultural context is obviously different between a European, high-income OECD country (Belgium) and an African least developed country (LDC), Benin. This fact, together with the –necessarily context-specific- path dependent emergence of sustainability assessment in different settings, makes a case

study approach relevant. No single model of sustainability assessment can work across all countries (Ramakrishna, 2003), and an analysis of the theory and practice of sustainability assessment will be of higher quality if different cases are analysed (Bond *et al.*, 2001).

- According to Pope *et al.* (2004), in order to be effective, sustainability assessment should be applied by all sectors of society and to existing practices across all sectors, as well as to the prevailing policy and legislative paradigm. The three analysed cases provide an insight in the practice of sustainability assessment in different sectors (energy policy, development co-operation); involving non-state actors (all cases build at least in part on participatory methods) and performed in different institutional environments (the sub-national level of a high-income country; the national level of a least developed country and the sector level (energy policy)).

Despite the contextual and substantive differences between the cases, each case focuses on proposals that are expected to have economic, social and environmental consequences. In each of the case studies, sustainability impacts are taken into account –at least partly- by means of the involvement of external actors.

Section 4.2 Methods

4.2.1 Outline

We recapitulate the main research objectives of the thesis:

- to identify how sustainable development is conceptualized and interpreted in sustainability assessments;
- to identify how sustainability assessments contribute to structure information from various types and sources;
- to identify how sustainability assessment fosters sustainable development through influencing policy;

Responses to these research objectives will be analyzed through a discursive-institutional approach. Although there is no single method for ‘doing discourse analysis’, the assumption is that there is a need to look directly at social events as they unfold (Wood & Kroger, 2000). This is done through a set of methods that can be grouped under the umbrella term of ‘participatory’ methods.

Concretely the discursive-institutional approach followed in each of the case studies and as an overall research guideline for this thesis consists of four main steps:

- | |
|---|
| <ol style="list-style-type: none"> 1. Document analysis; 2. Expert interviews; 3. Analysis of the set-up and the practice of participatory sustainability assessments; 4. Analysis of key influencing factors (with a focus on discourses & institutions) shaping the sustainability assessments. |
|---|

Box 4.1: Four main steps of the discursive-institutional approach followed in this thesis

This four-steps method allows us to understand the main discursive-institutional elements influencing the practice of sustainability assessment:

- the basic recognized or constructed discursive entities underpinning the assessment exercise (*i.e.* different discourses see different things in the world);
- the involved actors;
- the institutional setting in which the sustainability assessment is performed.

4.2.2 Data collection methods

Using a discourse analysis lens to understand institutional dynamics requires the use of data collection methods suited for exploratory research. This is illustrated by the work of a.o. Arts & Buizer (2009), Buizer & Van Herzele (2012) and Dryzek (2005).

While the four steps outlined in § 3.2.1 are used as a general guidance, various methods were used in the different case studies. We refer to the respective case study sections (within Chapter 6) for a more detailed account.

This section provides a brief overview of the data collection methods used in this thesis.

- *Document analysis*

This thesis draws extensively on scientific literature and on policy documents, as sustainability assessment is both an academic discipline (in development) as a decision-supporting process for policy-makers. Data were obtained from peer-reviewed scientific papers, official reports, personal correspondence and communications from governmental and non-governmental actors (see References section). The document analysis was a first step in every case, but in order to gain context-specific information and to gain insight into discursive practices, other methods were applied.

- *Expert interviews*

Resource persons that have a good overview of the case are termed ‘helicopters’ by Hajer (2006). They are often ‘experts’, a notion that refers to ‘persons responsible for development, implementation or control of solutions, strategies or policies’ in research methodology. Experts usually have a privileged access to information about groups of persons or decision processes and have a high level of aggregated and specific knowledge that is otherwise difficult to access (Otto-Banaszak *et al.*, 2011). Expert interviews were conducted to gain insight in the three cases.

Bogner *et al.* (2009) distinguish:

- explorative expert interviews, which aim at gaining insight in the structuring of problems (i.e. acquiring technical knowledge);
- systematizing expert interviews, which focus on the exclusivity of expert knowledge and ideally requires interviews with multiple experts to be able to compare and aggregate data to gain process knowledge; and
- theory-generating interviews, in which the expert is encouraged to air his personal perspectives (motives, routines, beliefs), so as to acquire explanatory knowledge.

While explorative interviews were carried out in the three case studies, in the Benin case (Chapter 5.2.2), the main method consisted in performing systematizing expert interviews.

- *Delphi method*

The Delphi approach is a method of structuring a group communication process so that the process is effective in allowing a group of individuals as a whole to deal with a complex problem. It consists of an iterative survey of experts. These experts are not aware of the identity of the fellow members of the Delphi panel (Kuo *et al.*, 2005). Each participant completes a questionnaire and is then given feedback on the whole set of responses. With this information in hand, he fills out the questionnaire again. The expert might change his opinion based upon his evaluation of new information provided by other participants. This process can be repeated if necessary. The idea is that the entire group of experts can weigh dissenting views and that the consensus increases from round to round (Steyaert & Lisoir, 2005). A practical example of a

Delphi approach in support of developing indicators for sustainability assessment is provided by Hugé *et al.* (2010) and is summarized in Chapter 5 (section 5.6.4).

- *Focus groups*

A focus group is a planned discussion among a small group of actors facilitated by a skilled moderator. Designed to obtain information about people's preferences and values with regard to a defined topic, and why these are held, by observing the structured discussion of an interactive group in a permissive, non-threatening environment. Focus groups are suited for the exploration of a concept and aim at generating creative ideas. They are particularly useful when participants' reasoning behind their views is of interest, as well as the process by which participants develop and influence each others' ideas (Steyaert & Lisoir, 2005).

- *Survey*

Surveys can be an integral part of impact assessments (MacLaren, 1987), yet in this thesis, the survey method was applied to obtain information about the attitudes of stakeholders with regard to the introduction and conceptualization of sustainability assessment in Chapter 5.1.1, an approach similar to the method of Devuyt *et al.* (2000).

- *Immersion in policy processes*

Following Flyvbjerg (2004), we believe that the most advanced form of understanding is achieved when researchers place themselves within the context being studied. Immersion in a policy process, combined with some of the methods outlined above contributes to a better understanding of the issue, especially where actors participating in a policy-making process aim at introducing non-dominant ideas (*e.g.* on sustainability) which are less well documented and hence cannot be accessed through document analysis (Buizer & Van Herzele, 2012).

In the case studies, immersion was especially relevant in the Flemish (Chapter 6.1.1) and Benin (Chapter 6.2.2) cases:

- Flemish case: As a researcher from the Flemish Policy Research Centre for Sustainable Development (2007-2011), I participated in numerous meetings with officials from various sub-national governmental departments, gaining first hand knowledge on policy-making processes at sub-national level in Belgium.
- Benin case: through my membership of the OECD / DAC Task Team on Strategic Environmental Assessment (2006-2008) and my membership of the advisory committee for the Benin Poverty Reduction Strategy Greening Process (2007), I was able to collect data and to access documents and key actors in sustainability assessment processes in the field of development co-operation. This immersion and participant observation allowed me to gain a better understanding of the processes at hand.

CHAPTER 5: SUSTAINABILITY ASSESSMENT EXPLORED

Section 5.1 Sustainability assessment explored

At the end of Chapter 2, sustainability assessment was generically defined as describing a series of stepwise umbrella processes aimed at operationalizing sustainable development as a decision-guiding strategy, through the identification of the future consequences of current and planned actions. This definition builds on the international scientific literature, on the ‘roots’ of the sustainability assessment approach and on existing sustainability assessment frameworks in various jurisdictions.

The definition embodies three key elements:

- a logical, stepwise approach; to
- operationalize sustainable development by using the concept to guide decisions; by following
- the impact assessment approach, focusing on the assessment of consequences / effects / impacts of current or proposed actions.

Depending on the authors, some defining elements of sustainability assessment receive particular emphasis. Pope (2006) focuses on the second element and defines sustainability assessment as *‘embracing a range of processes that all have as their broad aim the integration of sustainability concepts into decision-making, processes that may carry the labels sustainability appraisal, sustainability impact assessment, or integrated assessment, amongst others’*. Bond & Morrison-Saunders (2009) similarly present sustainability assessment as a *‘process to guide decision-making towards sustainability’*.

Devuyst *et al.* (2001) focus on the first and third element, defining sustainability assessment as *‘a formal process of identifying, predicting, and evaluating the potential impacts of a wide range of relevant initiatives and their alternatives on the sustainable development of society’*. Klopogge & Van Der Sluijs (2006) stress that – sustainability- assessment should also have added value compared to single disciplinary assessments.

This variety of emphasis seldom points to actual disagreement, and scholars as a rule accept –and sometimes even welcome– the ‘open’ definition of sustainability assessment. Indeed sustainability assessment is not a prescribed process as such, but rather an orientation of practice (Pope & Dalal-Clayton, 2011). It is not as codified as *e.g.* environmental impact assessment (EIA) and strategic environmental assessment (SEA). While this allows for a degree of freedom and inventiveness in developing more detailed or more context-specific definitions, methods and applications (see for instance Hai *et al.*, 2009; Winfield *et al.*, 2010; Zellner *et al.*, 2008), it also means that sustainability assessment frameworks exist in many forms, based on a variety of evaluation criteria (reflecting various interpretations of sustainable development) and used in a vast number of cases and contexts. However many of the conceptualisations and applications of sustainability assessment are still deemed by Winfield *et al.* (2010) to have been too narrow and overly selective, and some even appear to amount to ‘cynical green-washing’. This is linked to the interpretational abuse of sustainable development (see Chapter 2), which carries the risk of promoting ‘sustainable smokescreens’ (Waas *et al.*, 2011) or ‘cosmetic environmentalism’ (Robinson, 2005) through the non-justified use of the sustainability assessment terminology.

Even when there is agreement on a context-specific sustainability assessment approach, the involved actors may have divergent expectations with regard to the functions of sustainability assessment in the decision-making process. So although sustainability is an integrative concept and that it hence seems reasonable to design sustainability assessment as an essentially integrative process (Gibson, 2010), an analysis of the theory and practice of sustainability assessment is needed to shed light on what this actually means in a decision-making context.

A brief analysis of the history of sustainability assessment is an enlightening first step. Various approaches to sustainability assessment exist and their application depends on the institutional context and on the stated objectives of the assessment. To avoid endless terminological discussions, this section concludes with general characteristics of sustainability assessment based on a critical literature review. Other commonly used terms and acronyms include integrated assessment (IA), sustainability impact assessment (SIA) (Lee, 2006); sustainability appraisal (Bond & Morrison-Saunders, 2009; Ravetz, 2000), strategic sustainability appraisal (Partidario & Moura, 2000) integrated impact assessment *etc.*

Historically the idea of sustainability assessment is –partly- rooted in environmental impact assessment (EIA). EIA is typically a reactive process that aims to identify the impacts of an initiative for which the decision-making process is well advanced or completed, on a baseline; to evaluate the acceptability of the impacts and to identify potential modifications to improve the environmental outcomes (Pope *et al.*, 2004). In order to respond to the shortcomings of EIA (*e.g.* late initiation), strategic environmental assessment (SEA) was developed to address the environmental implications of decisions made at higher level (policy, plans and programmes). Sustainability assessment was subsequently developed through extending the scope of environmental assessment processes (EIA & SEA) to include social and economic considerations as well as environmental considerations, reflecting the triple-bottom line approach to sustainability (Pope *et al.*, 2004). Pope & Dalal-Clayton (2011) hence refer to sustainability assessment as ‘*the third generation of impact assessment*’ following EIA and SEA. This view however tends to minimize other inputs –besides the ‘environmental assessment’ input- in current sustainability assessment theory and practice.

Another root of current sustainability assessment approaches lies in the realm of regulatory impact assessment (RIA), which is the name given to a range of processes used to foster ‘better regulation’, especially in OECD countries. This root is often neglected or simply ignored by many authors working in the environmental assessment field (Bond & Morrison-Saunders, 2009; Gibson *et al.*, 2005; Pope *et al.*, 2004), perhaps because it is perceived to fit in a neo-liberal discourse rather than in a classical environmental discourse. Next to the environmental assessment approaches and RIA, fields such as land use planning, resource management and technology assessment have in some way contributed to shape the sustainability assessment ‘landscape’. In the energy debate, sustainability assessment approaches are increasingly linked to widening existing risk assessments (Eggermont & Hugé, 2011a).

Pope *et al.* (2004) also provide insight in sustainability assessment’s conceptual origins by proposing a typology based on its functions in the decision-making process (see Section 4.2). They distinguish sustainability assessment from other types of impact assessment through its objectives-led approach. Other impact assessments on the contrary, use the conditions that are likely to prevail in the absence of the proposed initiative as benchmarks for determining the significance of impacts (Hacking & Guthrie, 2006).

Looking at current practice also contributes to understanding the origins of sustainability assessment; a number of jurisdictions are already applying (some kind of) sustainability assessment on a more or less regular basis. The United Kingdom’s sustainability appraisals, the European Commission’s sustainability assessments of trade negotiations (Kirkpatrick & Lee, 2002) but also the European Commission’s Impact Assessments; as well as the Swiss, German and federal Belgian sustainability assessment schemes are examples of these practical applications (Hugé & Hens, 2010). There may be differences between the generic definitions outlined above and the context-specific policy-supporting instruments used in various jurisdictions.

The terminology and conceptualization of sustainability assessment may be new, but concerns about unwanted side-effects of decisions and about future generations are not (Gibson, 2006b). Yet sustainability assessment is to be conceptualized within current societal dynamics. Sustainability

assessment is a response to the realization that current development pathways are not viable in the long run, and that the reasons for this are as much socio-economic as ecological (Gibson, 2006b).

The quest for approaches and tools to sustainability assessment has led Rotmans (2006) to formulate the following insights a.o.: developing an overall generic sustainability assessment tool is not possible; the diversity of approaches hinders the use of sustainability assessment in policy-making; and the current views underpinning sustainability assessment have reached their limits in creating lock-ins for new tools that might be better suited to address the complexity of sustainable development. This analysis is interesting yet is not shared in its entirety by everyone (Devuyst *et al.*, 2001). Rotmans' last assertion in particular could be the result of an overly narrow interpretation of the sets of approaches embodied by sustainability assessment.

The variety of experiences and views with regard to sustainability assessment and the consequent variety of sustainability assessment approaches is welcome, as it reflects a genuine pressure for changing decision-making processes towards sustainability. But the need for a more or less consistent set of process requirements is also prominent (Gibson *et al.*, 2005; Gibson, 2006b; Winfield *et al.*, 2010).

The aim of this section is not to provide an absolute prescriptive approach to sustainability assessment, but rather to compile a critical synthesis of the literature to identify general characteristics (this chapter) and to analyze real-life applications of sustainability assessment (Chapter 5).

Characteristics of a generic sustainability assessment exercise are presented in Table 4.1. This synthesis is based on the work of Fischer (2002), George (2001), Gibson *et al.* (2005), Gibson (2006a & 2006b), Hardi & Zdan (1997, with the Bellagio Principles for Assessment), Jacob *et al.*, (2004), Lee (2006), Pintér *et al.* (2012, with updated Bellagio Principles) and Winfield *et al.* (2010), as well as on this thesis' second chapter. It was published in Hugé *et al.* (2011).

Table 5.1: Characteristics of an ideal-typical sustainability assessment (own synthesis, published in Hugé *et al.*, 2011)

1. Fostering sustainable development objectives	Global responsibility (esp. with regard to trans-boundary and global (GHG emissions) pollution issues); Integration (of environmental, social, economic and institutional issues as well as their interdependencies; of various scientific disciplines and approaches; of separate assessments; of the findings into decision-making); Equity (incl. intra-generational (vulnerable groups, burden sharing) & inter-generational (irreversible choices, lock-in) considerations); Precaution; Participation;
2. Having a holistic perspective	Assess the system as well as its parts & their interactions; Assess the environmental, social and economic impact of the proposal; Assess the environmental, social & economic risk facing the proposal;
3. Incorporating sustainability in the assessment process & procedure	Transparency & accountability regarding uncertainties, generation & use of data; Participation of various actors; Avoid irreversible risks and favors a precautionary approach; Assessment of alternatives based on the greatest overall benefits and avoidance undesirable trade offs;
4. Supporting decisions	Iterative and adaptive process, starting at the onset of the decision-making process; Adequate scope and proportionality; Adapted to and integrated into the institutional context; Prospective, long-term time horizon;

First of all any sustainability assessment should be guided by sustainability principles.

Secondly, any sustainability assessment should have a holistic perspective, assessing policy proposals without losing sight of systemic interdependencies. These first two clusters of characteristics respond to the interpretation and the information-structuring challenges.

Thirdly, sustainability principles should not only pervade the sustainability assessment's content but also its process: transparency, participation and a precautionary stance should guide the conduct of the assessment. Undesirable trade offs should be avoided.

Fourthly, to respond to the 'influence challenge' and to actually exert an impact on decision-making any sustainability assessment should be adapted to the institutional context, it should be an iterative and adaptive learning process and it should respect proportionality.

This generic sustainability assessment framework is intentionally not elaborated into specific guidelines to retain general applicability.

While the above section might suggest a hypothetical consensus about all aspects of the definition and design of a sustainability assessment approach, this is not necessarily the case. First of all concepts such as ‘holism’ (Bond & Morrison-Saunders, 2009), ‘integration’ (Scrase & Sheate, 2003) and of course sustainability itself are all subject to multiple legitimate viewpoints and interpretations. Secondly different actors have different framings of what the outcomes of a sustainability assessment should be (Bond & Morrison-Saunders, 2009). These authors refer to these areas of debate as ‘policy controversies’, which cannot be settled by recourse to fact *‘because they derive from conflicting frames, the same body of evidence can be used to support quite different policy positions’*. These include holism versus reductionism, the understanding of sustainability and the time horizon of sustainability assessments.

The next step is to translate these key principles into a stepwise approach that will give body to sustainability assessment. This will lead to the development of a structured procedure, which contains a number of prescribed stages that ought to be followed in order to meet a set of predefined objectives.

There is a consensus on the following key steps, as the basis of a generic structure of an *ex ante* impact assessment (Gasparatos *et al.*, 2010; Gibson *et al.*, 2005, EC, 2009a). These serve as a basis for sustainability assessment processes.

- Step 1: Problem identification
- Step 2: Definition of the objectives to solve the policy problem
- Step 3: Development of alternative policy options
- Step 4: Impact assessment of the various options allowing for comparison
- Step 5: Follow up (including monitoring & evaluation, policy recommendations, quality control, feedback *etc.*)

Box 5.1: Key sustainability assessment steps

This stepwise scheme is still generic. If it is to serve as guidance for practical sustainability assessment, every step needs to be clarified and elaborated and introducing sub-steps will probably be necessary.

Yet for now the characteristics of Table 4.1 and the steps of Box 4.1 provide a starting point for a more detailed exploration of sustainability assessment.

The further elaboration of this scheme is however heavily influenced by the functions assigned to sustainability assessment in decision-making.

Merely hinting to the underlying debate, think of the view that applying sustainability assessment should lead to better decisions as better information is provided (a rational actor perspective embodied in *e.g.* the policy-cycle model) (Bond & Morrison-Saunders, 2009; Hugé & Hens, 2009).

Other scholars argue that decision-making is not rational, and that assessment approaches have considerably more roles than mere information provision (Hertin *et al.*, 2007). Sustainability assessment may hence have the double role of a vehicle for the pursuit of sustainability and a contributor the interpretation of sustainability in specific circumstances (Gibson *et al.*, 2005). Other still, emphasise the need for sustainability assessment to operate as a vehicle for deliberation. Bond & Morrison-Saunders (2009) rightly observe that this view is not consistent with a positivist rational actor perspective, which would ignore constructed framings of sustainability.

This short anthology is an appetizer for the next section, which analyzes the function of sustainability assessment in the decision-making process.

Viewing sustainability assessment as an orientation of practice rather than a prescribed process (Pope & Dalal-Clayton, 2011) is both a cautious and stimulating stance at this stage of the reflection.

Section 5.2 Functions of sustainability assessment in the decision-making process

5.2.1 Perspectives on policy-making define the functions of sustainability assessment

The functions assigned to sustainability assessment in the policy-making process are determined by perspectives on policy-making. We discuss two perspectives on policy-making, inspired by Crabbé & Leroy (2008).

- Policy as a rational process

The policy cycle representation pictures policy as goal-oriented rational process: policy is seen as a conscious and rational problem-solving endeavour. Policy options are compared through some sort of -scientifically based- multi-criteria evaluation. After the best option has been chosen, *ex post* evaluation will tell to what extent the initial problem has been resolved. This perspective is inspired by engineering and economic thinking (Crabbé & Leroy, 2008). It is based on the perception that research is used efficiently and only instrumentally, meaning that research results are used to address well-defined questions on the selection of policy measures (Mickwitz & Melanen, 2009).

The policy cycle models policy-making as a set of successive steps (Howlett & Ramesh, 2003). Societal problems are placed on the political agenda (the agenda setting stage), after which problems are selected and prioritized. Then various policy responses (options) are generated to deal with that problem (the policy formulation phase). Subsequently the options are compared and the 'best' option (being the one that is considered most suited to solve the problem) is chosen in the opinion-forming stage, which leads to the eventual political decision. The next stage is policy implementation implying the concretization of the political decisions into specific measures through instruments and organisation. In the next stage policy effects (policy outputs; policy outcomes; unintended side effects) become visible. Once the policy effects materialize the evaluation phase provides feedback (Howlett & Ramesh, 2003). While this policy cycle unfolds, autonomous developments occur in society and different, simultaneous decisions are taken in other policy fields. This will altogether lead to newly emerging societal problems and therefore to new 'policy cycles' emphasizing the ongoing reiteration of a policy cycle (Howlett & Ramesh, 2003).

- Policy as political interaction

In this alternative perspective, policy is pictured as the product of power relations between various actors, convictions and interests.(Crabbé & Leroy, 2008). This 'policy as political interaction' view is more realistic and acknowledges the fact that policy-making is a 'messy' process subject to many influences (Hertin *et al.*, 2009). It goes beyond the assumption that more information will logically lead to better decision-making (Runhaar & Driessen, 2007). Indeed, although 'evidence-based decision-making' is an increasingly coined catchphrase, evidence is just one of the factors influencing decision-makers. Besides evidence; ideology, interests and institutional contexts are key subjective factors influencing decision-making (Huston, 2008). Cashmore (2007) speaks of 'behavioural variables'.

Viewing policy as political interaction is especially relevant when confronted with 'unstructured' policy problems, which are typical from a sustainable development perspective. Unstructured problems are characterized by divergent norms and values amongst the involved actors and by high uncertainty about the causes of the policy problem and about alternative policy options (Hoppe, 2002). As a consequence policy-making is believed to encompass negotiation between public decision-makers and external actors (Runhaar, 2009).

These two ideal-typical views influence the –expectations with regard to– the functions of sustainability assessment through the associated divergent views on knowledge acquired through policy-relevant learning processes.

5.2.2 Learning through sustainability assessment

One of the main stated objectives of sustainability assessment is to contribute to the delivery of ‘better’ (*i.e.* more sustainable) policy through the provision and structuring of knowledge. In other words: sustainability assessment is to contribute the emergence of the ‘knowledge-based society’ (Saviotti, 2007). However knowledge –anchored in the beliefs and commitments of its holder (Matzler *et al.*, 2008)– can feed into the policy process in different ways.

Knowledge in various forms is acquired through learning, defined here as a process in which individuals apply new information and ideas to –policy– decisions (Busenberg, 2001). Learning effects are considered by many scholars to be key in sustainability assessments (Hertin *et al.*, 2007; Holder, 2004; Owens, 2004; Sinclair *et al.*, 2007).

In the learning literature related to (sustainability) assessment, a main distinction is made between the ‘information theory’ and the ‘culture theory’ (Holder, 2004). The information theory focuses on the informing role of sustainability assessment implying that relevant information is –directly– provided to the decision-makers.

The ‘culture theory’ emphasises attitude changes indirectly generated by knowledge, which ultimately results in a new way of policy-making. Both theories are associated with different types of learning.

- The information theory: instrumental learning effects

Instrumental learning effects entail the use of newly gathered or newly developed knowledge when taking concrete decisions, thereby supporting a rational view on policy-making (Hertin *et al.*, 2007). Knowledge is used directly and instrumentally (Bekker *et al.*, 2004). This view is akin to single-loop learning, which involves improving efficacy or getting better at fulfilling existing purposes in the context of a given set of governing variables (Sinclair *et al.*, 2007) or to Lindquist’s (2001) ‘expanding policy capacities’.

- The culture theory – conceptual learning effects

Conceptual learning effects describe the development of new insights and perspectives by policy-makers, offering opportunities for policy change (Hertin *et al.*, 2007). This is in line with double-loop learning, which entails changes to both means and ends and to governing variables (Sinclair *et al.*, 2007). Lindquist (2001) speaks of broadening policy horizons such as introducing new frameworks for debates and putting new ideas on the agenda. In the context of the discourse analysis approach of this thesis, one might prefer the related term ‘discourse reflection’ defined as the reconsideration of initial discourses in light of interaction with other actors and associated discourses (Runhaar *et al.*, 2010).

Bekker *et al.* (2004) speak of the incremental model where knowledge is being used in an indirect way, by contributing to a gradual ‘enlightenment’ of the decision-makers. The incremental model emphasises the long-term horizon of societal change, reflected by the striking image of ‘knowledge creep’: knowledge gradually trickles down into the minds of the decision-makers, ultimately leading to potentially considerable change. The idea of political incrementalism was launched by Lindblom (1959) and views policy as a process of ‘muddling through’ as policy-makers need to deal with processes over which they have limited control. Lindblom’s idea also emphasises that radical societal change does not happen overnight.

Some authors go even further and talk about ‘transformational’ knowledge (Luks & Siebenhüner, 2007), which strengthens a society’s capacity to evolve towards a sustainable future through a fundamental re-design of policies (*cf.* Lindquist’s (2001) change in policy regimes).

From a learning perspective it is also relevant to make a distinction between explicit knowledge, that can be expressed by words, text and diagrams; and tacit knowledge that cannot be explicated and which consists of expertise, insights and intuition (Bapuji & Crossan, 2007). Knowing is then viewed as a process that combines tacit and explicit knowledge in light of specific actions (Matzler *et al.* 2008).

Applying a learning lens on sustainability assessment can contribute to reconcile the contradictory demands of making decisions in an uncertain globally changing context while at the same time providing a future-oriented sustainability vision (Hildén, 2011). Learning is linked to adaptability, which is defined as the capability of actors to develop appropriate reactions in the face of uncertainties and surprises, and to experiment and explore new paths (Hildén, 2011).

5.2.3 Functions of sustainability assessment

But the question remains: how do these various views on policy, knowledge and learning, influence the functions of (and the functions assigned to) sustainability assessment? Box 4.2 outlines the general idea that perspectives on policy-making influence the way knowledge is –to be– utilised and hence influence the type of learning effects fostered by sustainability assessment. This in turn will determine the functions of / assigned to sustainability assessment. The relationship works both ways as the stated functions of sustainability assessment carry with them an underlying perspective on policy-making.

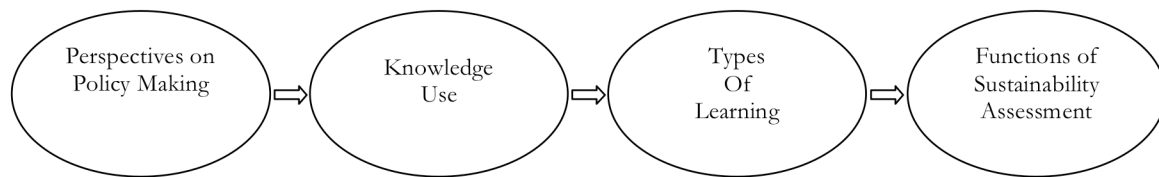


Figure 5.1: Chain of factors influencing the functions of sustainability assessment in the decision-making process

Sections 5.2.1 and 5.2.2 provide the theoretical background underpinning this synthesis section 5.2.3. Table 5.2 provides an overview of the whole section 5.2.

Table 5.2: Ideal-typical representation of factors influencing the functions of sustainability assessment according to two perspectives on policy-making

Views on Policy-making	Policy-making is...	Knowledge utilisation theory	Learning	Functions of Sustainability Assessment
Rational	Problem-solving oriented	Information theory	Instrumental	- Information generation (in comparing policy options) - Structuring complexity
Political interaction	Interaction between agencies and interests involved	Culture theory	Conceptual	- Forum for debate and deliberation. - Fostering attitude shifts

Sustainability assessments –and impact assessments *sensu lato*– can have different functions in a decision-making process. These functions are not mutually exclusive, and sustainability assessments often take on different functions simultaneously.

Four key functions can be identified:

- Information generation.
- Structuring complexity.
- Forum for debate and deliberation.
- Fostering attitude shifts.

First, sustainability assessment can be a tool/process to generate information for decision-makers, ensuring that a decision is taken with the best available knowledge of its full – (un)intentional – impacts. Ideally, this leads to choose the best policy option. This would then be the option most suited to solve the problem *in a sustainable way*. Making this choice demands reliable information about the possible impacts of the various alternative proposals.

Sustainability assessment thus creates choice opportunities. Sustainability assessment is seen here as an objectifying instrument, providing instrumental knowledge, directly underpinning specific decisions. This supposes a rational approach to decision-making. Small-scale instrumental learning effects are common in sustainability assessments and are relatively easy to identify in practice (Hertin *et al.*, 2007) yet this rational-instrumental ‘lens’ on policy-making only tells one part of the story (see other functions). In this view sustainability assessment can also be a performance assessment tool as it allows to assess to which degree policies are successful in meeting sustainable development objectives (Hardi, 2007).

Linked to the first perspective but going beyond mere information generation, the second perspective emphasizes sustainability assessment’s ‘structuring power’. Indeed, decision-makers face many challenges when designing policy. First the intrinsic complexity of multidimensional societal challenges creates an ever-growing need for information and debate (Funtowicz *et al.*, 1999). Secondly, institutional complexity arising from the new realities of multi-level governance networks blurs the boundaries between actors’ responsibilities and competences. These challenges demand instruments to structure both the increasing intrinsic complexity and the institutional complexity of decision-making. Sustainability assessment provides that systematic approach that allows policy-makers to deal with complexity and to structure the input of various actors.

Thirdly, sustainability assessment can be a forum for debate and deliberation (Baber, 2004). Policymaking is a ‘mess’, influenced by various actors subjected to power struggles and to strategic and coincidental considerations (Hertin *et al.*, 2008). Pre-decision deliberations enrich the decision-making process and create new perspectives. Deliberation is debate and discussion aimed at producing reasonable, well-informed opinions in which participants are willing to revise preferences in light of discussion, new information, and claims made by fellow participants (Chambers, 2003). Democratic deliberation creates a situation in which other interests than one’s own are considered, including the interest of nature and future generations (Baber, 2004). Diversity and openness to preference shifts are key characteristics of deliberative processes (Buizer & Van Herzele, 2012). Sustainability assessment can also contribute to a shared understanding of sustainable development in a particular context. But there is a risk of political (ab)use of impact assessments, *e.g.* to steer decisions in a particular direction or to justify irrevocable decisions. Other risks include conflicts of interests and the ‘capture’ of the assessment by particular interest groups. This view, akin to the perception of policy as political interaction, is a more realistic representation of policy-making as it allows for the acknowledgement of different motives and as it allows to analyse the policy process itself as an important explanatory variable the quality of the policy decision (Crabbé & Leroy, 2008). This also means that in a realistic decision-making context, the function of sustainability assessment is more difficult to delineate (EcoLogic *et al.*, 2007). This view recognizes that the phases of the idealized policy cycle are actually mutually dependent and that each phase is the result of inputs of and interactions between many actors. Dominant discourses also influence the way sustainability assessments are conducted, and critically reflecting on these discourses may enhance policy learning (Runhaar *et al.*, 2005). Furthermore there are interferences between other ‘policy cycles’, taking place in other policy sectors and on different levels of decision-making. Policy-making is thus seen as a multi-actor and multi-dimensional process. This means that sustainability assessment is not a mere ‘objectification’ tool, limited to the identification of potential sustainability impacts. Instead it can have multiple functions: *e.g.* it can contribute to an insight in the interpretation of sustainable development and hence become an deliberative and explanatory process.

A fourth view stresses the potential of sustainability assessment to foster attitude shifts in decision makers. New knowledge provides the decision-makers with new insights and perspectives, creating opportunities for policy change. Sustainability assessment ideally also triggers a shift in time horizon, by integrating long-term thinking in decision-making. This view emphasizes learning effects as worded by Nooteboom (2007): *‘The effect of an (impact) assessment procedure may well be that it will mainly benefit future decisions, while having a more limited impact on the decisions which the impact assessment was meant to inform and influence’*. Sustainability assessment may hence contribute to social learning, defined as a process of change that is based on newly acquired knowledge, a change in predominant value structures or of social norms, which results in practical outcomes (Siebenhüner, 2005), or as ‘learning derived from social interactions over solutions to shared problems’ (Cashmore, 2007). Social learning can be seen as a particular form of conceptual learning, which involves the reframing of issues (Hildén, 2011). Runhaar *et al.* (2005) link this to the potential function of –sustainability- assessment in fostering discourse reflection -or ‘reframing’- and hence promoting double-loop policy learning (Sinclair *et al.*, 2007). Learning effects as well as adaptability are enhanced by open public debate (Hildén, 2011), which can be fostered in sustainability assessment exercises (see third function). Research addressing learning effects in real-life impact assessments shows how the provision of environmental information during an EIA process resulted in changes in public perceptions of environmental issues (Peterlin *et al.*, 2008; Sinclair *et al.*, 2007).

Section 5.3 Policy impact of sustainability assessment

The policy impact of a sustainability assessment depends on which functions one assigns to the assessment process. Consequently, the definition of policy impact ultimately depends on one's perspective on policy-making.

The extent to which sustainability assessments are actually influencing decision-making depends on many factors but needs to be preceded by a reflection on the definition of that 'policy impact'.

Direct policy impacts refer to elements of the sustainability assessment that can be identified in the decisions made (*e.g.* conformities of formal decisions with the assessment's recommendations through the consideration of sustainability issues and the adaptation of the original draft policy idea).

Indirect impacts refer to:

- the anticipation of decision-makers on assessment studies, resulting in more sustainable decisions than would have been the case otherwise;
- new ideas that are used in next rounds of decision-making; and
- impacts on processes beyond the specific assessment (Runhaar & Driessen, 2007).

These indirect impacts are interesting as decisions are often implemented in ways that differ from the original decision-makers' intentions (Runhaar, 2009).

Three key factors can influence the degree of –indirect and direct– policy impact of sustainability assessment (following Runhaar & Driessen's (2007) analysis of the impact of strategic environmental assessment):

- *The degree of consensus on the interpretation of sustainability promoted by the assessment.*
As sustainable development is an intrinsically dynamic concept subject to many interpretations, the choice of sustainability criteria to be used in the assessment exercise will reflect a particular view on sustainability. General sustainability principles are well known but their operational translation will ideally be a context-dependent and participative synthesis, in which the sustainability assessment itself may play a key role. This interpretational consensus is thus not a precondition, but instead it should be seen as the result of a successful sustainability assessment. However, Runhaar & Driessen (2007) observe that policy impact was related to the extent to which the assessment recommendations were in line with the values and interests of the main decision-makers – pointing towards the influence of discourse (see Chapter 3). The actual impact of an assessment on the policy-making process will tend to be greater if the involved actors agree on its objectives, although social learning impacts will often not be noticed at the moment of the assessment.
- *The degree of uncertainty of the knowledge on which the assessment is based.*
Sustainability assessment is even more characterised by uncertainty and complexity than other prospective exercises. A high-quality sustainability assessment does not create an artificial sense of certainty, but tries to synthesise the inputs and views from a whole range of knowledge fields. The challenge is to combine high-level scientific input with the advantages of participatory decision-making.
- *The characteristics of the decision-making process and the institutional setting supporting the sustainability assessment*
Sustainability assessment fits within a participative interpretation of decision-making. Ideally it is an example of a governance instrument implying collaboration between state structures and external actors. The institutional landscape in which sustainability assessment is to function will partly determine the assessment's influence, *e.g.* through other existing –and possibly dominant– institutional practices.

In order for sustainability assessment to be effective and to be an instrument of change (*i.e.* to exert policy impact), it should be applied (Pope *et al.*, 2004):

- within a structured framework;
- to proposed new initiatives at all levels of decision-making;
- to existing practices across all sectors;
- to the prevailing policy and legislative paradigm
- to any decision with the potential to impact on patterns of production and consumption; governance and settlement;
- by all sectors of society;

The case study approach of this thesis allows to delve deeper into these aspects (see Chapter 6).

Section 5.4 Sustainability assessment approaches

Just like the assigned or expected functions of sustainability assessment can vary widely, there is no absolute interpretation of an ‘ideal’ sustainability assessment approach. Factors such as the expectations of involved actors, the shifting political commitment to sustainable development, the conceptualisation of sustainability itself, and the available human and financial capacities influence sustainability assessment.

In order to reflect the variety of interpretations we present a synthesis of ideal-typical approaches to sustainability assessment inspired by the existing scientific literature (Cashmore, 2004; Fischer, 2002; Holder, 2004; Paredis *et al.*, 2006; Pope *et al.*, 2004; Rotmans, 2006; Söderbaum, 2007; Weaver and Rotmans, 2006).

Our synthesis is necessarily a simplified representation but captures the essential features of two contrasting albeit complementary interpretations, termed here respectively as Type I, and Type II sustainability assessments. Both interpretations are extremes to be situated at both ends of a continuum. Most real-life sustainability assessments will be situated somewhere along that theoretical continuum between the Type I and the Type II approach.

Type I

A Type I sustainability assessment is a sequential, linear process aimed at enhancing the quality of one particular policy proposal. Its pragmatic approach and its short-term time horizon link it to the approach of environmental impact assessments (EIAs). The general objective is to screen an already drafted policy proposal on potentially negative sustainability impacts and –if needed- to develop accompanying measures mitigating the negative impacts and maximising the positive impacts on sustainability. The Type I-approach has the advantage of being implemented through easy-to-use tools such as matrices and checklists. This approach is akin to Rotmans’ (2006) sustainability impact assessment (SIA) approach. The compartmentalisation of sustainable development in the classical three pillars underlines the need for clearly established trade off rules, as Pope *et al.* (2004) warn for the risk that sustainability assessment could be interpreted as a means for economic requirements to override environmental and social requirements when trade offs are seen as legitimate in the pursuit of sustainability.

Type II

A Type II assessment is a cyclic, explorative, pro-active and long-term process, fully integrated with the policy-making process. This kind of assessment focuses on the development of adequate policy answers to respond to societal challenges while respecting long-term sustainability objectives. These assessments focus on deliberative governance and build on extensive involvement of external actors. Type II assessments are concerned with challenging prevailing paradigms and making the implementation of new policy frames possible. Type II assessments are based on interdisciplinary and non-linear knowledge generation. This approach is akin to Rotmans’ (2006) ‘integrated sustainability assessment approach’ (ISA).

Table 5.3 provides a schematic overview of key aspects of both ideal-typical sustainability assessment approaches, as well as their strengths and weaknesses and the opportunities and threats they face.

Table 5.3: Comparison between Type I and Type II approaches to sustainability assessment (own synthesis)

	Type I	Type II
General objective	Pragmatic: screening policy proposals on unwanted sustainability impacts;	Strategic: strengthening the achievement of long-term strategies for sustainable development;
What is being maximised	Planning (user-friendliness, clear recommendations with regard to a specific policy proposal);	Networking (interdisciplinary scientific knowledge, participation, deliberation, learning effects);
Effective if..	The policy proposal is of higher sustainability quality after having gone through the assessment process. Trade offs are made transparent.	The deliberative process leads to consensus through argumentation. The policy-making culture is being influenced positively. A transformational shift is triggered by way of a social learning process.
Efficient if..	The available resources (human, financial) have been used efficiently, as well as the necessary expertise.	A procedure allows to translate the 'Type II'-ideal into practical and feasible action. The assessment is performed on an iterative basis and is integrated with the policy process.
What matters for political planning	Facts (<i>i.e.</i> sharp distinction between 'object' and 'subject'), testing of hypotheses by standardised methods.	Framings, deliberation.
Methods and tools	'Standard' scientific methods, (e.g. mathematical models, cost-benefit analysis, cost-effectiveness analysis, checklists, matrices).	Deliberative methods (e.g. workshops, expert panels, focus groups etc.) with 'standard' scientific methods as supportive.
Strengths	Practical instrument resulting in clear and univocal recommendations. Easily introduced in the existing decision-making process.	Sustainability can become a collective concern. Potential to change the decision-making culture.

Weaknesses	Data and expertise requirements. Trade offs entail the risk of marginalising environmental concerns. Endorses ‘weak sustainability’. Risk of artificial reassurance concerning sustainability.	Representativeness of the involved actors. Potential to yield practical recommendations. Difficult to institutionalise
Opportunities	Political demand for this kind of exercises. Existing knowledge and know-how. Practical experience with similar exercises (Environmental Impact Assessment, Regulatory Impact Assessment).	Existing participation mechanisms. Scientific and political momentum in favour of sustainable development. Acceleration of global change calls for ambitious action.
Threats	Lack of sustainable development culture among civil servants. Risk of imbalance towards ‘better regulation’ agenda and consequent marginalisation of sustainable development objectives.	Lack of practical experience in conducting Type II exercises. Political and societal resistance against potentially transformative power of the exercise.

Section 5.5 Sustainability assessment tools

This section introduces a number of analytical techniques, methods or ‘tools’ that can be used within sustainability assessment frameworks, which describe integrated and structured stepwise procedures (Gasparatos *et al.*, 2010), methodologies, models, approaches and appraisals (IVM *et al.*, 2006) to evaluate sustainability.

Sustainability assessment tools can be categorized in various ways (Gasparatos *et al.*, 2008; IVM, 2006; Ness *et al.*, 2007), yet there is no single best analytical technique. The choice for the best - combination of- tools depends on the context (*e.g.* the decision-making level) and reflects a particular worldview as the legitimate yardstick to evaluate the sustainability of a particular case (Gasparatos *et al.*, 2010). Sustainability assessment tools ideally also need to bring together various types of information hence they often require the combination of tools.

Although sustainability assessment is a holistic approach – meaning that a whole set of considerations spanning the various dimensions and interrelationships of sustainable development need to be considered- reductionism is still the dominant paradigm in sustainability assessment tools, as it allows for a simplification and a user-friendliness that is demanded by decision-makers (Gasparatos *et al.*, 2008). The different tools –which were mostly not developed specifically for sustainability assessment- produce a wealth of useful information for sustainability assessment, yet do not on their own, allow to measure progress towards sustainability in a holistic way. Furthermore the use of any tool is based on assumptions that should be clarified at the onset (*e.g.* they can be based on a strong *versus* a weak interpretation of sustainability (Dietz & Neumayer, 2007)). The boundaries of the field of what constitutes a sustainability assessment tool and what does not are still discussed:

Bebbington *et al.* (2007) see sustainability assessment as an alternative to biased, reductionist and - even anti-democratic (Söderbaum, 2007)- cost-benefit analyses, while Gasparatos *et al.* (2008) and IVM (2006) see CBA as a tool that can be used in these very sustainability assessments (although ideally in combination with other tools).

We provide an overview of the literature on sustainability assessment tools and refer to Chapter 5 for the practical application of some of these tools in the respective case studies.

Paredis *et al.* (2006) distinguish three categories of tools: geographical tools (*e.g.* GIS); causal tools (checklists, matrices, cognitive maps outlining causal relationships), and accounting tools or economic tools. These accounting tools are termed monetary tools by Gasparatos *et al.* (2008), who distinguish these from biophysical tools and from indicators. Accounting tools tend to focus on quantifying externalities, which arise when the social, environmental or economic activities of one group of persons have an impact on another group and when the impact is not fully accounted or compensated for by this group (ExterneE, 2005).

Ness *et al.* (2007) categorize tools according to i. their temporal focus (*ex ante* or *ex post*); ii. their area of coverage (policies or products) and iii. the extent of the consideration of integration between natural and human systems.

Another interesting categorization is provided by Söderbaum (2007), who classifies tools into ideologically open *versus* ideologically closed (cost-benefit analysis being ideologically closed as it assumes market ideology for instance), and into highly aggregated versus highly disaggregated tools. The latter categorization refers to the measurement units used (*e.g.* monetary valuation).

The various categorizations often overlap, and specific tools can be lumped into more than one category (*e.g.* an indicator set may also be developed in a participatory way). We do not attempt at developing a new categorization, but propose an illustrative overview of tools that can be used in a sustainability assessment (Table 5.4).

Table 5.4: Illustrative overview of tool categories and tools used in sustainability assessments

Tool category	Tool	Example
Geographical tools	GIS	Graymore <i>et al.</i> (2009)
Causal tools	Impact matrix	Paredis <i>et al.</i> (2006)
Accounting tools	Cost-Benefit Analysis	Gasparatos <i>et al.</i> (2008), Frame & Cavanagh (2009)
Modelling tools	Computable General Equilibrium models	Böhringer & Löschel (2006)
Multi-criteria analysis	Analytic Hierarchy Process	Athanasios & Pilavachi (2009)
Biophysical tools	Ecological Footprint	Wackernagel & Rees (1996)
Indicator sets	Indicators for sustainable agriculture	Binder <i>et al.</i> (2010)
Participatory tools	Focus Groups	Kasemir <i>et al.</i> (2003)
Scenario analysis	Scenario workshops	Laes & Couder (2010)

While every categorisation of tools has its merits, it is clear that there exist a plethora of sustainability assessment tools, which somehow need to cope with the seemingly contradictory requirements identified by Ness *et al.* (2007): the demand for case-specific assessment tools on the one hand, and the demand for broader tools that can be used in a variety of circumstances and allow for standardisation to happen.

Ultimately the use of particular sustainability assessment tools also reflects a particular view on sustainability and its related assumptions, which needs to be acknowledged when performing and using sustainability assessments.

Section 5.6 Sustainability indicators

5.6.1 Defining sustainability indicators

From all the tools discussed in Section 5.5 indicators are perhaps the most widely used tools to measure progress towards sustainability (Ramos, 2009).

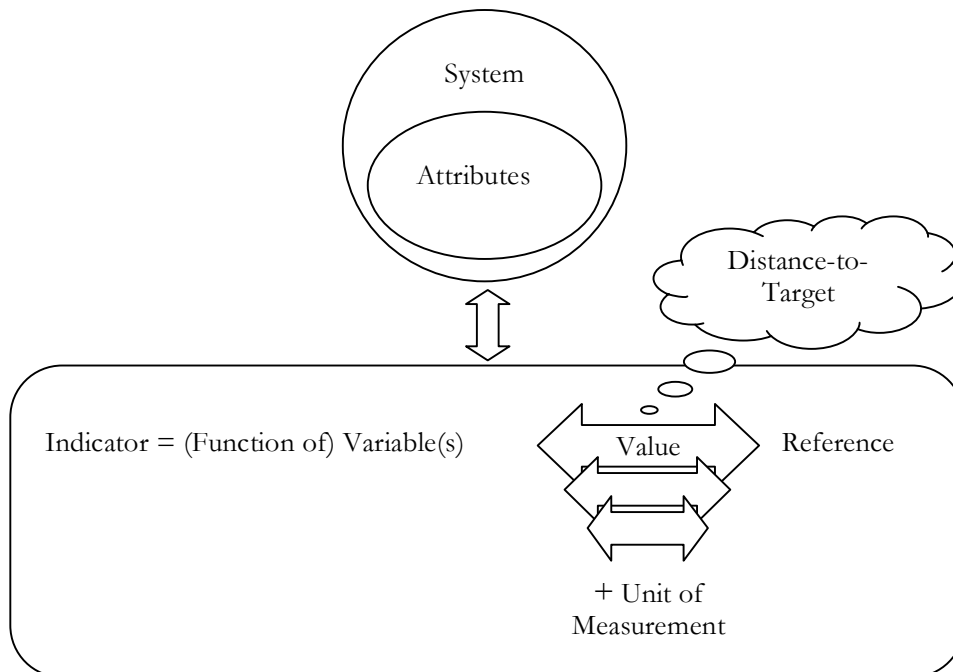
Indicators respond to the requirement to operationalize sustainable development on a practical level, as they embody the decision-making criteria that should ideally foster sustainability (Pope & Dalal-Clayton, 2011). Despite the political, organizational and public acceptance of sustainability indicators, their effectiveness in operationalizing sustainability is questionable (Ramos, 2009). However there seems to be an agreement about their function, which is to reduce the volume and structure the complexity of information required by decision-makers to make decisions (Donnelly *et al.*, 2007).

Indicators pervade our everyday life, and are indispensable to understand the information flows decision-makers are confronted with; to take decisions and to plan actions accordingly. The intuitive and pragmatic understanding of what an indicator is contrasts with the vast scientific literature on the definition and use of indicators for sustainable development or ‘sustainability indicators’. Gallopín (1997) identified a range of definitions, of which we present a selection: ‘*..An indicator has been presented as a variable, a parameter, a measure, a statistical measure, a proxy for a measure, a value, a meter or measuring instrument, a fraction comparing the quantity with a scientifically or arbitrarily chosen measure, a piece of information, an empirical model of reality, a sign, etc.....*’. The theoretical debate concerning the definition of sustainability indicators is rich and interesting but should not distract us from our priority, which is to structure and generate information to support decision-making for sustainable development.

We propose the following integrative definition, partly inspired by Bell & Morse (2008), Gallopín (1997) and Rydin *et al.* (2003):

‘A sustainability indicator is an operational representation of an attribute (quality, characteristic) that defines the sustainability of a system, by way of a variable related to a reference value’.

Figure 5.1: Schematic representation of an indicator’s integrative definition



An indicator, including a variable and a specified reference, hence shows performance as a measurement of ‘distance-to-target’. It measures the distance between current or predicted values of the variable and the value of the reference. In the case of sustainability indicators, the reference is what is understood by sustainable development (Bell & Morse, 2008).

Thus sustainability indicators are operational representations of an interpretation of sustainable development. They differ from ‘principles’ or ‘requirements’ by the fact that they derive their meaning from the linkage with the reference situation, which allows them to ‘indicate’ which direction the system is heading for.

Bond & Morrison-Saunders (2009) state that the key components of any sustainability assessment are sustainability indicators, and this for at least two reasons:

- they make the contextually valid interpretation of sustainable development in a particular assessment tangible;
- they provide clear signals to decision-makers, and, embedded in an assessment process, they visualize an assessment’s conclusions by allowing benchmarking and comparison between decision options.

5.6.2 Functions and use of sustainability indicators

Sustainability indicators make progress towards sustainable development observable, demonstrable and measurable by communicating information in a structured manner (Gallopín, 1997; Moldan & Dahl, 2007). Sustainability indicators communicate information to inform decision-making in the transitions towards a sustainable society. This is reflected by several scholars, such as Gallopín (1997): *“the basic purpose of indicators of sustainable development is to support and improve policy and decision-making at different levels”* and Segnestam (2002): *“Indicators [...] are not an end in themselves – they are the means to an end, consisting of improved decision-making.”*

The primary communicative role of sustainability indicators is complemented by a number of – assigned, perceived and/or actual- functions:

- Firstly, sustainability indicators operationalize sustainable development (Bell & Morse, 2008). The development of sustainability indicators shifts the discussion of sustainable development away from abstract formulations towards explicit discussions on its operational meaning (Rigby *et al.*, 2000).
- Secondly, sustainability indicators are leverages for change. They are a means of change, as their presence or absence potentially affect behaviour (Meadows, 1998). Sustainability indicators can for example, encourage people by recognizing success when it is achieved (Hodge *et al.*, 1999) or sensitize them for sustainability. Indeed sustainability indicators facilitate learning among actors involved in a sustainability indicators initiative (Hodge *et al.*, 1999). Developing and applying sustainability indicators is in itself a way of community learning (Bell & Morse, 2008). According to Rosenström (2006), sustainability indicators are most likely to be used as learning tools, or as symbols in political debates, than in a direct way to inform decision-making.
- Thirdly, sustainability indicators allow us to assess progress in the societal transition towards sustainable development (Gallopín, 1997).

In conclusion, sustainability indicators communicate information in a structured way to support and improve decision and policy-making in favor of sustainable development.

For indicators to be used in practice they need to be interpreted and transformed into information, and this information subsequently needs to be used to improve decision-making processes

(Segnestam, 2002) (in direct or indirect ways). Furthermore different audiences, contexts, and ends require different indicators (Segnestam, 2002).

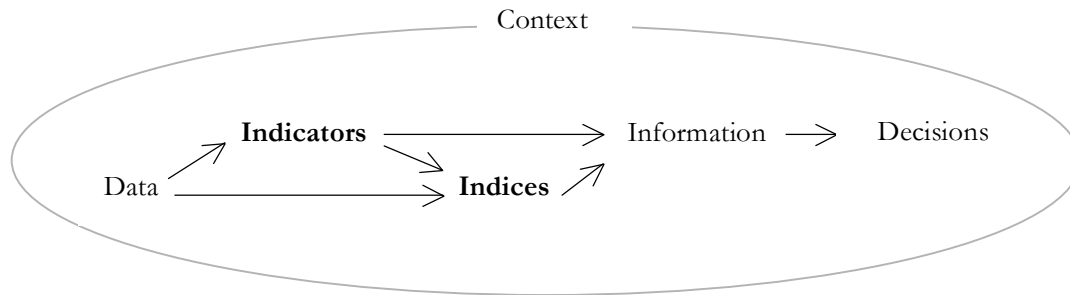


Figure 5.2: from data to decisions (adapted from Segnestam, 2002)

This simplified scheme does not mean that the function of sustainability indicators in influencing decisions is always straightforward, as according to Hezri & Dovers (2006) sustainability indicators go through a number of stages of utilisation on their way to exerting policy influence:

- Onset: the indicators cross the cognitive screen of the decision-maker, which means that the user becomes aware of them);
- Influence: indicators change the worldview of the decision-makers and induce action;
- Acceptance: the indicators actually influence policy decisions;
- Institutionalisation: the indicators influence policy over time;

Sustainability assessment may play a pivotal role in realizing these stages yet there is no guarantee that indicators will not get ‘stranded’ before they can exert any discernable influence in the decision-making process.

The first step of ‘using’ indicators lies in their interpretation. This demands an awareness of inherent bias, as any sustainability indicator has a ‘strong’ part that can be backed by relatively objective data, and a ‘weak’, negotiable part referring to normative views on sharing rights and responsibilities in a context of sustainability (Kestemont, 2010).

Anyone making a statements about sustainability based on sustainability indicators should be aware of their interpretive flexibility, as well of the challenges related to global comparability and aggregation (as national indicators *vs.* its local distribution may differ considerably) (Kestemont *et al.*, 2011). Kestemont *et al.* (2011) further warn for the range of varying possible political conclusions that can be drawn from reports using several sets of ‘sustainability indicators’.

5.6.3 Developing sustainability indicators

Because of the multifunctional nature of sustainability indicators, their development and selection is a relatively complex process (Donnelly *et al.*, 2007). Indicators can be developed in a variety of ways: generally scholars distinguish ‘top-down’ approaches from ‘bottom-up’ approaches to develop indicators. The top-down approach typically means that a certain interpretation of sustainability is ‘imposed’ by decision-makers and/or experts, who then translate that particular interpretation into a set of indicators, simply because they see them as the most relevant ones.

A bottom-up approach on the other hand, develops indicators based on the genuine sustainability concerns of actors outside the decision-makers’ inner circle, and is ideally a reflection of society’s interpretation(s) of sustainability, thereby reflecting a discursive perspective to sustainability.

The indicator development process ideally allows the indicators to acquire content (Mickwitz & Melanen, 2009). The formalisation of ‘bottom up’ community involvement in the development of

sustainability indicators has been driven by past failings of ‘top-down’ approaches (Fraser *et al.*, 2006): developing indicators should be an open process instead of a purely technical exercise (Ramos, 2009).

Bell & Morse (2008) discuss the participatory genesis of sustainability indicators. Once a group of actors (which ideally includes policy-makers, citizens and experts) has agreed on the interpretation of what sustainability means in a particular context -as part of a sustainability assessment exercise-, a set of sustainability indicators can be identified in order to assess that agreed vision of sustainability (Bell & Morse, 2008). Sustainability indicators are a social construct and tend to reduce reality into manageable pieces. This is essential in order to structure information, but one should be aware that sustainability indicators are not reality, but only a negotiated and reductionist construct of it (Gasparatos *et al.*, 2008). Each indicator is a simplification, and the dangers of not explicitly recognizing this simplification are real. This is especially true in the context of sustainable development, which is by its very nature a holistic and multidimensional concept in which discourse and ideology influence every actor involved in the development and use of indicators. Similarly it is more difficult to ‘test’ sustainability indicators compared with other indicators, as ‘*sustainable development takes us away from limited, well-defined situations, allied with an emphasis on immediate implementation*’ (Bell & Morse, 2008).

The way indicators are developed will largely influence their use as shown for instance by Mickwitz & Melanen (2009) in their study on the co-operation between academia and policy-makers in the development process of regional sustainability indicators in Finland. Similarly Singh *et al.* (2012) emphasize the importance of developing sustainability indicators for and through the appropriate communities, *i.e.* the people who will use the indicators.

5.6.4 Case: Developing sustainability indicators for Clean Development Mechanisms in Vietnam

This section is a shortened version of a paper integrally published in a peer-reviewed journal as: Hugé, J., Hai, L.T., Hai, P.H., Kuilman, J. & Hens, L. 2010. Sustainability indicators for Clean Development Mechanism projects in Vietnam. Environment, Development and Sustainability 13: 607-626.

5.6.4.1 Case CDM: Introduction

The Clean Development Mechanism (CDM) is one of the three market-based flexible mechanisms of the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) that provides so-called Annex-B countries (developed countries and countries with an economy in transition to a market economy) with the opportunity to reduce the cost of meeting their emission targets by allowing for geographical and temporal flexibility. The CDM allows emission-reduction projects in developing countries to yield ‘Certified Emission Reduction’ credits that can be traded and sold, and used by developed countries to meet part of their emission reduction targets. Besides the obvious greenhouse gas emission reduction objective, the Kyoto Protocol states that the CDM’s purpose is to assist Parties not included in Annex I to the UNFCCC in achieving sustainable development (UNFCCC, 2006). In summary, CDM projects pursue a twin objective: to offset greenhouse gas emissions and to contribute to sustainable development in the host country. But how can the achievement of this twin objective be guaranteed?

Potential projects must qualify through a process designed to ensure real, measurable and verifiable emission reductions that are additional to reduction measurements that would also have occurred without the project. The CDM Executive Board supervises the CDM. The responsibility for

achieving sustainable development goals is delegated to the national level of the host countries, as to prevent infringement on the national sovereignty of developing countries (Olsen & Fenhann 2008). The Designated National Authorities (DNA) are mandated for determining whether a CDM project is in accordance with the national sustainable development criteria. The host country's DNA's approval is essential for the actual implementation of the CDM project. In comparison with the legislation on GHG reductions, which must be 'real and measurable', there is little attention to its twin goal sustainable development: GHG reductions are controlled and monitored by independent validators (the Designated Operational Entities (DOE)), whereas the contribution to sustainable development of CDM projects is not included in the standard official assessment. Until today there exists no compulsory monitoring, neither at national nor at international level, of the sustainable development benefits of CDM projects in the host countries. Furthermore the highly competitive supply side is not an incentive to enforce strict sustainability criteria. In the absence of (international) sustainability standards there will be a strong competition between host countries, bringing about the risk for 'a race to the bottom' (Olsen & Fenhann 2008). Indeed as the approval power is devoluted to the country's DNAs, these are inclined to use less strict sustainability criteria if they are not provided with all necessary background information and pressure from civil society with regard to the delivery of sustainability advantages. Sutter & Parreno's (2007) empirical analysis indicates that early CDM-projects did not deliver their claim of contributing to sustainable development in the host countries. The trade offs are clearly in favour of the cost-efficient emission reduction objective, while the sustainable development objective is neglected.

This observed imbalance leads to questions about the effective (potential) contribution of CDM projects to sustainable development in the future, and gave rise to a series of initiatives which aim at promoting CDM projects with a higher contribution to local sustainable development goals. The Gold Standard and the Community Development Carbon Fund are two of the most important initiatives fostering sustainable development outcomes in CDM projects (Nussbaumer, 2009). Both initiatives propose a methodology to improve the sustainability quality of CDM projects, by respectively offering an adapted assessment and improvement framework and funding to deliver sustainable benefits to local communities. If one is to ensure a long-term commitment of all concerned stakeholders (including local communities on the project site) towards CDM projects in a developing country, the contribution of the project to sustainable development is essential. However the practical definition of sustainable development is dynamic and strongly context-dependent. Sustainability priorities shift in time and space, and are subject to constant reinterpretation by various societal stakeholders. An openly discussed and locally supported interpretation of sustainable development is a first step towards improving the sustainability score of existing and future CDM projects.

For now, Vietnam hosts only a few CDM projects (UNFCCC, 2009), but its attractiveness for CDM projects is expected to grow. Jung (2006) describes Vietnam as a country with a medium to high institutional CDM capacity, a rather small mitigation potential and a moderate investment climate, placing the country on an average position regarding CDM attractiveness. If CDM projects are to contribute to the sustainable development of Vietnam, then decision-makers will need adequately customised tools to assess the sustainability impacts of planned CDM projects. Such criteria are especially relevant to the Vietnam Ministry of Natural Resources and Environment, which is the country's Designated National Authority. The development of a set of sustainability criteria, and their subsequent 'translation' into user-friendly indicators are essential first steps towards a customised sustainability assessment framework. While the Vietnam Ministry of Natural Resources and Environment already has a concise set of sustainability indicators for CDM projects (Hieu *s.d.*), the selection process that led to the choice of these particular indicators was not scientifically underpinned. Moreover, the indicator set shows some major shortcomings compared to other existing sets in the international literature. This situation led the research team to start the current project of developing an adapted and customised set of sustainability indicators for CDM-projects in

Vietnam. In the context of this paper, sustainability indicators for CDM projects are to guide Vietnamese decision-makers with regard to the approval and improvement of planned CDM projects. The Delphi approach was followed to identify the most relevant sustainability indicators for CDM projects in Vietnam, based on expert knowledge.

5.6.4.2 Case CDM: Materials and methods

To ensure the relevance of the proposed indicator set with regard to locally formulated and context-specific needs, it was decided to initiate a participatory process of indicator selection. As the exercise aims at designing a set of generic sustainability indicators (to be used for CDM-projects across Vietnam) not targeting a particular CDM project, an expert-based approach is considered most relevant. However it is not easy to elicit and integrate knowledge from a range of experts with different and varying opinions. The Delphi approach was chosen to overcome this challenge and to generate a balanced indicator set. It is defined as 'a method of structuring a group communication process so that the process is effective in allowing a group of individuals as a whole to deal with a complex problem'. The Delphi approach involves an iterative survey of experts. Each participant completes a questionnaire and is then given feedback on the whole set of responses. With this information in hand, he fills out the questionnaire form again. The expert might change his opinion based upon his evaluation of new information provided by other participants. This process can be repeated if necessary. The idea is that the entire group of experts can weigh dissenting views and that the consensus increases from round to round (Hasson & Keeney, 2011; Steyaert & Lisoir, 2005). Key features of this method are: the structuring of an information flow; the feedback to participants and the (possible) anonymity for participants. Delphi was designed to provide the benefits of pooling and exchanging opinions, so that respondents can learn from each others' views, without the undue influence likely in conventional face-to-face settings. The technique allows to deal systematically with a complex problem. From round to round the information is shared, allowing the panel members to modify their perspectives. This approach is especially relevant in the present setting: indeed the research problem does not lend itself to precise analytical techniques but it can benefit from subjective judgements on a collective basis (Steyaert & Lisoir, 2005).

In this case the Delphi consisted of a series of seven steps:

- Step 1: Selection and recruitment of a panel of experts;
- Step 2: Development of the first-round Delphi questionnaire;
- Step 3: Transmission of the first-round questionnaires to the panellists;
- Step 4: Analysis of the first-round replies;
- Step 5: Preparation of the second-round questionnaires;
- Step 6: Transmission of the second-round questionnaires to the panellists;
- Step 7: Analysis of the second-round replies and reporting;

The experts were selected by the research team having knowledge of the local institutional landscape and of the key resource persons for CDM in Vietnam. All panellists were familiar with CDM issues in Vietnam, and the composition of the panel reflected a balance between government officials (n=2), academics (n=3), managers from private businesses (n=1) and civil society organisations (n=1). Care was taken to select experts who could make an effective contribution to the theme being studied. Their degree of motivation as well as the potential exchange of information between experts with different backgrounds was also taken into account. The selected respondents (n=7) were presented with a first set of indicators for consideration in round 1. This first indicator set was compiled by the authors and will be called 'the initial set' throughout this paper. The indicators from the 'initial set' were derived from existing international sustainability indicator sets for CDM-projects (Heuberger *et al.* 2007; Nussbaumer 2009; PCFplus 2002; Sutter & Parreno 2007), as well as from existing Vietnamese sustainability indicator sets (Hai *et al.* 2009). The research team chose to

categorise the proposed indicators according to their focus on economic, social or environmental aspects of sustainability. This categorisation follows the classical three-pillar interpretation of sustainability (see Chapter 2).

The indicator list ('the initial set') was subsequently submitted to the experts. In each round, the experts were asked to assign a degree of relevance (hereafter called a 'score') on a five point Likert scale for each proposed indicator (see Figure 5.6.4.1).

1	2	3	4	5
the indicator is highly irrelevant	the indicator is irrelevant	the indicator is somewhat relevant	the indicator is relevant	the indicator is highly relevant

Figure 5.6.4.1: Likert-scale of indicator relevance 'scores' in the Delphi approach

Based on the scores given by the experts, the median value, the quartile deviation and the variance are calculated for each indicator in order to measure the degree of convergence of opinion.

At the start of the second round, the results of round 1 were presented to the experts. They were again asked to rank the proposed indicators on a Likert-scale, and to comment on the scores obtained during the previous round. After the completion of round 2, the median score, the quartile deviation and the variance of each indicator was calculated again. If an expert failed to score an indicator, the data was not used. Chu & Hwang (2008) set the threshold (minimum requirement) to reach an agreement on a particular item during the second round or later at 75% consensus. Steyaert & Lisoir (2005) stick to the general advice to re-iterate the questionnaire rounds as long as desired or necessary to achieve stability (defined as a percentage of consensus) in results. We used Chu & Hwang's rules to analyse the indicator scores yielded by the Delphi approach (see Table 5.6.4.1):

Table 5.6.4.1: Rules for analyzing the scores from multiple experts using a Delphi approach (based on Chu and Hwang, 2008)

Round 1	Round 2
Mean score Ind $i \geq 3.5$	If mean score Ind $i \geq 3.5$ and $Q \leq 0.5$ and score variance $< 15\%$ then Ind i is accepted.
Mean score Ind $i \leq 3.5$	If mean score Ind $i \leq 3.5$ and $Q \leq 0.5$ and score variance $< 15\%$ then Ind i is rejected.

Note: Mean score (Ind i): the mean of the scores for indicator i . Score variance (Ind i): the ratio of experts who change their scores for indicator i between two successive rounds. Q stands for the inter-quartile range.

5.6.4.3 Case CDM: Results

The Delphi approach has yielded 'final' results when all of the indicators are either accepted or rejected based on the rules of Table 5.6.4.1. An indicator is accepted if its mean score is higher than 3.5 on a 1-5 scale and if the variance of the indicator's score lies below 15%. Table 5.6.4.2 summarises the results of the two successive Delphi rounds. We refer to Hugé *et al.* (2010) for the complete compilation of the data.

Table 5.6.4.1: Overview of relevant sustainability indicators for CDM projects in Vietnam based on a two-round Delphi exercise

Based on a two-round Delphi exercise			Chosen indicators
Nr.	Aspects	Indicator	
1	Economy	Amount of Certified Emission Reduction (CER) revenues	✓
2		Genuine saving rate of the population	✓
3		Rate of technological transfer (e.g. share of high and medium technology import in total goods import)	✓
4		Macro-economic efficiency	✓
5		Import substitution / lower import rate	
6		Micro-economic efficiency (e.g. transaction costs)	✓
7		Increase in the regional economic activity	✓
8		Skills development (amount of skilled Vietnamese staff: technical, electrician, etc)	
9		Technological self-sufficiency (local/ imported experts ratio)	✓
10		Income distribution (e.g. Gini coefficient)	✓
11		Evolution of income poorest households	✓
12		Improved access to electricity services (e.g. percentage of families with access to electricity)	✓
13		Number of internet hosts per capita	
Sub-total			10
1	Socio	Employment generation	✓
2		Satisfaction of basic social needs (e.g. access to water and sanitation)	✓
3		Safe working conditions (e.g. amount of accidents on workplace)	
4		Gender equality (e.g. share of male/female employees)	✓
5		Infectious diseases' contamination rate	✓
6		Life expectancy	✓
7		Under -five - survival rate	✓
8		Public expenditure on health	✓
9		Adult literacy rate	✓
10		Education (e.g. percentage of children attending primary/secondary education)	
11		Transport and mobility (e.g. access to cheap public transport; quality of road network)	
12		Participation of political authorities (e.g. consultation of local authorities in the process of designing the CDM project)	✓
13		Participation of local communities (e.g. consultation of local communities in the process of designing the CDM project)	✓
14		Readiness of implementing agencies in private sector in Vietnam	✓
15		Readiness of implementing agencies in public sector	✓
Sub-total			12
1	Environment	GHG emission level	✓
2		Non GHG air pollution emission level	✓
3		Level of Particulate Matter Pollution	✓
4		Non GHG water pollution	✓
5		Solid waste generation level	✓
6		Discharge of liquid effluents	✓
7		Degree of soil contamination (e.g. heavy metal contamination)	

8	Soil erosion (e.g. percentage of strongly eroded local agricultural land area)	✓
9	Share of renewable energy in total energy generation	✓
10	Energy efficiency	✓
11	Loss of local forest cover	✓
12	Amount of protected area	✓
13	Level of biodiversity (e.g. number of species of large mammals / protected birds)	✓
14	Sustainable management of natural resources (e.g. degree of depletion of non-renewable resources)	✓
Sub-total		14
Total number of selected indicators		36

5.6.4.4 Case CDM: Discussion and conclusion

Ultimately the majority (36 out of 42) of the indicators from the ‘initial set’ were considered relevant by the respondents after two Delphi rounds. These 36 indicators form the ‘final indicator set’. This result shows that the experts evaluate the existing international sustainability indicators for CDM-projects as being mostly relevant to Vietnam, as these indicators (albeit often slightly reformulated) form the bulk of the initial set as well as of the final set. The experts eliminated indicators that they considered irrelevant in the Vietnamese CDM-context.

The Delphi exercise validates a selection of international sustainability indicators for CDM projects and provides a comprehensive interpretation of sustainability that complements the limited set of existing sustainability indicators used by the Vietnam Ministry of Natural Resources and Environment. The study also yielded somewhat surprising results. For instance, ‘skills development’ is not considered pertinent by the respondents, even if this is generally accepted as a defining pillar of social sustainability. On the other hand, the complementary issue of ‘technology transfer’ between developed countries and developing countries is considered to be relevant by the respondents. It is indeed one of the stated objectives of the Clean Development Mechanism and it can be expected to gain in relevance with regard to the long-term horizon of the post-Kyoto climate negotiations. Now that the question of relevance has been settled (for now), the question of data availability remains. As the selected indicators will have to be applied on specific CDM projects, national-level datasets will mostly be of limited use. Enhancing the assessment capabilities and the data collecting abilities of Vietnam’s Ministry of Environment and Natural Resources is thus essential in order to ensure that the selected indicator set will be used.

The participatory selection of sustainability indicators to compile a user-friendly indicator set should be the first step in the development of a sustainability assessment framework for Clean Development Mechanisms in Vietnam. Despite the range of existing CDM-specific assessment methodologies, there was no comprehensive indicator framework for Vietnam yet. The Delphi approach is suited to gather expert opinions in an early stage of the development of a sustainability assessment framework. While further research is needed to delve deeper into the reasons motivating the respondents when selecting or rejecting particular sustainability topics, the Delphi exercise yielded useful input in the ongoing discussion relating to the sustainability assessment of CDM projects.

In order to further refine and adjust the indicator set, a case-study approach is required, as well as a broader consultation of local, non-expert stakeholders. Such an approach is the only guarantee that the indicator set will have become a trustworthy reflection of a locally endorsed and user-friendly interpretation of sustainability, adapted to the specific context of CDM projects. Ultimately the

refined indicator set could evolve into a full-fledged sustainability assessment framework including weighted criteria, and provide a platform for discussion and deliberation to ensure that CDM projects do indeed contribute to sustainable development and do live up to the claim of fostering twin objectives.

CHAPTER 6: THE PRACTICE OF SUSTAINABILITY ASSESSMENT

Section 6.1 Sustainability assessment in Flanders, Belgium

6.1.1 Converging impact assessment discourses for sustainable development: the case of Flanders, Belgium

This section was integrally published in a peer-reviewed journal as: Hugé, J. & Waas, T. 2010. Converging impact assessment discourses for sustainable development: the case of Flanders, Belgium. Environment, Development & Sustainability 13: 607-626.

Abstract

The scientific field of impact assessment encompasses various 'traditions', each reflecting a set of particular policy objectives. This paper analyses two types of impact assessment. Regulatory impact analysis focuses on better regulation and competitiveness, while sustainability assessment fosters a holistic approach centred on the values of sustainable development. Through an analysis of the political discourses at the level of the European Union and at the sub-national level of the Flemish Region of Belgium, elements of convergence between the better regulation and sustainable development discourse are identified. The paper analyses how integrated impact assessment can be an integrative tool that allows to merge both discourses and to implement them in day-to-day decisionmaking. The potential of the existing Flemish regulatory impact analysis framework to be the starting point of an integrated assessment scheme for sustainable development is advocated and motivated

Keywords: sustainability assessment, regulatory impact assessment, discourse, Belgium

6.1.1.1 What's in a name? Introducing impact assessment

According to the authoritative International Association for Impact Assessment, impact assessment (IA) is the process of identifying the future consequences of a current or proposed action. The 'impact' is the difference between what would happen with the action and what would happen without it (IAIA, 2009). Choosing which impacts are to be identified will define what kind of impact assessment one performs. If one aims to identify the impacts on the environment, an environmental impact assessment (EIA) will be done; if the focus lies on health impacts, a health impact assessment (HIA) will be performed, and so on. While this might suggest a simple categorization reflecting classic disciplines, as well as a clear 'division of tasks' between practitioners performing the various thematic impact assessments using their own expertise and methodology, reality is much more complex. First of all, the rising awareness of interdependencies and complexity reduces the attractiveness and the use of strictly defined impact assessments. Secondly, thematic impact assessments have the 'natural' tendency to widen their initial scope over time. Environmental impact assessment (EIA) is probably the most famous example. The initial focus on the biophysical components gradually evolved to include the physical-chemical, biological, cultural and socio-economic components of the total environment. Thirdly, impact assessment has become a field of science on its own. Thematic categorizations are not sufficient to grasp the process aspects that span over various scientific disciplines (think of mathematic modeling, participatory techniques, political sciences *etc.*). Impact assessment has turned into an approach in itself, aimed at contributing to

structure decision-making. Fourthly, the actual impact of impact assessments on decision-making depends on the institutional context and on the way knowledge feeds into the decision-making process, which is most often a non-linear, ‘messy’ process (Hertin *et al.*, 2009). Impact assessment thus needs to be analysed through a governance lens.

If we are to list the defining characteristics covered by the umbrella term ‘impact assessment’, it is necessary to turn to the common goals put forward by the promoters of -almost- any impact assessment exercise (see for instance Bäcklund, 2009; Gibson *et al.*, 2005; Hugé & Hens, 2007; IAIA, 2009; Van Humbeeck, 2007).

- Impact assessment aims to provide information for decision-making by analysing the (unintended) consequences of proposed actions;
- Impact assessment aims to promote transparency and participation of the public in decision-making;
- Impact assessment aims to identify alternative options and/or to design mitigating measures so as to avoid/minimize unintended harmful impacts as well as to foster positive impacts.

The practice of IA relies upon a range of instruments and tools, typically based on the physical and natural sciences and social sciences, in order to predict future expected consequences of possible decisions (IAIA, 2009). Although practice and discourse often allow us to cluster the various types of impact assessment exercises under one common umbrella, reflecting common objectives and similar methods, a number of impact assessment fields are/were relatively clearly delimited. This paper will focus on two types of impact assessment: regulatory impact assessment (RIA) and sustainability assessment (SA). These two approaches originally reflect two different ‘traditions’ in the world of impact assessment, but they also share a striking number of similarities, creating opportunities for synergy, as we will see below. Regulatory impact assessment and sustainability assessment used to be clearly and exclusively defined: RIA reflected a competitiveness-based, economic growth-focused agenda, whereas SA reflected a balanced view based on the various dimensions of sustainable development (SD), often with a –historically grown– bias towards environmental issues. The fact that much sustainability assessment thinking has been substantially developed by EIA and SEA (strategic environmental assessment) practitioners is understandable, given that SA is often considered to be ‘the next generation’ of environmental assessment (Pope *et al.*, 2005).

Notwithstanding a few exceptions, the RIA and SA ‘traditions’ did not mix at the level of scholars and practitioners but this is now changing, partly due to a shift in the dominant discourse(s) on impact assessment. We will analyze the discursive shifts that are giving rise to an emerging synthesis –sometimes labeled as integrated impact assessment – which is blurring the boundaries between these two impact assessment worlds.

6.1.1.2 Aims and method

The aim of this paper is to analyse how discursive evolutions lead to the convergence of regulatory impact assessment and sustainability assessment towards an integrated impact assessment approach that contributes to the achievement a range of policy objectives fostering SD. This study is part of a research project of the Flemish Policy Research Centre for Sustainable Development (*Steunpunt Duurzame Ontwikkeling*), investigating the potential of impact assessment as an element contributing to the implementation of Flemish sustainability policy.

Two methods were used to perform the analysis:

- i. The first method entailed a participatory exercise consisting of a survey and a series of in-depth interviews amongst SD stakeholders (officials, experts, politicians and civil society representatives) in Flanders.

The survey consisted mainly of closed-end questions. However, the respondents were also given the opportunity to issue remarks and suggestions freely. The questionnaire was sent out in early January

2009. Reminders were sent after one month and the extended deadline was set at March 1st, 2009. The survey was sent out to stakeholders from four target groups: Flemish officials (civil servants); political representatives; civil society organisations; and experts. As this consultation aimed at gathering relevant information about the design of impact assessment for SD in Flanders, the stakeholders were carefully chosen among the target groups. Most contacted civil servants were members of the Flemish inter-department Working Group for Sustainable Development, guaranteeing a degree of commitment towards sustainability. All regional ministerial cabinets were contacted, as were the study services of every regionally active democratic political party. The selection of representative civil society organisations was not straightforward: we contacted trade unions, employer organisations, the Flemish Socio-Economic Council (SERV), the Environmental Advisory Board (MINA Board) and the most important non-governmental environmental organisations. Among the contacted experts were officials such as team members of the Unit for Legislation Quality (working on Regulatory Impact Assessment), the Environmental Impact Assessment Unit, as well as a range of accredited thematic experts in environmental assessment. In order to complete the results of the survey and in order to delve deeper into the opinions of stakeholders with regard to sustainability assessment, semi-structured interviews were performed with a selection of stakeholders.

ii. The second method used was a literature review consisting of two parts: a desk study of scientific and policy documents concerning SD and impact assessment in Flanders; and a desk study of European Union impact assessment literature.

The paper's first section sketches the context in which respectively regulatory impact assessment and sustainability assessment evolved (both at the international level and in Belgium's Flemish Region) and provides a working definition of both approaches. The second section analyses the converging official discourses of better regulation and SD. The third section sheds a light on how discursive shifts contribute to the rising prominence of integrated impact assessment approaches on the field and focuses in particular on what Flanders can learn from the European experience. Finally, the conclusion offers food for thought on strengthening the institutional anchoring of SD through impact assessment.

6.1.1.3 Setting the stage

Regulatory Impact Assessment

Regulatory Impact Assessment (RIA) is basically a stepwise process that aims to improve the quality of regulation. Better regulation is defined as a broad strategy to improve the regulatory environment, containing a range of initiatives to consolidate, codify and simplify existing legislation and to improve the quality of new legislation by evaluating its likely impact (Renda, 2009). Better regulation is about correcting the failures of traditional regulation, which is intrinsically linked to the new context of governance. Better regulation aims to open up the policy process and to break down the intimacy of regulators-regulatees interactions in close policy communities. It puts emphasis on open and transparent processes, disciplined consultation, fair treatment of the empirical evidence, and robust and pluralistic peer review. Less and better regulation is expected to lead to an increase in competitiveness for industries that in turn, would entail the growth of the economy as a whole (Van Humbeeck, 2007). Radaelli (2007) observes that the focus of better regulation has swung between regulatory quantity (or de-regulation) and regulatory quality across time and space.

The origins of RIA lie in the United States, where it was introduced in the wake of the first 'better regulation wave' brought about by the New Public Management ideas. At the international level, one of the first documents mentioning RIA is the 1995 OECD *Recommendation for Improving the Quality of Government Regulation*. It reflects the consensus amongst OECD countries that a duly performed RIA improves the cost effectiveness and the transparency of decision-making, strengthens participatory processes and avoids 'useless' regulation. In the European Union, the *Mandelkern Report on Better*

Regulation (2001) has become the reference document with regard to RIA (DBR, 2004). The report states that both the member states and the European Commission ‘*should systematically, as part of the impact assessment system and prior to the adoption of any significant regulation, carry out a comparative analysis of the relevant alternatives to regulation (...) the foreseeable impact of each of the relevant options should be submitted to assessment through some explicit and consistently used method*’. This report was followed by the European Commission’s ‘Action Plan on Better Regulation’ (Renda, 2009). A lot of individual countries also have RIA schemes in place. Instead of getting into detailed descriptions of the various RIA methodologies, we will focus on the general characteristics of the RIA approach. Jacobs (2006) states that:

- RIA focuses on asking and answering the right questions in a structured framework which leads to transparent policy-making;
- RIA focuses on the systematic analysis of potential impacts of public policy;
- RIA focuses on the communication of information to policy-makers and stakeholders;

Van Humbeeck (2007) makes a similar statement by identifying three factors explaining RIA’s intrinsic added value:

- RIA forces policy-makers to look beyond the boundaries of their own policy domain when considering the impacts of planned policy; RIA thus increases policy coherence;
- RIA allows to analyze policy impacts in a systematic and consistent way as to choose the most suited policy option;
- RIA is a communication tool between government, business and citizens and enhances the transparency of the decision-making process;

The EU Directors of Better Regulation (DBR, 2004) propose operational principles characterizing a ‘good’ RIA:

- Clear problem definition and identification of policy objectives;
- Initiation of the RIA-process at a moment where different policy options can still be chosen;
- Information generation and explicitation of assessment criteria and methods;
- *Ex ante* impact assessment of each relevant policy option;
- Transparent dissemination and generation of the RIA’s results;

In conclusion, RIA can thus be defined as a decision-support process that mainly aims to assess the impacts of decisions on competitiveness and administrative burden, focusing on businesses and government as target groups. In the next section, we turn towards another type of impact assessment: sustainability assessment.

Sustainability assessment

Pope (2006) defines sustainability assessment as ‘*embracing a range of processes that all have as their broad aim the integration of sustainability concepts into decision-making, processes that may carry the labels sustainability appraisal, sustainability impact assessment, or integrated assessment, amongst others*’. Devuyt *et al.* (2001) provides some more detail by defining it as ‘*a formal process of identifying, predicting, and evaluating the potential impacts of a wide range of relevant initiatives and their alternatives on the SD of society*’.

These definitions immediately trigger a new question: what is meant by sustainability / SD?

While the seminal ‘Brundtland’ definition of SD: ‘*development that meets the needs of the present without compromising the abilities of future generations to fulfill their own needs*’ (WCED, 1987) is widely held as the most universal and valid interpretations of sustainability, SD is often further operationalized in the conventional ‘pillars’ definition. SD is then seen as development that takes environmental, social, economic and institutional aspects into account (Sedlacko & Gjoksi, 2009). However, Morrison-Saunders & Fischer (2006) warn that this view might lead to a legitimization of trade offs between pillars, in particular trade offs of environmental issues for economic gain and the perceived social benefits of this gain. Authors such as Gibson (2005 & 2006) therefore emphasise the integrative nature of sustainability and focus on principles and process design so as to keep interdependencies and complexity in mind. The variety of interpretations of the sustainability concept does not prevent sustainability assessment to have developed into a field of its own. Integration is a central idea in that

field, and this might refer to the integration of all sustainability aspects as well as to the integration of the assessment within the development process of the proposal. Robinson (2004) states that SD is above all centered on integration: it should reconcile development and environmental objectives, views and interests of different stakeholders, and various temporal and spatial scales. We refer to Scrase & Sheate (2002) for an in-depth analysis of the integration concept. While scholars have developed a range of methodologies (Lee, 2006) and typologies (Pope *et al.*, 2005) to structure the sustainability assessment field, a number of jurisdictions are already applying sustainability assessment on a more or less regular basis. The United Kingdom's sustainability appraisals, the European Commission's sustainability assessments of trade negotiations (Kirkpatrick & Lee, 2002), the Swiss (Wachter, 2005), German (German Federal Government, 2008; BMI, 2009) and federal Belgian (PODDO, 2009) sustainability assessment schemes are examples of such practical applications. Gibson *et al.* (2005) grasp the main characteristics of a sustainability assessment exercise, of which we present a selection; any SA:

- shows explicit commitment to sustainability objectives;
- covers all potentially significant initiatives (planned decisions);
- is transparent and ensures effective involvement of citizens and stakeholders;
- is initiated at the outset of initiatives when problems/opportunities are identified
- addresses positive as well as negative, indirect as well as direct, and cumulative as well as immediate effects;
- seeks to identify alternatives that offer the greatest overall benefits and that avoid undesirable trade offs;
- favors options that reflect a precautionary approach to significant risks.

In conclusion, we propose to define sustainability assessment as a process that aims to integrate sustainability issues into decision-making by identifying sustainability impacts, but also by fostering sustainability objectives to be achieved. It reflects a desire to achieve defined sustainability objectives, by assessing the extent to which the implementation of a proposal contributes to these objectives when compared with baseline conditions (Pope *et al.*, 2005). This objectives-led approach distinguishes sustainability assessment from most other types of impact assessments, as these use the conditions that are likely to prevail in the absence of the proposed initiative as benchmarks for determining the significance of impacts (Hacking & Guthrie, 2006). Given the value-laden and at least partly subjective definition of sustainability and its associated objectives, sustainability assessment must be supported by participatory exercises, which in turn is to contribute to more transparent decision-making.

RIA and SA: two sides of the same coin?

At this stage of the paper, we can already identify a number of similarities between the definitions and the stated objectives of RIA and SA. Table 6.1.1.1 identifies the objectives shared by both assessment approaches, as well as two SA-specific objectives.

Table 6.1.1.1: Objectives shared by RIA and SA

	RIA	SA
To identify and assess future impacts of planned or current actions		
To increase integration		
To enhance communication and transparency		
To provide decision-makers with information		
To structure the policy preparation process		
To foster SD		
To promote broad participation		

Although most of these objectives clearly fit for both approaches, this is also tantamount to the fact that both RIA and SA are types of impact assessment. Indeed, one can reasonably believe that the shared objectives listed in Table 1 are in fact common to most impact assessment exercises. In the next section, we will see that these shared general objectives are only one aspect that may (and does) lead to a convergence between both approaches.

However, as the more elaborate list of sustainability assessment principles compiled by Hardi & Zdan (1997) in the ‘Bellagio principles for assessment’ proves, there are also marked differences between RIA and SA. These differences do not affect the common general objectives listed above (Table 1). Next to the objectives that are specific for sustainability assessments, the differences are related to general process aspects. Said bluntly, *SA as a rule* offers a more open, holistic and flexible approach even if it requires a clear interpretation of its assessment focus before the assessment can start.

Yet besides a number of common objectives, RIA and SA above all share a common approach to decision-support. Both are processes entailing a set of logical steps to be followed when decisions (such as policy proposals) are prepared, aiming at structuring information on the advantages and disadvantages of possible (policy) options when assessing their potential impacts.

The introductory exploration of RIA and SA literature and practice allowed us to identify similarities and differences between both approaches. However, we warn for an absolute interpretation of both RIA and SA. One should be aware that the boundaries between RIA and SA are not always that clear. Some RIAs might actually encompass much more than ‘narrowly’ defined regulatory impacts, while some SA-labelled exercises might in reality be biased to cover mostly or only economic or competitiveness impacts. Before exploring the potential and actual function of both SA and RIA in the decision-making process (section 6.1), and in particular their contribution to sustainable development, the discourses underpinning the convergence of these two impact assessment processes are discussed in section 6.1.1.4.

6.1.1.4 Converging discourses: better regulation and SD

After having introduced RIA and SA, we will now move ‘up’, towards the policy declarations related to impact assessment and the evolving ‘discourse(s)’ these embody. We will see that these discursive evolutions greatly influence the design and application of impact assessment. By a discourse we mean ‘a way of seeing and talking about something’ (Barry & Proops, 1999). Indeed as Wilkins (2003) states: *‘people define themselves and their beliefs through both language and actions’* and the way people give

meaning to certain aspects of life in society creates -a series of- discourses, which ideally reflect coherent –yet essentially normative- worldviews. Basically, by using discourse analysis we do not take the definition of problems for granted. The aim is to elucidate the various problem perceptions involved in an issue. We focus on the broader definition of discourse analysis (not on the linguistic-oriented interpretation) where the focus lies both on the ways of thinking and arguing on specific themes or issues, and on the related practices, structures and institutions (Runhaar *et al.*, 2005). This approach contributes to structure complex scientific and political debates.

Impact assessment (IA) –in its generic interpretation (see section 1)- has received increasing attention throughout the last years due to its diffusion among OECD-countries. This development is driven on the one hand by the ‘better regulation’ discourse, and on the other hand, IA is also promoted to address the requirements of SD. Both discourses are reflected in policy agendas that demand a better quality and coherence of policies and/or foster sustainable development, and IA is considered as a key tool to accomplish this task. This has often led to an integration of several sector assessment procedures into one overall assessment procedure (Hertin *et al.*, 2008). This section analyses the discourse at European Union level and at the level of the Flemish Region of Belgium; in section 5, the consequences on the function of impact assessment processes in decision-making is discussed.

Converging discourses and impact assessment at the European Commission

In 2001, the European Commission (EC) introduced its first version of the Impact Assessment Guidelines (in order to avoid confusion, the EC’s Impact Assessment will be written in capital letters, while impact assessment continues to refer to the generic definition outlined in this paper’s introduction).

The gradual introduction of Impact Assessment at the European Union (EU) level since 2001 is a direct consequence of the 2001 European SD Strategy and the Lisbon Competitiveness Agenda (Tanasescu, 2009). But how are these two guiding European policy frameworks linked? Analysing the discourse embodied by these two major strategies will clarify the relationship with Impact Assessment. The two strategies were supposed to be complimentary, with a big question mark regarding the creation of synergies between them and the identity of the guiding strategy: how would the integration between the two be achieved in practice? Notwithstanding ambitious goals formulated at the Helsinki European Council in December 1999 reflecting the need for ‘...a strategy dovetailing policies for economically, socially and ecologically SD’ (Tanasescu, 2006), these objectives were split into two strategies. The Lisbon Strategy was drafted first and aims at making the EU the ‘fastest growing knowledge-based economy in the world’ (EC, 2009c). The 2005 EC intermediate report is almost entirely dedicated to the economic side of the Lisbon agenda, and almost drops SD completely (Tanasescu, 2009). However Renda (2009) states that the re-launch of the Lisbon agenda under the name “Partnership for growth and jobs” identified better regulation as one of the main pillars of competitiveness *and* SD in Europe. However the re-launched Lisbon Strategy of 2005 still shows a predominance of growth and employment issues, as does the 2010 evaluation of the European Commission (EC, 2010a): ‘*In assessing ten years of the Lisbon Strategy, what ultimately counts is the impacts on growth and jobs*’. It is fair to say that techno-optimism remains the predominant approach to growth in the Lisbon Strategy, although a prudent shift to more environmentally friendly and energy-efficient innovation can be observed (Sedlacko & Gjoksi, 2009). These indications of a prudent shift are also reflected in the 2010 evaluation by the Commission, which states that the Lisbon Strategy has led to a more sustainable future, as economic growth has been accompanied by a downward trend in energy intensity (EC, 2010a).

The first European SD Strategy (EU SDS) was adopted at the European Council Meeting in Gothenburg (Sweden) in 2001 and aimed at complementing the Lisbon Strategy by addressing environmental issues and thus at achieving the European Union’s general objective of SD (EC, 2009d). While the first EU SDS focuses on decoupling economic growth from resources use, the

2006 renewed EU SDS adds a number of priority areas of action to this general objective. These include: climate change; sustainable transport; sustainable production and consumption; conservation and management of natural resources; public health; social inclusion, demography and migration; and global poverty and SD challenges (EC, 2009d). Analyzing the main objectives of the Lisbon Strategy and the EU SDS, one can see that the revised versions of the strategies have achieved more coherence since their initiation. The EU SDS concentrates on the 'quality of economic growth', which includes the distributive part of economic growth, social inclusion and environmental protection. The Lisbon Strategy mainly focuses on increasing competitiveness and economic growth and on enhancing job creation. In its 2010 evaluation, the EC (2010) recognized that key decisions on climate change and energy (e.g. the so-called 20-20-20 targets) were taken outside the context of the Lisbon Strategy, emphasizing that the Strategy might not (yet) be as comprehensive as wished for.

Generally speaking, the relationship between the EU SDS and the Lisbon Strategy is extremely ambiguous, as the European Commission gives contradictory signals with regard to priorities and 'overarching' objectives. Tanasescu (2006) states that the inconsistencies between the two strategies could originate in the differences in scope and operational level that existed from the outset, as *'The Lisbon Strategy thus focuses first and foremost on economic growth and social cohesion and sets time-bound and quantitative targets in these areas while the Gothenburg strategy -the EU SDS- is a much broader and long-termed strategy'*. In its recent evaluation, the European Commission (2010a) states that the strategies were kept separate due to the different time focus (a medium term perspective (5-10 years) for Lisbon and a time horizon of several decades for the EU SDS).

Nevertheless, the fact that this imbalance was not only not addressed in the review of both strategies, but was further accentuated in the decoupling of their periodic assessment, is an indication of the lack of political will to make SD the real priority.

The European Union will soon devise a new strategy for the period beyond (*'post'*) 2010. This new strategy should enable the EU to make a full recovery from the crisis, and help speed up the move towards a greener, more sustainable, and more innovative economy. To make this transformation happen, Europe needs a common agenda: the EU 2020 strategy (European Commission, 2010b). Furthermore the Strategic Framework of the 2010-2011 trio presidency of the European Council (Spain, Belgium, Hungary) stresses that the post 2010 Strategy should incorporate the guiding principles of SD, *inter alia* a low carbon economy (European Union, 2009). Similarly, the European Commission recently recognised that the links between the Lisbon Strategy and the EU SDS have not been sufficiently strong and recommends solving this so as to improve policy effectiveness (EC, 2010a).

Despite inconsistencies and drawbacks, there are clear signs that the European high-level discourses converge. This is apparent in the quest for an increased synergy between the Lisbon Strategy and the EU SD Strategy. However, this is mainly visible in lip service paid to these synergies, and several political inconsistencies and biases remain, while at the same time, implementation seems to lag behind. But what's the link to impact assessment?

To help solve these inconsistencies between the European SD agenda and the Lisbon agenda Impact Assessment is presented by the European Commission as a tool that will contribute to these strategic agendas' integration. The European Commission's Impact Assessment Guidelines (EC, 2009a) state that Impact Assessment *'helps to ensure coherence of Commission policies and consistency with Treaty objectives such as the respect for Fundamental Rights and high level objectives such as the Lisbon or SD strategies'*.

Impact Assessment should ideally offer a balanced account of the likely economic, social and environmental impacts of all major policy initiatives, going beyond the question of whether Lisbon or the EU SD Strategy is the overarching strategy. The European Commission thus drops the

distinction between regulatory impact assessment/analysis (RIA) and sustainability assessment (SA). Instead both approaches are merged in order to contribute to the achievement of both the better regulation and the SD agendas. This is apparent in the definition given by the EC (2009a): *Impact Assessment is a set of logical steps to be followed when you prepare policy proposals. It is a process that prepares evidence for political decision-makers on the advantages and disadvantages of possible policy options by assessing their potential impacts.* The objectives that were identified in the RIA and SA literature are now fostered together, as the EC's Impact Assessment should:

- *Help the EU institutions to design better policies and laws;*
- *Facilitate better-informed decision making throughout the legislative process;*

When it comes to analyzing the impacts, we can again clearly identify RIA and SA elements in the EC Impact Assessment Guidelines, as Impact Assessment is expected to:

- *Identify (direct and indirect) economic, social and environmental impacts and how they occur;*
- *Identify and assess administrative burden/simplification benefits (or provide a justification of this is not done).*

Tanasescu (2009) lists the steps that led to the last (2009) version of the EC's Impact Assessment guidelines. The first guidelines date from 2003, the EC revised them in 2005 and updated them again in 2006, when the decision was taken to create an Impact Assessment Board. The most recent version of the guidelines dates from March 2009, and follows an evaluation performed by TEP (2007). TEP (2007) states that the Commission Impact Assessment system would have three main objectives –which are common to RIA and SA:

- to improve the quality of the Commission proposals;
- to provide an effective aid to decision-making;
- to serve as a valuable communication tool:

Ultimately, the achievement of these key objectives should contribute to a better, simpler and more consistent regulatory environment that helps the European Union to meet the objectives of the Lisbon and SD Strategies.

This document analysis shows that political discourses, embodied by high-level strategies, political declarations and Communications from the European Commission increasingly converge despite numerous ambiguities, yet fail to become operational. The European Commission wishes to translate this convergence to the operational level through the application of Impact Assessment Guidelines, which now explicitly aim to realise both the Lisbon and Gothenburg policy agendas. Other authors such as Bäcklund (2009) emphasizes even other policy objectives set forward by the EC: Impact Assessment is also expected to improve legitimacy of government and to increase unity in European politics.

The practical results of the application of Impact Assessment have been mixed until now. A number of studies analysed its various aspects (see Tanasescu, 2009 for an overview). But as Bäcklund (2009) states: one has to keep in mind that: *'Impact Assessment is a political instrument shaped by its multiple objectives and the political context of permanent negotiations in which it is situated.'* The narrative analysis outlined in section 4.1 does not preclude a critical look at the 'messiness' of actual decision-making processes (see section 6.1), as impact assessments are not performed in isolation, but ultimately depend on the institutional context.

Converging discourses and impact assessment in the Flemish Region of Belgium

Since the 1970s, Belgium has evolved into a federal state, which granted important legislative powers to the sub-national entities such as the Flemish Region. The regional parliaments and governments have the competence over important policy areas such as economic, employment and energy policy, environment, housing and urban planning, public works and transport, agriculture, education *etc.* As a sub-national actor, the Flemish Region has launched broad strategic initiatives in recent years; both in the field of competitiveness and economic development and in field of SD. Although not explicitly linked to the European-level initiatives, the challenges that led to respectively the 'Pact 2020' and the

'Flemish SD Strategy' are in many ways similar to the context that triggered the drafting of the European Lisbon and Gothenburg strategies.

The so-called 'Pact 2020' outlines objectives for the future development of the Flemish Region. Pact 2020 reflects the shared long-term vision and strategy of the Flemish government and the social partners (employers, labour unions) within the frame of the 'Flanders in Action' initiative. The Pact wants to stimulate a 'societal dynamic for action and change' so as to position Flanders amongst the European front-running regions with regard to economic, social and ecological aspects. The keywords supporting the strategy are wealth creation, inclusion and sustainability. While the first two aspects are clearly in line with the objectives of the European Lisbon strategy, the sustainability aspect is clarified through the aspirational idea of 'a circular economy' with a reduced commodities, energy, material and space use and an environmental impact that is as low as possible. The strategy also presents four priority topics: 1. a competitive and sustainable economy, 2. more people at work, with qualitative jobs and longer careers, 3. high quality of life; 4. efficient governance (SERV, 2009 a). These ambitions are translated into 20 objectives, and a number of these embody a holistic, sustainable vision of the future. These objectives include: Flanders should become a sustainable top-region; eco-efficiency needs to be stimulated; environmental indicators must be amongst the best in Europe; biodiversity needs to be preserved *etc.* Next to the comprehensive Pact 2020 strategy, the Flemish Region is one of the few regions in Europe that came up with an own, explicitly Lisbon-inspired Flemish Programme of Reform, that was endorsed by the regional government in October 2005. In its associated yearly 'Lisbon Reports', the Flemish Government demands to put more emphasis on sustainability, through a stronger focus on 'sustainable growth and jobs' (Flemish Government, 2009).

Thus, it appears that the sustainability dimension is strongly present in the Flemish strategic discourse, yet the interpretation of the concept of sustainability sometimes seems (over-)stretched.

SD is part of the Flemish Region's competences. This was translated into a 2008 regional law, aiming at guaranteeing the continuity of Flemish SD policy (Flemish Parliament, 2008). This law makes the periodic drafting of a strategy note reflecting the Flemish SD Strategy (SDS) compulsory. The Flemish Region committed itself to draft a SDS at the 2002 World Summit for SD.

The first Flemish SD Strategy was adopted in July 2006. It provides the framework for Flanders' sustainability policy. The Strategy builds on seven key issues: poverty and social exclusion, ageing population structure, climate change, mobility and transport, spatial planning, sustainable natural resources management, combating health risks. The process aspects of SD (governance) are also taken into account (Flemish Government, 2006a).

The Flemish SD Strategy is explicitly inspired from the European SD Strategy. The Pact 2020 was drafted more recently and fits well in the global rise of the 'green economy' discourse, carried amongst other by the United Nations (UNEP, 2008), as it calls for synergies between competitiveness objectives and broader sustainability objectives.

But is this discursive evolution being translated to the operational level? And what are the linkages with impact assessment? The Flemish Region has different impact assessment schemes in place, each with their own specificities and objectives. These schemes include Environmental Impact Assessment, Strategic Environmental Assessment and Regulatory Impact Assessment. For now, there is no integrated impact assessment scheme similar to the European Impact Assessment scheme. But, under the influence of the discursive shifts outlined above, this situation is changing.

Indeed, the 2006 Regional Strategy for SD explicitly calls for steps towards integrated impact assessment for SD. Literally, it calls '*...to examine the possibility to carry out an analysis of the economic, social, environmental and administrative impacts of policy measures, in Flanders and on a global scale.*' The idea to analyse sustainability impacts and administrative impacts in one impact assessment tool is relatively recent

(the Flemish SDS dates from 2006), but it builds both on the strategic dynamics outlined above – the links between Pact 2020 and the SDS – as on dynamics at the administrative level.

In order to have an idea of these ‘lower level’ dynamics, we analysed policy documents shedding a light on the way the Flemish Region’s official opinions with regard to relevant European initiatives is being formed. In June 2008, the European Commission initiated a consultation process concerning the reform of the European Impact Assessment Guidelines. This reform process ultimately led to the newest version of the Guidelines (issued in January 2009).

The Flemish Administration issued a communication to the Flemish Regional Government where it clarifies its opinion with regard to the proposed EC Impact Assessment Guidelines (Flemish Government, 2008a). This communication stresses the need for a balance between economic, social and ecological aspects and reflects the worries of the administrations that EC Impact Assessments still overemphasise the sole economic dimension. The communication further states *‘It is both a methodological problem and a capacity problem in the concerned services’*.

Similarly, the viewpoint of the Flemish Government with regard to the Midterm Review of the Lisbon Strategy (2004-2005) already reflects the sustainability concern in strong words: *‘Flanders can only agree to narrow the scope of the Lisbon Strategy to an economic strategy for growth and jobs if the European SD Strategy is used as the all-encompassing and coordinating strategy’*. In that 2005 Communication, the Flemish Government also demands *‘to adjust the European Impact Assessment as to assess the economic, social and ecological dimension of the Lisbon Strategy’* (Flemish Government, 2005). This is in line with the more or less concomitant 2004 European Commission Staff Working Paper ‘Impact Assessments: Next Steps’, which states that *‘SD objectives and Lisbon objectives are to be firmly anchored in the assessments’*, thus pointing to the (need for) practical coordination of the two strategies via the Impact Assessment Tool (Tanasescu, 2009).

In May 2009, the Flemish Minister-President issued a communication to the Flemish Government, clarifying the first steps in the development of a Flemish vision on the European post-2010 Lisbon strategy (Flemish Government, 2009). This document was issued before the European Commission’s official proposal for the new Lisbon strategy, and can thus be considered to be an unconstrained reflection of the opinion of the Flemish Government. Flanders, as a region both in the federal state of Belgium and as a member of the European Committee of the Regions, stresses SD throughout this communication. Concretely, it states that *‘the Flemish Region wants to focus on sustainability in the post 2010 Lisbon Strategy’*; *‘The complementarity between the European SD Strategy and the Lisbon Strategy should not be forgotten...as both strategies aim at supporting structural changes in the member states’ economies for them to be able to cope with the challenges of globalisation’*; *‘Innovation must provide an answer to the necessary shift to a sustainable society’*. On an operational level, Flanders calls to adapt the existing set of Lisbon indicators to firmly anchor the sustainability dimension in the monitoring process. These quotes sound ambitious and promising, but one should be aware that these are recommendations aimed at the European level, and are not to be realised directly by the Flemish policy-makers. Nevertheless, this anthology of ambitions and ideas fostering a synergy of competitiveness and sustainability reveals a powerful sense of urgency.

However, when briefly mentioning the Flemish RIA in this communication, the Flemish Government (2009) fails to link this process to SD and only provides a narrow RIA-interpretation focussing exclusively on the reduction of the administrative burden. This is somewhat surprising, as the Flemish Government proposes to introduce a ‘sustainability test’ as a part of the new Lisbon Strategy. Furthermore, the use of evaluations is mentioned, but again through a narrow *‘efficiency and effectiveness of public administration’* prism.

This original Flemish proposal for ‘a sustainability test’ is not linked to the Flemish RIA nor to the European Impact Assessment framework. Apparently, there is no lack of ideas, but there is still a coordination problem when it comes to make transversal issues such as SD operational. In another Communication concerning the Flemish priorities for the Belgian presidency of the European Union in 2010, the Flemish Government again stresses sustainability as the basis for the updated Lisbon Strategy. Similarly, Flanders’ response to the consultation process of the European Committee of the

Regions stresses the need for a *‘reorientation (of the Lisbon Strategy) towards sustainability’* (Flemish Government, 2009b).

6.1.1.5 Regulatory Impact Assessment in the Flemish Region of Belgium

The narrative analysis of recent Flemish official documents reflecting the regional government’s opinion on European initiatives is illustrative for the state-of-mind surrounding the integration of the better regulation agenda and the SD agenda. Whereas at the European level, the Impact Assessment guidelines explicitly call for an integration of these both agendas through the very application of Impact Assessment, this is not yet the case in Flanders. In this section, we will analyse the Flemish RIA system as to get an idea of the potential of the approach to foster SD and to be reformed into an integrated assessment approach. This is a logical step, as Flanders does not currently have an officially endorsed SA framework.

During the 1990s, concern grew that the quality of legislation in Flanders might suffer from the plethora of regulations, which would ultimately reduce the effectiveness of government interventions (Van Humbeek, 2007). In response to that, the RIA system was introduced in 2005 through the circular 2004 / 13 of the Flemish Government, as a result of the set up of a Regulatory Control Unit. The 2004-2009 Flemish Government emphasised three main objectives that RIA should pursue: 1. better policy preparation; 2. increased transparency; 3. policy coordination.

Other objectives put forward in the preparatory phase (Flemish Government, 2004a), such as *‘RIA as an instrument for balanced decision-making’* were not considered a priority by 2005. Apparently, the link with SD was not clarified from the onset.

Since January 1st 2005, every regulatory initiative having a regulating impact on citizens, business or non-profit organisations is subject to a RIA in Flanders. This includes all draft regional laws, with a few formal exceptions (Flemish Government, 2006b).

In the RIA Guidance (Flemish Government, 2006b), RIA is presented as *‘a structured analysis of the impacts of planned regulation or of a policy measure in general. It consists of a development process and of a document drafted in line with the present RIA guidance’*. This generic definition of an impact assessment process is specified in the next section of the guidance: by applying a RIA, the Flemish Government wishes *‘to propose regulations only after an assessment of its need and effectiveness and after having obtained a clear view on its likely impacts. It wishes to moderate the costs of implementation and enforcement. It wishes that regulation in one policy area takes the impacts on the realisation of objectives in other policy areas into account’*. The key elements of a RIA as stated in the RIA Guidance are outlined in Table 6.1.1.2:

Table 6.1.1.2: Key elements of a RIA in the Flemish Region of Belgium (Flemish Government, 2006b)

Title
Motivation and objective
Options
Impacts
Elaboration, implementation, administrative burden, compliance and evaluation
Consultation
Information for the Financial Inspection
Summary
Contact information

It is clear throughout the guidance that RIA is first and foremost a process of assessment and (limited) consultation, intended to start early in the decision-making process. SD impacts are

mentioned in a careful way in the Flemish RIA Guidance. The Guidance uses an approach focussing on target groups and effected stakeholders, and distribution issues are central.

Section five of the guidance states: *'The RIA aims to ensure that the planned regulation has no negative impact on the potential to realise SD. This means that –if needed- the likely social, economic and environmental impacts for current and future generations need to be mapped'*. This cautious wording contrasts with the last version of the European Impact Assessment Guidelines (European Commission, 2009) stating that an Impact Assessment should *'identify (direct and indirect) economic, social and environmental impacts and how they occur (causality)'*. The 2006 Flemish RIA Guidance, although mentioning the three pillars of SD, tends to show a bias towards (economic) competitiveness impacts. Recently however, there have been signs of a shifting interpretation of RIA, for instance, the *'Flemish Inter-Institutional Agreement on a common approach and application of RIA'* fosters the use of RIA as a central deliberation and assessment instrument between the government, the parliament and the advisory councils. RIA is presented as an instrument to achieve the Lisbon objectives, good governance and SD objectives as well as better regulation (SERV, 2009b).

But how does the Flemish RIA system work in practice? The Flemish RIA system has been evaluated internally and externally a number of times since its initiation (Van Humbeeck, 2007). Without going into detail, the design of the RIA system scores well. The broad scope, the formal guidance, the focus on cost-benefit analysis, the wide array of impacts that need to be analysed in principle, the demand for quantification, and the quality control are all considered to be positive elements. When it comes to the RIA process, the score is less satisfactory. There is a lack of transparency concerning the dissemination of results and concerning quality control, as well as a lack of *ex post* evaluation of the performed RIAs. Concerning SD impacts, Van Humbeeck (2007) found that in 2005 and 2006, only 15% of the 46 analysed RIAs, took the social and environmental aspects of SD into account. The most recent RIA evaluation dates back to the summer of 2009. A fair number of past recommendations have been taken into account: the RIA database increases transparency, the regional Parliament gets a more important role *etc.* It is harder to get rid of the somewhat negative SD connotation surrounding RIA, despite the fact that the Flemish RIA seems to have evolved positively between the 2007 and 2009 evaluations. The successive evaluations have led to gradual improvements in both guidance and practice. A next reform of the RIA is coming up, and as observed by the Legislation Quality Unit (personal communication), civil society is also demanding this reform.

6.1.1.6 Towards an Impact Assessment Framework for Sustainable Development in Flanders

Discourse, impact assessment and the reality of decision-making

The analysis presented in this paper links the convergence between policy discourses on better regulation and sustainable development to the emergence of integrated impact assessment processes, and the next section (6.2) provides tangible arguments to support the RIA-based emergence of integrated impact assessment in Flanders. These arguments can be an inspiration for other jurisdictions. Although the scope of this paper does not encompass an in-depth analysis of the array of functions of impact assessment exercises in decision-making, it is necessary to warn for an overly simplified 'linear' perspective on decision-making in which impact assessment provides information to decision-makers who subsequently use this information directly to improve the quality of future decisions. Indeed, information and knowledge can feed into decision-making in various ways. Holder (2004) for instance, makes a distinction between the 'information theory', which focuses on the informing role of IA, and the 'culture theory' which emphasises attitude changes and new perspectives brought about by IA. In the context of this paper, it is enough to keep in mind that these secondary 'learning effects' are as or even more important than direct information provision by IA. To say it with the words of Nooteboom (2007): *'The effect of an (impact) assessment procedure may well*

be that it will mainly benefit future decisions, while having a more limited impact on the decisions which the impact assessment was meant to inform and influence’.

LA for SD in Flanders: RIA as a starting point?

Structural similarities between RIA and SA (section 3), together with the observed discursive evolutions both at the EU-level and at the Flemish level (section 4) and with the characteristics of the current Flemish RIA system (section 5), all contribute to create a window of opportunity to introduce an integrated impact assessment framework in Flanders. Instead of introducing a brand new assessment approach, the existing RIA scheme can be used as a starting point to turn it into an integrated impact assessment framework fostering SD. Although the detailed implementation of RIA’s potential in Flanders is subject to further research, this stance is based on four key premises that are explored in the following sections:

- the learning potential embodied in the existing RIA framework;
- the effectiveness and efficiency of building onto existing frameworks;
- the political discourse in the EU and in Flanders;
- the experience of the European Commission’s Impact Assessment scheme.

Learning potential embodied in the existing RIA framework

Many institutions and scholars (e.g. Jha-Thakur *et al.* 2009) acknowledge that introducing and applying (any) impact assessment framework is a gradual learning process. Concerning RIA, the OECD (2006) rightly states: ‘*RIA implementation is a long-term process which necessarily requires significant cultural changes to take place throughout the government policy-making apparatus*’. The European Mandelkern Report (2001) also points to the evolutionary character of RIA, and the European Impact Assessment Board notes a steady improvement in the application of the EC’s Impact Assessment Guidelines. The learning process in applying assessments is thus emphasised (EC, 2009 b). Similarly, Van Humbeeck (2007) looks beyond the poor quality of a series of early Flemish RIAs, and stresses the gradual improvement in RIA quality and influence. Indeed, in the early phases, the potential of impact assessment lies essentially in raising awareness amongst policy-makers with regard to the shortcomings of the decision-making process and its results.

In the same vein, Luks & Siebenhüner (2007) mention that impact assessment methods also percolate only slowly into the policy-makers’ minds and habits.

As many Van Humbeeck (2007) stresses ‘*the value of RIA as a process rather than as an analytical tool*’, the challenge lies in avoiding the sometimes negative SD connotation surrounding the (Flemish) RIA process; as well as in turning its strong points into an opportunity for improving the assessment practice. Historically, RIA still carries with it the ideological label of avoiding public regulation and sparing business without taking other interests into account. This can be explained by the genesis of RIA in Flanders, as the compensation rule for administrative burden was introduced at the same time as the RIA in 2005.

However, given the gradual acceptance of RIA by Flemish stakeholders and the ongoing learning process, it is advised to reframe and reform the current RIA system instead of introducing a brand new framework. This position is supported by two thirds of the Flemish stakeholders consulted by the authors in the survey (see section 2), as these stakeholders were in favour of strong linkages between RIA and any sustainability assessment process to be introduced.

Effectiveness and efficiency

Besides the intention not to hamper the ongoing learning process in Flanders, using RIA as a starting point to introduce integrated impact assessment fostering SD is also a matter of effectiveness and efficiency. It is also in line with the Flemish Government’s decision to embed every existing and future *ex ante* assessment in the RIA system so as to ensure no extra administrative burden would

slow down decision-making and so as to keep the structure of impact assessment(s) as convenient as possible. Hence it is not indicated to introduce a completely new *ex ante* assessment in Flanders. Increased fragmentation would be contradictory to the trend of using integrated assessments to get a grip on the complexity of public decision-making. As fragmentation increases the risk of biased decision-making, it is more efficient to incorporate existing tests in one integrated assessment (Jacobs, 2006; Van Humbeeck, 2007). Furthermore as shown in the analysis of Jacob *et al.* (2007), there is a trend to integrate environmental appraisal into existing regulatory appraisal schemes. This is both a response to the integrative character of the SD agenda and to the proliferation of impact assessment procedures.

Political discourse in the EU and in Flanders

As outlined in section 4, one of the main reasons to work towards an integrated impact assessment for SD is that it would enable to turn abstract policy objectives into concrete realizations. The narrative discourse analysis outlined in section 4 supports this view. Indeed, as the Flemish Government (2006a) states, it strives towards '*an empirical base and a quantitative measurement of the impacts, to identify (in)direct environmental, social and economic consequences and to take these into account in the ultimate choice between different options*'. The analysis of Flemish opinions with regard to European initiatives (section 4) shows that the Flemish Government (2008) thinks that insufficient attention is granted to social and environmental impacts in the EC's IA. Integrated impact assessment is expected to solve this by considering all relevant SD impacts into one process. This statement is also apparent in the European Commission's discourse (EC, 2009h).

The European Commission's Impact Assessment experience

The introduction of impact assessment for SD in Flanders is linked to international evolutions. At the European Union level, Impact Assessment is not limited to regulation, but can be applied to all major policy decisions, and ideally starts at the earliest phase of decision-making. Furthermore, the EC's Impact Assessment has a positive connotation when it comes to assessing SD impacts, although the practical results are mixed until now (TEP, 2007). The EC's IA Guidelines also theoretically ensure a flexible application of impact assessment, as the legal form of the regulation is not what matters most. Instead, the emphasis lies on the contents. Harmonizing practices between the EU-level and the (sub-)national level is another important argument. Renda (2009) says: '*..placing the emphasis only on the EU level would miss the broader picture of better regulation in Europe.(...)In this respect, a degree of convergence between the EU and national IA systems would also entail that EU IAs serve as a basis for implementation in member states, and that impact assessment can be performed at national level as an 'add-on' to what the European Commission has analyzed in its own IA document. Achieving convergence between the EU and national better regulation systems should thus be considered as a key priority*'. We would like to add the SD dimension to this assertion, and we would like to explicitly refer to the existing European Impact Assessment Guidelines, as these can be both a source of inspiration and a logical step with regard to European integration.

Experience from other European countries show that (timid) steps are taken to realise a synergy between better regulation and SD, albeit SD is often not made explicit and albeit RIA is often not (yet) presented as an instrument that can contribute to the institutionalisation of SD. In the field of policy supporting instruments where impact assessments take up their role in the policy preparation process, day-to-day practice reflects the strategic discourse that is slowly spreading from the European Commission to the member states and (some of) their (sub-)national entities. However, one has to keep in mind that the 2009 financial crisis and the subsequent budget deficits created a strong suspicion with regard to any initiative that is perceived as bringing more administrative burden. Similarly, the EC's IA system is not flawless and implementation still shows flaws, yet analysing the EC's experience is an essential input in the Flemish IA debate.

6.1.1.7 Conclusions

Impact assessment is an idea and a process that can be interpreted in many ways. Its interpretation and practice are constantly evolving and the way it is used and applied is the result of political and societal choices. In the Flemish Region of Belgium, evolving discourse triggers a focus shift from the initial economic and deregulation bias of RIA towards a broader approach sharing characteristics of the European Impact Assessment system. This shift can be explained through practical experiences, evaluations and reflections, but at a strategic level, it is the result of shifting discourses and societal dynamics. The converging objectives of SA and RIA have the potential to lead to the emergence of a Flemish integrated impact assessment. The ongoing learning process surrounding RIA and the effectiveness and efficiency argument are strong elements supporting the introduction of integrated impact assessment by taking RIA as a starting point.

An important finding of this paper is that the current window of opportunity to introduce an integrated impact assessment scheme fostering SD in the Flemish Region is not a direct consequence of SD policy, but instead arises from the reform of an instrument that was initially framed as an instrument essentially fostering better regulation, the RIA.

When introducing an integrated impact assessment scheme one can thus not only build on arguments centred on SD as such, but one also needs to use windows of opportunity that might have seemed un-linked to the subject before discursive shifts had occurred at various decision-making levels.

The initial cold feet to link both processes (RIA and SA) can be explained by their different origins and traditions, but this perception of incompatibility is fading. Next to the evolutions of the RIA and SA approaches as such, the EC's decision to implement the European better regulation agenda and the European SD agenda through the use of one integrated impact assessment tool has certainly contributed to this evolution.

Reforming the Flemish RIA is one important step, but this does not preclude actors to have diverging interpretations of impact assessment. Impact assessment can also be a flexible approach in the realization of deliberative governance. The key objective of impact analysis is to help policy-makers to structure policy issues and ultimately, to frame policy issues differently. However, changing policy-making routines is demanding.

Introducing a Flemish integrated impact assessment may not be an easy task, but the European experience proves that it is possible. A pro-active stance may turn the Flemish Region into a frontrunner in integrated impact assessment fostering SD. This is an encouraging perspective.

6.1.2 Participatory sustainability assessment: rationale and pilot application in Flanders, Belgium

Abstract

In support of the development of a participatory sustainability assessment approach for the Flemish Region of Belgium, the impact assessment-focus group method was applied on a regional spatial planning strategy. This study yielded methodological insights into the impact assessment-focus group method, which is an adequate approach to involve citizens in a structured group discussion on the complex issue of sustainable development impacts; as well as indicative policy recommendations for the new 2012 spatial planning strategy. The method is subsequently assessed from the perspective of its contribution to the interpretive, the information-structuring and the policy influence components of sustainability assessment. Context-specific interpretations of sustainable development impacts emerged through the interaction between the participants' perspectives and scientific knowledge, and learning effects were apparent among participating citizens, public decision-makers and scientists alike. Moreover the policy recommendations emphasized the need to consider chains of causality to ensure sustainable spatial planning. Despite the novelty of the approach and the qualitative results of the impact assessment-focus group, this participatory sustainability assessment approach has the potential to be a forum for dialogue where citizens, scientists and sub-national governments can contribute to the transition to sustainable development.

Keywords: sustainability assessment, participation, focus group, Flanders, sustainable development

6.1.2.1 Introduction

Almost 25 years after the publication of 'Our Common Future' (WCED, 1987) the concept of sustainable development (or sustainability) has become an overarching policy goal and an action-guiding principle for decision-makers all over the world (Hugé *et al.*, 2011). The interpretive flexibility of the concept is embedded in two key aspects: the multiplicity of goals and issues embodied in sustainable development, and the limited insight into empirical relations between these issues (Huppés & Ishikawa, 2007). The plurality of perceptions of sustainable development is a logical consequence of its intentionally open-ended definition. Although the concept's interpretation remains inherently controversial, the fact that current development paths are unsustainable and that urgent action is needed is increasingly recognised (Harding, 2006). Throughout this paper, the terms 'sustainable development' and 'sustainability' will be used interchangeably following Dresner (2008).

Despite its interpretative flexibility sustainable development does refer to a more or less stable set of primary characteristics (Zaccai, 2012). These characteristics or principles are defined in a variety of ways (Gibson *et al.* (2005), Hugé *et al.* (2011), Lafferty & Meadowcroft (2000), Pope *et al.* (2004)) yet these sets of principles draw on the same understanding of sustainable development and reflect considerable agreement among scholars (Waas *et al.*, 2011). These principles, providing rules of action towards sustainable development, are to be the reference for anyone making the statement to act in a sustainable way (Hugé *et al.*, 2011). Within the frame of this paper sustainable development entails at least respecting the principles of: global responsibility (in tackling global socio-ecological issues); integration (of ecological, social and economic dimensions and their interactions); intra- and intergenerational equity; dynamism (as sustainability is a process of directed change); precaution (in the face of uncertainty); and participation (Waas *et al.* 2011).

In order to use these principles in day-to-day public decision-making the practice of 'sustainability assessment' emerged as a decision-supporting process. In its broadest sense, it refers to a process that

aims to integrate sustainability issues into decision-making by identifying sustainability impacts, but also by explicitly fostering sustainability objectives. It reflects a desire to achieve defined sustainability objectives, by assessing the extent to which the implementation of a –policy- proposal contributes to these objectives (Devuyst *et al.*, 2001; Pope *et al.*, 2005). Sustainability assessment is a particular form of impact assessment, which is the process of identifying the future consequences of a current or proposed action (Hugé *et al.*, 2011).

There is a wide range of sustainability assessment approaches (Ness *et al.*, 2007), and a typology is proposed by Pope *et al.* (2005) to structure the array of interpretations. A number of jurisdictions are already applying sustainability assessment on a more or less regular basis: The United Kingdom's sustainability appraisals, the European Commission's sustainability assessments of trade negotiations and the European impact assessments (European Commission, 2009), as well as the Swiss, German and federal Belgian (Hugé & Waas, 2011) sustainability assessment schemes are examples of such practical applications.

Sustainability assessments can be developed and performed in a variety of ways (Pintér *et al.*, 2012). This paper focuses on *participatory* sustainability assessments.

Participation in the context of public decision-making for sustainable development amounts to the inclusion of non-governmental stakeholders in the public decision-making process. O'Faircheallaigh (2010) defines it as '*any form of interaction between government and corporate actors and the public*'. There is an overwhelming consensus among policy makers and stakeholders that more participation is needed in public decision-making processes (Kasemir *et al.*, 2003), especially in the case of complex issues and so-called 'unstructured' problems (van Asselt & Rijkens-Klomp, 2002). Unstructured problems are characterized by divergent norms and values amongst the involved actors and by high uncertainty about the causes of the policy problem and about alternative policy options (Gasparatos, 2010; Hoppe, 2002). As a consequence, decision-making on these issues needs to encompass negotiation between public decision-makers and external stakeholders (Runhaar, 2009). Yet the question remains on how to realize participatory decision-making – there is obviously no blueprint to achieve that goal. Furthermore Fadeeva (2004) warns for an overly uncritical stance towards participation, which can for instance easily be misused to actually promote vested interests.

Jänicke (2007) puts participation at the centre of governance for sustainable development, and Andersson (2008) identifies three main rationales explaining this desirability of public participation. The substantial rationale concerns knowledge: it states that the public should be involved because citizens have knowledge, which differs from the knowledge of scientists and politicians. The political-institutional rationale states that public involvement strengthens the legitimacy of decisions, and that this will lead to better policy by providing control and feedback. The ethical-normative rationale states that the public should be involved because they are the ultimate source of value within society, and these values should be expressed in decision-making. Similarly, O'Faircheallaigh (2010) proposes a categorisation of the purposes of public participation in decision-making and distinguishes different degrees of control over decisions by the public. A summary is provided in Table 1.

Table 1: Purposes of participation in public decision-making (adapted from Andersson, 2008 and O’Faircheallaigh, 2010)

Main purpose of participation	Secondary purposes of participation
Obtain public input into decisions taken elsewhere (substantial rationale)	• Provide information to the public • Integrate knowledge from the public to fill information gaps • Allow for information contestability • Problem solving and social learning
Share decision-making with the public (political-institutional rationale)	• Reflect democratic principles • Ensure legitimacy, control & feedback • Ensure pluralist representation • Integrate values
Alter distribution of power and structures of decision-making (ethical-normative rationale)	• Involve marginalised groups • Shift the locus of decision-making • Entrench marginalisation

The unstructured nature of sustainability challenges (Hoppe, 2002) requires a participatory approach so as to turn sustainable development into a decision-guiding strategy, which led to a call for participatory sustainability assessments by scholars and governments (Hugé *et al.*, 2011). This paper describes and analyzes a case study that was performed to analyze and feed the further development of the participatory sustainability assessment approach in Flanders, Belgium.

6.1.2.2 Context and objectives of the study

The Flemish Region of the federal state of Belgium has been granted legislative powers in policy areas such as economic and environmental policy, education and spatial planning a.o. (Hugé & Waas, 2011). As a strong sub-national actor the Flemish Region is also competent for sustainable development policy. This commitment was translated into a 2008 regional law, which makes the periodic drafting of a strategy note reflecting the Flemish Sustainable Development Strategy (SDS) compulsory (Hugé & Waas, 2011). The Flemish Region committed itself to draft a regularly updated sustainable development strategy at the 2002 Johannesburg World Summit for Sustainable Development (Happaerts & Vandenbrande, 2011).

The involvement of sub-national governments in sustainable development policy is important both because of their role in the implementation of sustainable development (Lafferty & Meadowcroft, 2000), and because of their proximity to citizens (Happaerts *et al.*, 2011). More specifically sub-national authorities appear to offer benefits over larger scales in terms of opportunity for community participation and stakeholder engagement in setting sustainability agendas (Lyons & Deutz, 2010).

Furthermore, sustainability problems at the sub-national level may be different from national-level problems and may hence require tailored tools (Coelho *et al.*, 2010). This need for tailor-made regional approaches to sustainability policy is widely reflected in the scholarly literature (Mickwitz & Melanen, 2009; Ramos, 2009; Zilahy *et al.*, 2009).

The Flemish regional government formally expressed its commitment towards sustainability assessment in the 2010 Flemish Strategy for Sustainable Development (Flemish Government, 2010), which calls for the development of a sustainability assessment framework.

The research team who performed the present case study is part of the Flemish Policy Research Centre for Sustainable Development, which supports the Flemish authorities in developing and pilot testing sustainability assessments on policy proposals.

The 2004 Flemish Spatial Planning Strategy (FSPS) is a strategic policy document outlining the broad directions of the Flemish spatial planning policy until 2020. The development process of the new FSPS (*Beleidsplan Ruimte Vlaanderen* in Dutch) was initiated in early 2011 by the Flemish Government. In the preparatory Concept Note of the new FSPS both the process and the content of the FSPS are required to be aligned to sustainable development principles, and a broad societal support base is called for (Flemish Government, 2011 a). Similar to the stepwise approach in European Union strategic policy-making the Flemish Government issued a Green Paper in November 2011, which outlined the general ideas and was intended to stimulate further debate. After a broad societal debate a White Paper will outline proposals for action at a 2050 time horizon. The White Paper will then finally be translated into the new FSPS entailing concrete actions for a sustainable spatial planning in Flanders (Flemish Government, 2011 b).

In agreement with Flemish regional officials from the General Governmental Services and from the Spatial Planning Department, a participatory sustainability assessment approach was adapted and applied as a pilot on the –old- 2004 Flemish Spatial Planning Strategy (Flemish Government, 2004) in the summer of 2010. This exercise, which is reported and analysed in this paper, is intended to be one of the inputs in the societal debate launched and stimulated by the Flemish Government in the run-up to the new 2012 FSPS.

This sustainability assessment has two objectives:

- to inform strategic decision-making on spatial planning in Flanders by providing citizen input to the development of the new Flemish Spatial Planning Strategy by way of a participatory sustainability assessment;
- to apply and adapt a participatory sustainability assessment approach in Flanders, in particular through pilot testing the impact assessment-focus group method.

6.1.2.3 Method: the impact-assessment focus group

Turning the ideas underpinning participatory sustainability assessment into practice is a challenging task (Mickwitz & Melanen, 2009) that can be performed in a variety of ways. Participatory sustainability assessments typically start with an explorative sustainability discussion during which participants (citizens, possibly also scientists and officials) discuss and identify the most relevant sustainability aspects of a policy issue. Once the preconditions for effective participation are respected –such as the inclusion of different perspectives, the use of creative problem-solving capacities and the quest for a commonly discussed solution- such a sustainability discussion has the potential to enhance the quality of the decision-making process (Hage & Leroy, 2008).

The impact assessment-focus group (IA-FG) method developed by Kasemir *et al.* (2003) in the European Commission-supported ULYSSES (Urban Lifestyles, Sustainability and Integrated Environmental Assessment) project was chosen as a basis. In a nutshell IA-FG is a discursive process based on the focus group method, during which citizens debate the sustainable development impacts of a policy proposal and are given scientific background information to support their debates.

The IA FG method is centred on the concept of the sustainability discussion: participants explore sustainability issues relevant for the case at hand in a discussion facilitated by a facilitator. The sustainability discussion allows to identify the opinions and concerns of the participants with regard to the policy case (Kasemir *et al.*, 2003). The most relevant concerns and potential impacts on sustainable development are identified during the discussion.

The typical IA-FG method consists of three phases (Kasemir *et al.*, 2003): in a first phase participants issue their opinions and concerns about a particular policy topic; this allows the research team to get informed about the participants' perceptions and valuations (Dürrenberger *et al.*, 1999).

In a second phase expert input is provided -through the presentation of scientific data and/or – simplified- mathematical models- so as to inform the participants and feed the discussion. Finally in a third phase participants come up with a deliberative synthesis and present their conclusions (Kasemir *et al.*, 2003). IA-FGs thus become informed discussions since scientific information is provided as a stimulus to the discussions to enable participants to react to scientific/expert knowledge and to further develop their own opinions and preferences of the topic under consideration. The resulting discussion is expected to have clearer science-policy relevance than conventional group discussions (Swartling, 2006). The assumption is that IA-FGs produce richer, more reflective and collective results than other methods such as opinion polls and allow for more in-depth reflections on collective matters (Puy *et al.*, 2008).

A typical IA-FG consists of a series of 2 hour-meetings with a group of six to eight citizens ideally having different attitudes towards sustainability. During a facilitated discussion cause-impact relationships relevant for sustainable development are outlined in narrative statements or in visual representations (collages, mind maps etc.), which are produced collectively by the participants. These represent the output of the IA-FG. The participants also have access to sources of scientific/expert information to enrich the debate and confront their own perspectives, which represent the input to the IA-FG (Kasemir *et al.*, 2003; Puy *et al.*, 2008).

The selection of the IA-FG method among other methods for participatory stakeholder involvement in sustainability assessment was based on four criteria (adapted from Klopogge & Van Der Sluijs, 2006; and from van Asselt & Rijkens-Klomp, 2002) : i. the objectives of the exercise (and in particular the expected contribution of the exercise to the decision-making process); ii. the available resources; iii. the nature and scope of the issue (including prior knowledge, maturity, complexity and controversy).

Consequently, the impact-assessment focus group (IA-FG) method was selected based on: i. the objective to obtain informed public input (in the form of recommendations) for the development of a new Flemish spatial policy strategy; ii. the objective to apply a flexible participatory method within a short time frame with a limited number of citizen participants and limited human resources; iii. the complexity of strategic spatial planning policy and related sustainability issues; the potentially controversial nature and the limited prior knowledge of the issue at hand; and the characteristics of the IA-FG as a bottom-up method entailing active stakeholder involvement and showing openness to these stakeholders in problem framing, impact assessment and policy formulation aspects (Klopogge & Van Der Sluijs, 2006).

Focus groups are indeed particularly suited as a method for sustainability discussions thanks to the inherent social dynamics of the setting, which fosters interaction between different perspectives and visions. Focus groups are suited to identify and structure opinions, preferences and values of people with regard to a particular issue (Swartling, 2006), and allow to peer through a window onto people's lives (Collier & Scott, 2010). Focus groups are also a means to democratize scientific matters and to empower citizens (van Asselt & Rotmans, 2003).

6.1.2.4 Process: the IA-FG approach in the Flemish case study

Two IA-focus groups with eight participants were organized in Brussels in May and June 2010. Each time, a 2 hours sustainability discussion was organized following an adapted impact assessment-focus group approach.

6.1.2.4.1 Adapted IA-FG approach

The two workshops followed a five-step template adapted from the IA-FG method developed by Kasemir *et al.* (2003):

- i. welcome of the participants and introduction of the IA-FG objectives by the research team;
- ii. presentation of the method;
- iii. input of scientific background information;
- iv. focus group session;
- v. evaluation of the workshop by the participants.

6.1.2.4.2 Recruitment of participants

Participants were recruited amongst citizens (non-experts) through announcements on a series of websites (portal site of the Flemish North-South movement, portal site of the Flemish environmental movement, university website) as well as by flyers and posters in the immediate vicinity of the *Vrije Universiteit Brussel* main university campus in Etterbeek, Brussels. Nineteen citizens issued their interest, and sixteen were eventually able to attend the focus group sessions. We recall that the aim of the IA-FGs is to achieve an in –depth understanding of the sustainable development impacts of Flemish spatial planning policy as understood by a group of citizens and is not to attain statistical representation (van Asselt & Rijkens-Klomp, 2002).

6.1.2.4.3 Focus

The 2004 FSPS consists of three main parts: an informative section describing the current spatial structure of Flanders; an orientation part describing the planned spatial structure and a section describing legally binding aspects (Flemish Administration, 2004).

The second section outlines a desired spatial structure for four so-called ‘spatial components’: an urban component, the countryside, key economic areas (such as airports and harbours) and line infrastructure. This is the main section of the strategy as it contains the policy views for future spatial planning in Flanders.

To ensure that the IA-FG would allow for clear policy recommendations to emerge the research team selected the urban component of the FSPS (Section 3.1 of the FSPS Part II, paragraphs 4.1-4.14) as the focus of the IA-FG. This focus on urban spatial planning was based both on feasibility (available time & resources) and relevance considerations, as well as on the fact that eventual policy recommendations could potentially be interpreted through and confronted to the vast body of work on urban sustainability in Flanders (e.g. Block *et al.*, 2011; Devuyst *et al.*, 2001; Van Assche *et al.*, 2010).

A sustainability assessment of the whole FSPS was not possible given the time and resource constraints of the project as this endeavour would have necessitated the organization of a great number of additional IA-FGs.

6.1.2.4.4 The focus group discussion

The focus group discussion forms the actual core of the IA-FG method and consists of the following set of steps.

First, after a brief introduction of the participants and the facilitators, the participants are provided with a synthesis and with the full text of the urban component of the FSPS by the facilitators.

In a second step the participants are provided with two supporting tools (a mind map and an impact matrix - see also section 4.5) that they may freely use to structure their considerations on the sustainable development impacts of the FSPS.

Subsequently the facilitators (members of the research team) announce the key questions that will be guiding the group discussion to ensure a focused approach:

- Which are the most important impacts of the FSPS on sustainable development?
- How could these sustainable development impacts be addressed in an updated FSPS?

The first three steps take about 15-20 minutes.

Each participant is then given 15 minutes to freely formulate a written summary (by way of a bulleted list for instance) of her/his personal concerns, remarks and suggestions with regard to the guiding questions. This step amounts to the first stage of the actual IA-FG as described by Kasemir *et al.* (2003): it aims at collecting information on the perceptions and valuations of the participants and at initiating a reflection before scientific input is provided.

Following this individual assessment the responses of each participant are discussed by the group. The facilitators ask every participant to outline his/her views and the emergence of a group discussion is encouraged (approximately 30 minutes).

After this first group discussion, scientific background information is provided to the participants (see section 4.5) to enrich the debate in a second group discussion (15 minutes).

The participants are then given the opportunity to reformulate their concerns, remarks and suggestions with regard to the guiding questions, based on the input of the scientific information (approximately 15 minutes)

Finally in a second group discussion, the participants collectively discuss the guiding questions and suggest indicative recommendations (see section 4.6) (45 minutes).

The whole focus group exercise aimed at generating emergent exchange and was not steered by the facilitators. The participants were asked to reflect upon the issues based on their personal concerns and experiences. The workshops aimed at arriving at acceptable conclusions for all participants rather than striving for consensus *per se*, which is not a stated objective of the focus group approach (van Asselt & Rijkens-Klomp, 2002).

6.1.2.4.5 Input to the IA-FG

Three kinds of input were provided to the participants:

- i. at the start of the focus group discussion the participants were provided with a synthesis and with the full text of the urban development perspectives chapter of the FSPS (Flemish Government, 2004);
- ii. at the start of the focus group discussion the participants are also provided with two supporting tools that they may freely use to structure their reflection. These two tools consist of a mind map and an impact matrix presenting a graphic overview of relevant sustainability issues as outlined in the Flemish Sustainable Development Strategy (Flemish Government, 2010).
- iii. After the first focus group discussion scientific background information is provided to the participants in order to enrich the debate. This information consists of the state and the projected evolution of spatial structures in Flanders based on land use scenarios from the most recent Flemish State of the Environment Report (VMM, 2009). The visually attractive information (dynamic maps of the region showing shifting spatial structure) allowed for a quick understanding of the main issues. Moreover participants could ask questions about the background information at any time.

6.1.2.4.6 Output

The output of the focus group discussions consisted of

- i. modified mind maps drawn by the participants; and
- ii. filled out impact matrices (the supporting tools of section 4.5), as well as of:
- iii. the written summary of the focus group discussion that was drafted and projected on a screen in real time during the focus group discussions and could be amended any time by the participants during the discussion.

These three types of output form the basis of the material that eventually fed into the indicative policy recommendations.

6.1.2.5 Results & discussion

The results of the two performed IA-FGs are analyzed through the lens of the two research objectives: arriving at policy recommendations and arriving at methodological conclusions on participatory sustainability assessment.

6.1.2.5.1 Indicative policy recommendations

The interpretation of qualitative data obtained during the focus group discussions yielded results at two levels.

First at a general level, key policy proposals emerged from the discussion of the sustainable development impacts of the FSPS' urban chapter as being especially relevant from a sustainability point of view: the sections 'concentration of offices at public transport hubs', 'guarantees for urban agriculture' and 'urban mobility' were selected by the participants.

Secondly indicative policy recommendations can be retrieved based on the concerns related to potential sustainable development impacts of the FSPS. These were presented as modified mind-maps and/or impact matrices by the participants and could also be retrieved by using the written focus group reports.

Drawing clear policy recommendations from these graphical and/or synthetic impact assessment representations for specific policy proposals is at least partly a matter of interpretation. Indicative policy recommendations are proposed for each of the sub-fields based on the sustainable development impacts identified by the participants.

Regarding the FSPS policy proposal 'concentration of offices at public transport hubs', participants acknowledged the positive impacts of direct accessibility of offices for various transport means, as well as some –implicit– opportunities: for the sustainable construction of new office buildings; for the initiation of cooperation agreements between public transport organizations and other companies; for shared energy use and generation. The need for economic incentives to increase the willingness of workers to shift to public transport for commuting was also emphasized. A range of potential positive sustainability impacts was identified yet the participants also stressed that these impacts can only materialize if policies beyond spatial planning are put in place. This can be interpreted as an acknowledgement of the structuring power of spatial planning policy, as it has the potential to create an institutional and physical environment, which will influence the initiation, success or failure of other policy actions fostering sustainability. Opportunities for sustainable development can hence turn into sustainability risks. The participants seemed generally well aware of this duality.

Recommendations to deal with expected negative sustainability impacts include: containing land prices near transport hubs; ensuring a multifunctional neighbourhood with a good social mix around the transport hubs which are often located near/in city centres; enhancing the quality and efficiency of public transport; guarantee that the newly built offices are built according to sustainability standards.

The participants listed mainly positive expected impacts for the FSPS policy proposal on ‘guarantees for urban agriculture’ albeit the risk of increased functional fragmentation of space was aired as a main caveat – partly influenced by the scientific information on future spatial fragmentation trends in Flanders (VMM, 2009). Another recommendation concerned the affordability of urban agricultural inputs and products (in terms of land and food prices) and hence the need for possible government interventions in this respect. The –dominant- positive considerations included the accessibility of agriculture for all; the dissemination of sustainable agricultural practices (seasonal crops, soil quality enhancement etc.) into cities; the realization of innovative sustainable agricultural practices at a small scale; the positive impacts on public health; and the concretization of local production and consumption ideas.

The FSPS chapter on urban mobility yielded ambiguous sustainability assessment results. Contrasting views were apparent although the focus group setting allowed everyone to air its concerns. The discrepancy between what was termed ‘subjective’ and ‘objective’ liveability was mentioned, as illustrated in the compact city discourse: the advantages of easy accessibility and spatial concentration was confronted to the risks of heightened local pollution and social problems. Most of the participants’ inputs on potential sustainability impacts were grouped under ‘health and well-being’ and include concerns on particulate matter (PM) pollution, the choice of transport fuel and noise nuisance as well as positive expected impacts such as increased accessibility and enhanced physical exercise in cities. Housing was another important issue: recommendations were centred on sustainable construction, the linkage between the structure of buildings and social contact and children playgrounds in the cities. Clearly, urban mobility was linked to the quality of the urban environment as a determinant for anchoring a mix of social groups in the city, which would also reduce the transport and mobility demand. Environmental quality was considered key in fostering sustainable means of transport (walking, cycling) – emphasizing the bidirectional impact of mobility choices. The energy question was the biggest flaw of this FSPS chapter according to the participants, as alternative sources of energy are deemed necessary yet this topic is insufficiently elaborated in the FSPS. Again the structuring power of spatial policy is apparent in the perceived risks of infrastructural lock-in and/or the potential for facilitating a transition to a more sustainable organization of mobility flows. Finally social considerations were brought in, as the risks of high ground prices and hence possible social exclusion could be an undesired impact of more mobile cities, which are by definition squeezed on small surface areas. In the same vein, increased demand to live in the cities could lead to social problems related to income and housing expenses.

6.1.2.5.2 Discussion on the IA-FG method

The suitability and user-friendliness of the adapted IA-FG method was assessed based on:

- i. the experience of the participants;
- ii. the assessment of the research team, informed by the work of Klopogge & van der Sluijs (2008) and van Asselt & Rijkens-Klomp (2002).

The IA-FG method in the eyes of the participants

At the end of the IA-FGs the participants evaluated the IA-FG method through answering a semi-structured mini-questionnaire. According to the participants, the interactive IA-FG method combined with a live projection of remarks and clarifications on a screen in real-time allowed constructive interactive debate and contributed to structure the reflection. The sustainability aspects contained in the supporting tools (mind map and impact matrix) actually acquired content for the participants during the discussion. Positive appreciations of the IA-FG method are illustrated by the following quotes: *‘Discussion amongst non-experts is positive as it allows ‘naïve’ ideas to emerge’*; *‘Small group and informal setting favours interaction’*; *‘The mind-map helps us to recall sustainable development themes, it introduces structure, it is easy to understand and to use’*.

Concerns were issued by the participants on the lack of hierarchical ranking in the supporting tools (mind map and impact matrix), which implicitly refers to the substitutability debate reflected in weak *versus* strong interpretations of sustainability (Dietz & Neumayer, 2007). However the sustainability discussion of the IA-FG aims at letting potential trade offs and priorities emerge in a participatory way and hence does not use generic trade off frames. Some sustainability concerns and opinions issued by the participants were difficult to group under a particular heading. For example noise disturbance impacts were categorized by the participants under ‘health and well-being’; as well as under ‘environmental quality’ illustrating the non-absolute definitions of the sustainability headings in the supporting tools to the IA-FG. Grasping the multidimensional content of sustainable development was considered by the participants to be a real challenge (*‘the definition of sustainable development should be clarified from the onset’*) and the lack of familiarity with the spatial planning policy jargon of the focus document was an obstacle for some participants. Questions were asked about the eventual use of the IA-FG results and many participants explicitly demanded feedback.

General discussion on the IA-FG method

Going beyond the appreciation of the method by the involved participants, a more general discussion is now proposed.

The IA-FG method used for the sustainability assessment of the FSPS aimed at providing policy recommendations (see 5.1) and at learning from the application of an adapted participatory sustainability assessment method in Flanders.

The brief qualitative assessment of the IA-FG method as a sustainability assessment approach is based on its contribution to solving the three main challenges of sustainability assessment as identified by Hugé *et al.* (2011). We ask the question if the IA-FG method contributes to solve:

- the interpretation challenge, which refers to the interpretive flexibility and context-dependency of the understanding of what sustainable development entails;
- the information structuring challenge, which refers to the need to translate sustainable development into operational information units through adequate –participatory– processes;
- the influence challenge, which refers to the actual influence of sustainable development on decision-making.

The interpretation challenge

The IA-FG’s contribution to a better understanding of the context-specific interpretation of sustainable development was apparent as the participants focused on the expected impacts of the FSPS in the urbanized and space-constrained Flemish context. The range of sustainability issues provided in the supporting tools was based on the Flemish Regional Sustainable Development Strategy (Flemish Government, 2010). The supporting tools encouraged a multidimensional discussion and structured the reflection, yet the participants experienced some difficulties to reflect on sustainable spatial planning at a more general level, going beyond their everyday experiences (as seen in the focus on very tangible issues such as traffic jams, public transport issues, and accessibility of shopping malls etc.). However as shown in section 5.1 interesting recommendations included the linkages participants made between spatial policy and economic incentives to shift behaviour (*e.g.* to promote shifts in transport modes).

The information-structuring challenge

Impacts were identified and structured both by using the supporting tools (mind map and impact matrix) as by discussing impacts among the participants. The focus group setting allowed the participants to associate impacts and initiate reflections on impact chains, which was especially relevant to better frame the impacts of strategic spatial policy on sustainable development.

The IA-FGs performed a discussion forum function that allowed citizens to confront their perspectives with scientific information in an open setting, avoiding a top-down citizen involvement in public decision-making.

The small group size, the diversity of opinions and the group interaction, the open exchange of ideas, the brainstorm component and the user-friendliness of the support tools all facilitated the inclusion of the participants' perspectives in the sustainability assessment. The adaptability of the IA-FG approach is a plus; the quantity and quality of scientific information provided to the participants, as well as the issue in focus can vary widely.

Elements of improvement from an information-structuring point of view include the lack of information provided to participants prior to the IA-FG and the need for iterations in order to gather varied inputs from a broader range of participants. Finally Swartling (2006) also mentions the difficulty of conducting focus groups on complex multidimensional matters- a warning that fits – sustainable- spatial planning.

The influence challenge

The extent to which the IA-FG method contributes to the realization of sustainable development objectives depends on the eventual uptake of the results by the public decision-makers. In the case of the FSPS, the performed IA-FGs were a preliminary input to the public debate on the new FSPS and did not form part of the official FSPS public consultation & assessment process. However as the Flemish Government formally expressed its interest in the development and application of participatory sustainability assessment, the IA-FG results will modestly contribute to the body of knowledge that will ultimately inform the drafting of a new FSPS. The recommendations yielded by the IA-FGs were communicated to the government team that drafted the Green Paper on the new FSPS (an interdepartmental team facilitated by the Spatial Planning Department) and although their uptake is not –yet- verifiable, they were part of the body of inputs to the first phase of the new FSPS process.

Improvements are however needed in the future with respect to communicating the results to decision-makers and in informing the participants about the use of the results. In other words IA-FGs should need to become an integral part of the decision-making process to solve these issues. On a general level, the policy relevance of research is likely to increase as assessments are backed by both scientific expertise and social valuations (Dürrenberger *et al.*, 1999; Kasemir *et al.*, 2003). Participation is not merely instrumental in gaining support for policies, it becomes essential for making 'good' decisions (O'Faircheallaigh, 2010).

Concluding comments

The approach generated qualitative data that are challenging to analyse: these include written comments and annotations by the participants as well as –partly- filled out impact assessment matrices and a written summary of the group discussion. However the strategic decision-making level at which the IA-FG was applied benefits from an exploratory sustainability assessment method such as the IA-FG as many degrees of freedom are still present before final policy decisions are made. In a strategic level sustainability assessment, participants are involved from the early phases of decision-making on (including problem framing). Public involvement is not restricted to the assessment of previously designed policy responses but ideally allows to actively shape policy decisions (Klopprogge & Van Der Sluijs, 2008).

The strength of IA-FG as a participatory sustainability assessment approach lies in the interaction between stakeholder knowledge and scientific knowledge as observed by Puy *et al.* (2008) in their study on forest bio-energy systems in Catalunya, Spain. Yet the balance between citizen participation and scientific input needs to be acknowledged in order to avoid symbolic participation or tokenism (when the scientific input dominates) as well as to avoid an overly 'classical' focus group aiming at gathering attitudes and opinions without scientific background (when participation dominates). The IA-FG allows all stakeholders in public decision-making to redefine their expectations and roles. Public understandings become complementary inputs to the policy-making process. Scientists are hence expected '*to provide a variety of plausible assessments regarding different courses of action, and thus to support rather than to settle an informed and pluralistic public debate*' (Kasemir *et al.*, 2003). This potential redefinition

of perceptions, expectations and roles of the various actors involved brings us to the learning dimension of participatory sustainability assessment.

6.1.2.5.3 Discourse reflection?

IA-FGs shed light on the sustainability discourse(s) shaping and given shape by the participants' perspectives, in particular with regard to sustainable spatial planning. A discourse –in a simplified definition- is a shared, structured way of speaking, thinking, interpreting and representing things in the world (Dryzek, 2005).

Focus groups (such as IA-FGs) are an ideal method for identifying key sustainability issues and impacts (which was one of the primary objectives of the exercise in this study); yet focus groups also allow to identify –elements of- discourses (Collier & Scott, 2005). Constitutive discourse elements such as the basic entities structuring a discourse; the assumptions about natural relationships; agents and their motives; and key metaphors (Dryzek, 2005) can be gathered in part from focus groups.

The scope of this study –comprising only two focus groups- was too limited to characterize discourses as such but in combination with other research approaches (such as an extensive document analysis, interviews *etc.* (Hajer & Laws, 2006)) IA-FGs contribute to understand participants' shared perspectives on sustainability in a particular context and hence to understand the dynamics of discourse (Hugé & Waas, 2010).

Spatial planning strategy has been subject to a series of competing and/or complementary discourses (*e.g.* the compact city discourse, the network perspective, the polycentric discourse *etc.*) (see *e.g.* Hidding *et al.*, 2000; Richardson & Jensen, 2000); and IA-FGs can contribute to identify these evolutions and their triggers, as well as their 'echo' amongst citizens. A better understanding of discursive evolutions is especially relevant regarding the current dynamics of the sustainability –assessment- discourse in Flanders (Hugé & Waas, 2011), as sustainability assessments can induce a 'reframing' of issues whereby actors reflect about the discourses they initially identified with, and whereby they may change their perspectives (Runhaar *et al.*, 2010).

6.1.2.6 Conclusion

Fostering sustainable development requires action at various decision-making levels. As a sub-national actor the Flemish regional government has jumped on the train of sustainable development policy and is now actively trying to grasp what this entails both with respect to strategic policy-making as with respect to policy-supporting processes. The recently initiated development of a new regional spatial planning strategy ideally is to reflect the –prudent yet formally endorsed (Flemish Government, 2010)- transition to sustainable development. In order to propose a socially relevant, credible and valid spatial planning strategy with a strong societal support base a multi-actor policy development process is needed, which materializes in part by way of participatory processes that involve citizens in public decision-making.

Flanders' array of public policy initiatives in the realm of sustainable development includes a stated interest in systematically assessing the sustainability of policy proposals as expressed in its 2010 Regional Sustainable Development Strategy. As practical experience is still missing the planned preparation of the Flemish Spatial Planning Strategy was an opportunity to develop and apply –participatory- sustainability assessment in Flanders.

The results of this pilot application are to be viewed from both a methodological perspective and from a policy perspective, so as to feed future research and policy-making initiatives.

The impact-assessment focus group method was selected to obtain public input in the Flemish Spatial Planning Strategy. Citizens were invited to reflect on relevant sustainability issues with regard to the development of the strategy. Following an adapted version of the impact assessment focus group method, citizens were asked to structure their reflections in a stepwise process centred on a

sustainability discussion. The iterative discussion –before and after the provision of scientific background information- allowed for a fruitful experiment in the co-production of policy-relevant knowledge. Participatory sustainability assessment provided a forum for exchanging arguments in a systematic way and created a fertile discursive environment by confronting citizens' views with scientific background information. The exercise hence contributed to solve the interpretation and information-structuring challenges inherent in sustainability assessment exercises.

The open and explorative 'impact assessment focus group' method was considered user-friendly by the participants and yielded indicative policy recommendations. It allowed to shed light on the potential sustainability impacts of strategic spatial planning policy for actors with different *a priori* perspectives.

Despite the positive elements listed above, the exercise did not exert a directly assignable influence on policy decisions: no elements were directly taken up in the gradual drafting process of the Flemish spatial planning strategy. The IA-FG approach has the potential to trigger policy-relevant learning and to induce discourse reflection among the involved actors, but these effects (as indicated by the evaluation by the participants) were limited to the directly involved stakeholders and did not reach a wider audience. However future research is needed to identify and assess the actual learning outcomes of participatory sustainability assessments, and to improve the assessment's –indirect-policy influence. This will strengthen the rationale for their application and more importantly anchor their policy influence in the long term.

The short-term involvement of the participants in the case study is a limitation of the approach: for now the IA-FGs were a one-shot exercise and they were not officially linked to other participatory processes (such as advisory boards or transition arenas). As a future transition-centred sustainable development policy looms at the horizon in Flanders (as expressed in the new regional sustainable development strategy), the linkages between participatory sustainability assessment and other decision-supporting processes also need to be clarified.

The indicative policy recommendations generated through the IA-FG are one input amongst many others in the development of strategic policy. While this will always be the case as policy-making is subject to many influencing factors, the present pilot application strengthens the case for a systematic application of participatory sustainability assessments by pointing to the feasibility, the flexibility and the results-orientation of the approach. Although still imperfect (*e.g.* with regard to the scope of participation; time and resource constraints; the openness of the policy-making process in early preparation stages *etc.*), the IA-FG approach is complementary to other approaches that contribute to 'unpack' the umbrella term of sustainability into tangible informed citizens' concerns and recommendations. When the future spatial planning visions are translated into operational actions in Flemish cities, the complementarity between the strategic level IA-FG approach and local level sustainability indicators of *e.g.* the Flemish City Monitor (Block *et al.*, 2011) could become even more relevant for decision-makers and citizens alike.

The institutional anchoring process of sustainability assessment is ongoing in Flanders. Although the experience with participatory sustainability assessment is still in its infancy, the pilot application of the IA-FG method can contribute to bridge the gap between the potentially paralyzing interpretive ambiguity of sustainable development and the sheer necessity of urgent public policy actions to ensure a more sustainable future. The experimental modified 'impact assessment focus group' setting proved to be suited to probe citizens' perceptions and concerns about topical sustainability issues. It was also a forum for discussion where scientific information could be provided to citizens in an informed and structured decision-supporting process. Although the results do not yet automatically feed into the decision-making process, the pilot experience outlined in this paper is a modest first step in the development of participatory sustainability assessment for strategic policy in Flanders.

Section 6.2 Sustainability assessment for development co-operation

6.2.1 Sustainability assessment of Poverty Reduction Strategy Papers (PRSPs)

This section was integrally published in a peer-reviewed journal as: Hugé, J. & Hens, L. 2007. Sustainability assessment of Poverty Reduction Strategy Papers. Impact Assessment and Project Appraisal 25: 247-258.

Abstract

Poverty Reduction Strategy Papers (PRSPs) are currently a central instrument in international development cooperation. Although many critics point to severe shortcomings in the practical implementation of the key concepts of the PRSP-approach, these documents are still of key importance in guiding donors' policies towards Southern recipients. In order to assess the comprehensiveness of these development frameworks, this paper proposes a method for sustainability assessment adapted to the PRSPs.

A checklist of 85 questions has been developed to analyse the inclusion of aspects of sustainable development in PRSPs. The checklist allows to point to sustainability challenges and opportunities and thus facilitates targeted advice and quality improvements.

The checklist was applied to a selection of 12 PRSPs of developing countries. The results of the sustainability assessment reveal an insufficient integration of the ecosystem services concept, of biodiversity and of climate issues. Property rights, gender issues, water and energy are as a rule well elaborated.

PRSPs show significant variation in the integration of environmental sustainability issues. Sustainability assessments can contribute to significant improvements between first and second generation PRSPs provided the assessments are supported by a strong institutional framework and a dedicated political commitment towards sustainability.

Keywords: sustainability assessment, PRSP, development cooperation, checklist

6.2.1.1 Introduction

Poverty Reduction Strategy Papers (PRSPs) have become a central instrument in development co-operation since their introduction in 1999. PRSPs are presented by the Bretton Woods institutions as comprehensive results-oriented policy frameworks to reduce poverty and they are the basis of the 'new aid architecture', characterized by a strengthened country-ownership of the development process (Holvoet & Renard, 2005).

The PRSP-approach is originally strongly donor driven as its genesis is linked to the Heavily Indebted Poor Countries Initiative. Although the success of the approach has been uneven, the PRSP quickly embodied the new approach to international development aid at the turn of the century. However, many aspects of the PRSP have been criticized by a variety of development stakeholders. In theory, five basic principles are supposed to underpin the PRSP approach: country ownership, comprehensiveness, results-orientation, partnership and a long-term horizon. Critics have especially tackled the interpretation of the ownership idea, typically being defined as "*the situation where partner countries exercise effective leadership over their development policies and strategies*" (Paris Declaration, 2005), combined with an active participation from civil society in the policy-making process. Guttal *et al.* (2001), expressing the view of Southern NGOs, contest the novelty of the PRSP approach. The widely acclaimed principle of 'country ownership' is not being respected; PRSPs are said to be only a

new name recycling the ideas underlying the failed structural adjustment programmes, forced upon the recipient countries by the international financial institutions (IFIs).

Even if the idea of broad participation in the PRSP-drafting has succeeded in improving poverty diagnostics and to a certain extent in improving transparency and accountability, it has failed to influence macro-economical choices (IEO, 2004). The (cosmetic) inclusion of the poor in the PRSP-process does not guarantee a thorough analysis of the political economy of poverty and inequality in the eventual PRSP-document, which points to the duplicity of the whole participation discourse (Craig & Porter, 2003). Externally triggered top-down participation often results in subtle co-option and fails to give a representative picture of the opinions of the various parts of civil society. The uneven involvement of different civil society groups can even fuel segregation between those who participate and those whose voice was not heard at all. It thus appears that participation in the PRSP-process is often far from a complete success. International NGOs such as CIDSE & Caritas (2004) state that the PRSP is fundamentally compromised by being a donor-imposed conditionality, ignoring the reality of policy-making in the recipient countries.

Another major range of critics concerns the alleged comprehensiveness of PRSPs. The documents exhibit an obvious lack of attention to some important topics such as land reform, progressive taxation, labor rights and environmental standards.

The gap between the presented characteristics of PRSPs (such as country ownership, participation, and the alleged comprehensiveness) and their actual realization accounts for one category of critics, but the dominance of the framework compared to other policy strategies is another major flaw. The PRSP is supposed to become the only important framework guiding the development policy of a country as well as the associated aid flows. In reality, important decisions are not always taken within the PRSP framework. This reinforces the view of 'PRSPs as theatre'. If this is the case, PRSPs might appear to be no more than a distraction for civil society while the real decisions are taken elsewhere. This concern has been raised in Vietnam, where the PRSP remains a relatively minor document compared with the long-term development strategy and five-year plan (Nguyen & Stewart, 2005). Imposing a PRSP might again severely undermine the principle of 'country ownership', contradicting the international commitment set out in the 2005 Paris Declaration on Aid Effectiveness.

This non-exhaustive list of shortcomings should not obscure the fact that the PRSP's reframing of poverty is now a reality in many Southern countries. Donors have chosen PRSPs as guiding documents for aid allocation. PRSPs have also evolved into genuine strategic planning frameworks in some developing countries. In fact, existing pre-PRSP policy documents such as the Ugandan Poverty Eradication Action Plan have been used as an inspiring model by the international financial institutions in developing the PRSP as an instrument (Piron & Norton, 2004). Furthermore, PRSPs can contribute to define a strategy to achieve the Millennium Development Goals (World Resources Institute, 2005), even if there is no consensus on this.

The importance of PRSPs cannot be ignored, notwithstanding the many pertinent criticisms are still surrounding the approach.

Sustainable development

Given the alleged comprehensiveness and the strategic importance of PRSPs and given the range of poverty-related sustainability issues, one might reasonably expect sustainable development to be a guiding principle of the PRSP approach. The classical definition of sustainability, based on Brundtland's report (WCED, 1987): "*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" is now widely known. In the context of this paper, the choice has been made to focus on 'environmental sustainability'. This nuance is necessary in order to point to the most salient shortcomings of the vast majority of analyzed PRSPs. While the three-pillar definition of sustainability devotes equal attention to the economic, social and ecological aspects of development, 'environmental sustainability' is defined here

as the ability to maintain the qualities that are valued in the physical environment. These include the ecosystem services underpinning human life and the various linkages between these services and the socio-economic bases of society. The ecological dimension is thus emphasized, even if firmly embedded in the broader definition of sustainability.

While the vast literature on poverty-environment linkages lies outside the scope of this paper, some authors have produced particularly valuable analyses which have served as a theoretical underpinning of this research and will introduce the interested reader to the concept of environmental sustainability from a poverty-environment perspective (Dasgupta *et al.*, 2005; DFID *et al.*, 2002; Millennium Ecosystem Assessment, 2005; Shyamsundar, 2002).

The framing of poverty within PRSPs is by no means neutral. The classical PRSP approach does not consider sustainable development as a guiding principle, nor does it emphasize the importance of sound, pro-poor natural resources management. This contrasts with the opinions of the poor and the scientific findings on poverty-environment linkages. The literature abounds with examples of where the poor themselves have voiced their concern about environmental sustainability. Craig & Porter (2003) cite the volatility of the livelihoods of the poor due to their vulnerability to environmental calamities, while Participatory Poverty Assessments (PPAs) are filled with environmental concerns (Brocklesby & Hinshelwood, 2001). The dependence of the poor on the natural resources, growing population pressure, environmental health, environment-related conflicts *etc.* are some examples of commonly mentioned environment-related problems. Swallow (2005) issues concerns about the low priority given to environmental conservation in PRSPs. Besides this, the economic costs of pollution and natural resources' degradation are acknowledged on an ever increasing scale, pointing to the need to address environmental sustainability issues if a country wants to consolidate its economic strength (Dasgupta *et al.*, 2006; Swanson & Lundethors, 2003).

Logically some authors and organisations consider Poverty Reduction Strategies to be promising frameworks to integrate and realize national sustainable development strategies (Dalal-Clayton & Bass, 2002; UN ESA, 2005). These strategies aim '*to ensure socially responsible economic development while protecting the resource base and the environment for the benefit of future generations*' (OECD, 2001). The iterative nature of PRSP-drafting - as reflected in the second and third generation-PRSPs - is suited for a national sustainable development strategy as expressed by Swanson *et al.* (2004): 'moving towards operating an adaptive system that can continuously improve'. Furthermore, PRSPs are supposed to be based on a multi-dimensional analysis of the causes of poverty.

A Poverty Reduction Strategy Paper (PRSP) thus appears as an 'entry point' through which environmental sustainability principles can be introduced at a strategic level in development policy (OECD, 2006). The underlying idea is that the mainstreaming of environmental sustainability principles in comprehensive frameworks such as PRSPs triggers the introduction of these principles at other decision-making levels such as plans, programmes and projects.

Efforts towards a 'greener' development policy are particularly pertinent in these times of growing environmental concerns. Southern countries can substantially improve their policies and do not need to go through the so-called 'environmental Kuznets curve' before acting towards environmental sustainability. In this respect however, Kestemont *et al.* (2011) provide an interesting caveat: although their research indicates that African countries seem to have a proportionally higher environmental impact per produced unit of wealth compared to Europe, this could be explained by the underestimate of African -out-of-market- economic activity in classic economic indicators, as well as by burden shifting -as part of Europe's environmental externalities are transferred to the South.

Recent work by Dasgupta *et al.* (2006) emphasizes the importance of sound environmental governance.

PRSPs have a role to play as major policy documents, as they often focus on 'good governance' and can influence a country's policy perspective for many years. An environmentally sound PRSP can be the starting point towards environmental policy integration, which can be defined as 'the

consideration of environmental sustainability aspects at the various levels of the decision-making processes.

Sustainability assessment

While making use of existing policy frameworks is arguably the best way to integrate environmental sustainability in strategic decision-making, the majority of the current PRSPs have failed to integrate it adequately. International organizations such as the World Bank (Bojö & Reddy, 2002, 2003; Bojö *et al.*, 2004) and the World Wide Fund for Nature (Tharakan & MacDonald, 2004), the World Resources Institute (World Resources, 2005), the United Nations Development Programme (UNDP, 2004) recognized that until now, PRSPs do not sufficiently address environmental sustainability issues. Given the socio-economic emphasis of PRSPs, the lack of integration of environmental issues hampers the achievement of sustainable development.

The existing PRSP assessment-approaches need to be completed with a general assessment of the environmental sustainability of PRSPs. Even if the study focusses on the ecological aspects of the poverty-environment linkages, other aspects such as the organisation of the drafting process, the identification of linkages and trade offs between different policy priorities and the assessment of institutional aspects of sustainable development are also considered.

Policy-supporting instruments such as sustainability assessment methodologies contribute to integrate sustainability principles in the policy process (Scholten & Post, 1999). If no sustainability assessment is performed, there is a risk of missing the potential negative effects of development policies, plans and programmes. Moreover, sustainability assessments allow to identify sustainable development opportunities and to strengthen a general sustainability-based approach in decision-making.

The holistic approach of sustainability assessment tools is suited for the comprehensiveness of macro-level strategies such as Poverty Reduction Strategies. Classical project-based environmental impact assessment (EIA) is not suited to the strategic PRSP-level and often fails to incorporate the different aspects of sustainable development. Flexible methodologies with a broader scope, such as strategic environmental assessment (SEA), integrated assessment (IA) and the various interpretations of sustainability assessment can fulfil an important function at higher decision-making levels (Alshuwaikhat, 2005; Kjørven & Lindhjem, 2002). The 'Good Practice Guidance on Applying Strategic Environmental Assessment (SEA) in Development Cooperation' of the OECD / DAC (OECD, 2006) is an interesting practical example.

To develop a practical sustainability assessment methodology adapted to PRSPs, a checklist for sustainability assessment was developed. The tool can be used to identify sustainability strengths and weaknesses as such or within the framework of a larger, fully elaborated assessment process. The developed sustainability assessment checklist assesses a wide range of subjects in the PRSP, from the dependence on natural resources, empowerment and incentive mechanisms, to the vulnerability of the poor. The checklist not only considers the content of the PRSP, but also evaluates some aspects of the preparation process and the link between the proposed policy measures and the planned implementation activities. The method results in a diverse and full interpretation of sustainable development in the PRSP process, taking into account both content and process characteristics. To include the relevant aspects of sustainable development, without hampering its practical use, the list consists of 85 questions grouped into nine separate categories. These categories are defined based on a review of the literature on poverty-environment linkages and sustainable development (Brocklesby & Hinshelwood, 2001; DFID *et al.*, 2002; DFID, 2004; Shyamsundar, 2002; Bojö *et al.*, 2004; Tharakan & McDonald, 2004; Poulsen, 2006).

In short, the conceptual framework on which the checklist is based can be presented as follows: the environment provides ecosystem services that are then used by the poor to carry out socio-economic activities. This creates a dependence relationship that is being influenced by the degree of

empowerment and participation of the poor. The socio-economic activities exert pressure on the environment. This pressure can in turn lead to increased vulnerability for the poor. This vulnerability relationship is influenced on its turn by the access that the poor have to resources, and by the societal and policy responses to (environmental) pressures. The PRSP preparation process influences the way in which these sustainability aspects are taken into account.

This paper applies the checklist to the PRSPs of twelve developing countries (mainly in sub-Saharan Africa) and explores how the results can be used for the improvement of policy documents.

6.2.1.2 Methodology

Issues addressed

Based on the poverty-environment framework, the 85 questions of the sustainability assessment checklist are grouped into nine separate categories:

- the commitment to sustainable development (8 questions);
- the dependence on the natural resources (6 questions);
- the access to services and natural resources (8 questions);
- the empowerment and participation – dimensions (11 questions);
- the pressures on the environment and on the natural resources (17 questions);
- the vulnerability of the poor (12 questions);
- the economic incentive mechanisms for sustainability (4 questions);
- the policy response (9 questions);
- the process of PRSP development (10 questions);

Each question is scored on a 0-2 scale, where 0 stands for ‘no mention of the issue’, 1: ‘the issue is mentioned but not elaborated’, 3: ‘the issue is elaborated’. The full checklist can be found in Annex 1.

PRSPs assessed

The checklist has been applied to the PRSPs of 12 developing countries listed in Table 1 (Belgian partner countries). Apart from Vietnam and Bolivia, all countries are in sub-Saharan Africa. The PRSPs were accessed through the website of the International Monetary Fund (www.imf.org), as they were accessible in February 2006. Table 1 provides an overview of the titles and publication years of the assessed PRSPs. Many countries ‘customized’ the title of their PRSP to reflect country ownership. In this paper, the acronym PRSP will be used as a generic term. Two versions of the Tanzanian PRSP were assessed, in order to assess evolution in PRSP quality within a country.

Table 6.2.1.1: Overview of the assessed PRSPs

Country	Title of the PRSP	Publication year
Benin	Benin Poverty Reduction Strategy Paper 2003-2005	2002
Bolivia	Estrategia Boliviana de Reduccion de la Pobreza	2001
Burundi	Interim Strategic Framework for accelerating Economic Growth and Reducing Poverty (interim PRSP)	2003
Congo (Democratic Republic)	Interim Poverty Reduction Strategy Paper	2002
Mali	Cadre Stratégique de Lutte contre la Pauvreté	2002
Mozambique	Action Plan for the Reduction of Absolute Poverty (2001-2005) (PARPA): Strategy Document for the Reduction of Poverty and the Promotion of Economic Growth.	2001
Niger	Full Poverty Reduction Strategy	2002
Rwanda	Poverty Reduction Strategy Paper	2002
Senegal	Document de Stratégie de Réduction de la Pauvreté	2002
Tanzania (1)	Poverty Reduction Strategy Paper	2000
Tanzania (2)	National Strategy for Growth and Reduction of Poverty	2005
Uganda	Poverty Eradication Action Plan	2005
Vietnam	Comprehensive Poverty and Growth Strategy	2003

Use of the checklist

Full and interim PRSPs were assessed using the checklist.

The application of the sustainability assessment checklist allows to identify the main sustainability opportunities and risks of a PRSP as well as to characterize aspects of the PRSP preparation process. As such, this facilitates targeted advice and quality improvements. The application of a sustainability assessment is particularly encouraged in the PRSP revision process to improve the quality of next generation PRSPs.

6.2.1.3 Results

Comparison between and within countries

Table 6.2.1.2 shows the total scores and the ranking of PRSPs according to the sustainability assessment:

Table 6.2.1.2: Scores and ranking of the assessed PRSPs

	PRSP publication	Score (max. = 170)	Rank
Tanzania 2	2005	100	1
Uganda	2005	97	2
Rwanda	2002	92	3
Mozambique	2001	89	4
Niger	2002	84	5
Bolivia	2001	83	6
Mali	2002	83	6
Senegal	2002	82	7
Vietnam	2003	81	8
Benin	2002	80	9
Burundi*	2003	61	10
DR Congo*	2002	43	11
Tanzania 1	2000	40	12

*: the assessed PRSP of these countries was an interim-PRSP

Besides the obvious quality variability of the PRSPs, Table 2 shows that recently drafted PRSPs tend to obtain higher scores; that interim PRSPs have lower scores and that clear improvements are possible between ‘first generation’ and ‘second generation’ PRSPs (such as in Tanzania).

General findings of the sustainability assessment

Despite the significant differences between countries, some general observations can be drawn from the country-specific qualitative results of the sustainability check.

Table 3 show to which extent the key sustainability aspects are addressed in the assessed PRSPs, as they are reflected by the analysed categories. To obtain a general appreciation of the consideration of the sustainability aspects, the average score of the assessed PRSPs on the different categories was calculated and compared to the maximum possible score per category. The variability between PRSPs (as reflected by the minimum and maximum scores) nonetheless remains significant.

Table 6.2.1.3: Consideration of selected key sustainability issues in the analysed PRSPs

Key sustainability issue	Consideration in PRSPs (average score per category in %)	Variation (minimum – maximum score in %)
Commitment towards sustainable development	54	31 – 69
Dependence on the natural resources	41	8 – 83
Access to services and natural resources	70	50 – 87
Empowerment and participation	72	41 – 96
Pressures on the environment and on the natural resources	40	15 – 59
Vulnerability of the poor	40	8 – 71
Economic incentive mechanisms for sustainability	17	0 – 38
Policy Response	24	0 – 55
Process of PRSP development	47	33 – 61

Table 3 shows that empowerment, participation and the access-dimension of poverty are well considered in most PRSPs. Most countries also show a commitment towards sustainable development. The dependence of the poor on the natural resources and the vulnerability issues are considered in a most variable way, as shown by the variation in country scores for this parameter. Countries obtain poor scores on policy response. The economic incentive mechanisms for sustainability are barely considered, despite their potential to steer production and consumption towards sustainability. Aspects relating to the sustainability of the PRSP development process obtain moderate scores.

While Table 3 provides a semi-quantitative indication following the categories of the sustainability assessment checklist, the next section discusses the qualitative appreciation of the consideration of selected aspects within these categories. The most striking sustainability aspects are discussed by category.

Commitment towards sustainable development

Sustainable development is mentioned in the majority of the PRSPs, but a clear definition of the concept and its implementation is often lacking. Sustainable environmental management is as a rule recognized as a cross cutting issue, but this is not always visible in the policy matrix where concrete measures are listed. References to multilateral (environmental) agreements and to the Millennium Development Goals vary widely from one country to another.

Dependence on the natural resources

The dependence of the poor on the natural resources and on sound environmental management is insufficiently emphasized, despite being a fundamental aspect of the poverty-environment nexus. Some particular aspects, such as the excessive share of fuel-wood for energy supply, are considered in a number of PRSPs. The ecosystem services approach still needs to be introduced in many PRSPs, even if the Millennium Ecosystem Assessment has contributed to the dissemination of its key principles (Reid, 2006).

Access to services and natural resources

Issues of property rights, land reform and institutional strengthening of land ownership security are usually considered adequately, while the underlying struggle for control over the (natural) resources between the powerful and the poor is not considered. The access to water and sanitation facilities, financial services and infrastructure (markets, roads) is considered. Gender-related access issues and problems relating to access to reliable energy sources are unequally treated.

Empowerment and participation

Participatory natural resources management, often linked to community development initiatives, is mentioned in most PRSPs. There is a general commitment towards decentralization and participation in decision-making. Gender issues, minorities, education and job opportunities are well elaborated. However, human rights, corruption, local cultural values, democratization and the reduction of social polarization receive much less and varying attention in PRSPs.

Pressures on the environment and on the natural resources

The fundamental relationship between uncontrolled demographic pressure and environmental degradation is considered in some PRSPs, as is the gradual depletion of the natural resources stocks. 'Classical' environmental issues obtain much different levels of attention amongst different PRSPs. Land use, deforestation, the management of water resources and energy issues are generally well treated. While air pollution, the negative impacts of agricultural intensification, biodiversity, waste management, sustainable transportation, the sustainability impacts of large infrastructural projects, climate change and other global environmental issues are not or insufficiently mentioned. As mentioned before, one should consider these observations with caution, as PRSPs can vary significantly in quality and thoroughness.

Vulnerability of the poor

The vulnerability of the poor to natural disasters and the housing conditions of the poor are considered in most PRSPs, as are social security issues. The link between environmental quality and human health is recognized in the majority of PRSPs, but is seldom elaborated. An integrated approach to HIV/AIDS is present in a number of PRSPs. The social and ecological impacts of rural exodus, urban sprawl, liberalization and globalization are not considered despite their growing importance.

Economic incentive mechanisms for sustainability

The potential of economic incentive mechanisms to stimulate sustainable production and consumption patterns is barely considered in the vast majority of PRSPs.

Policy response

Virtually all PRSPs lack a clear and consequent vision on conflicting priorities and the possible trade offs that may arise to achieve a balanced, sustainable development.

The potential of environmental and natural resource accounting mechanisms is almost never recognized despite the fact that PRSPs are in essence macro-economical documents. Clear expenditure programs for environment-related policy measures are lacking, even if institutional features in the environmental field (responsible ministries and agencies) are sometimes considered.

Process of PRSP development

The process by which PRSPs are developed usually pays sufficient attention to participation from (representatives of) the poor, at least on paper. Sustainable development and environmental assessment are not adequately considered in the monitoring & evaluation part of the PRSPs. A clear understanding of trade offs and conflicting priorities is lacking in most PRSPs. The preparation processes tend to lack a comprehensive view on the institutions needed to support sustainable development in the long run.

6.2.1.4 Discussion

Recent studies (Bojö *et al.*, 2003, Bojö *et al.*, 2004; Eberlei, 2004; Tharakan & McDonald, 2004) assessed the inclusion of environmental issues in PRSPs. These studies have always a different focus and use a different methodology. Nevertheless, it is interesting to compare their general findings, as the integration of 'strictly' environmental issues in a macro-economical document is often an indication of a balanced view on development.

According to the abovementioned studies, the following issues are generally considered in PRSPs: water availability, sanitation, vulnerability towards natural disasters, institutional capacity, property rights and the link between environmental quality and health. The access to basic social services and to the natural resources is generally treated, but often in an unequal way.

On the contrary, indoor air pollution, biodiversity, alternative energy sources, gender-environment issues, climate change, urban environmental quality, the impact of macro-economic policy on the environment, globalization and trade are usually not or only scantily treated in PRSPs. The policy measures do not provide details on environment-related expenditures. Most PRSPs do not mention the Millennium Development Goals. Few of them present time-bound, quantified targets and some indicators concerning environmental sustainability.

The findings of this research and the literature indicate a general lack or incompleteness of the analysis of the poverty-environment linkages and of the integration of environmental and / or sustainability issues. The narrowly interpreted macro-economic character of PRSPs seems to hamper the effective integration of principles of sustainable development in the strategies. There is no analysis of possibly conflicting priorities between socio-economic and environmental objectives and an argumentation on trade offs is lacking. Even if sustainability is mentioned in the vast majority of the assessed PRSPs, there is no clear strategy for action towards sustainable development. Generally speaking, the dependence of the poor on the ecosystem services is not elaborated. The access to services is considered, but PRSPs do not usually present radical reforms which might trigger important pro-poor social change. Vulnerability issues are treated, but the underlying causes of the problems are rarely elaborated.

There is a lack of acknowledgment of the interrelations between the various aspects of development. This leads to incomplete coverage of relevant sustainability issues, lack of policy coherence and ultimately, to un-sustainable development.

The analysed literature supports the findings of this research work. The relative ranking of the assessed PRSPs is comparable, as shown in Table 6.2.1.4. Only the results of the assessment methods of Bojö *et al.* (2004) and Eberlei (2004) are presented, as the sample of Tharakan & McDonald (2004) is considered to small to justify inclusion in Table 6.2.1.4.

This paper emphasizes the inter-linkages and the multidimensional approach to sustainable development and has a broader scope than the other assessment methods. Much information can be gathered using one practical checklist. The similar relative ranking supports the idea that the integration of environmental issues in macro-economical documents such as PRSPs often goes hand in hand with the integration of aspects reflecting a broader interpretation of sustainable development.

Table 6.2.1.4: Relative ranking of the PRSPs according to different assessment methods

	This paper	Bojö et al. (2004)	Eberlei (2004)
	9	7	NA
Benin			
Bolivia	6	2	1
Burundi*	10	9	NA
DR Congo*	11	11	NA
Mali	6	4	4
Mozambique	4	1	2
Niger	5	8	3
Rwanda	3	5	4
Senegal	7	6	5
Tanzania 2000	12	10	6
Tanzania 2005	1	NA	NA
Uganda	2	NA	NA
Vietnam	8	3	4

NA: not available; *: The assessed PRSPs of these countries were interim-PRSPs

Improving the integration of sustainability in PRSPs

The assessment methodology described in this paper can be used to obtain an overview of the sustainability strengths and weaknesses of a PRSP. This is especially useful in the preparation process of successive versions of the PRSP. Sustainability assessments allow to take the shortcomings of earlier experiences into account. This applies particularly to an iterative process providing multiple possibilities for feedback. A sustainability assessment is also useful when drafting Country Strategy Papers or Cooperation Agreements between donor and recipient country. It allows to advise the partner country on the integration of sustainable development in their PRSP and contributes to the adoption of sustainable development as a core principle of international development cooperation.

The scoring method is a practical way to present information in clearly interpretable figures. Any assessment involves subjective judgments, but in this application, the subjectivity is transparent and consistent across countries. Small score differences between countries are not considered important. This quantitative presentation of the sustainability assessment is a complement to the country-specific qualitative information that allows to identify the key sustainability challenges and opportunities. The evolution between subsequent versions of PRSPs, and between interim PRSPs and full PRSPs can be monitored. In addition, the scores of different countries can be compared.

Integrating sustainable development in Poverty Reduction Strategies is not a straightforward task. A focus on the institutions supporting an effective realization of sustainable development is essential to influence the policy process and to cope with the possible sustainability impacts of the proposed PRSP-measures. The coordination and coherence between the different government services is of key importance for the long-term integration of the cross cutting concept of sustainable development. Establishing inter-ministerial or interdepartmental working groups can be useful to anchor sustainable development in the institutional landscape. Uganda for instance, has benefited from the substantial influence of the Environment & Natural Resources Working Group in the PRSP revision process (Mugenyi *et al.*, 2005). In Tanzania, the Vice President's Office ran an extensive program to strengthen the integration of poverty-environment links in the PRSP (URT, 2004). These two countries, together with Ghana and Benin, are currently home to the best examples of succesful PRSP 'greening' processes. This means that aspects of environmentally sustainable development have been integrated in second generation PRSPs. Successful greening processes require a strong commitment from the authorities and need to be based on a sense of broad national

ownership. As these are also key preconditions for a successful PRSP approach as a whole, there is no reason to assume that PRSP greening cannot be replicated in other countries.

The implementation of the ('greened') PRSP-measures requires an emphasis on the institutional organisation at decentralised level. Sustainability assessments should not be confined to high-level policy processes, as the 'trickling down' of the sustainability concept to the local level is not always guaranteed. During the strategic environmental assessment (which can be considered as a form of sustainability assessment (Dalal-Clayton & Sadler, 2005)) of the Ghana PRSP, the national PRSP was assessed simultaneously with programs and initiatives at decentralised district-level in a participatory process (Allotey & Gyan-Baffour, 2004).

The institutional capacity of a country to cope with unpredictable and potentially large- scale societal change is especially important to realize sustainable development. The sustainability assessment methodology presented in this paper ideally needs to be completed by a thorough institutional assessment to anchor sustainable development in the decision-making process.

6.2.1.5 Conclusion

Poverty Reduction Strategy Papers have become guiding documents for partner country policy and donor interventions alike. It is therefore particularly important to adequately integrate sustainability principles in these comprehensive frameworks for development. Sustainable development can only be implemented if high-level policy papers show a clear commitment towards its achievement.

The developed sustainability assessment checklist covers various aspects related to the contents and to the drafting process of the PRSP. The analysed PRSPs were subject to a sustainability assessment using a checklist with 85 questions spread over nine categories. The scoring of the PRSPs allows to identify the sustainability strengths and weaknesses country by country in order to come up with proposals for improvement in integrating sustainability in the contents and in the preparation process of a PRSP. The relative ranking of the assessed PRSPs highlighted significant differences in quality between countries and between the successive versions of national PRSPs. The ranking of the PRSPs is in line with the results of previous evaluation studies, while the comprehensiveness and the broad sustainability focus of this work makes it possible to target a wider range of sustainability challenges.

Donors should of course not limit themselves to the use of sustainability assessments in order to 'green' development policy. The policy dialogue between donor and recipient countries provides many opportunities to foster a shift towards environmentally sustainable development, and a well thought-out portfolio of aid modalities can significantly contribute to environmental integration in development co-operation interventions. Only applying a sustainability assessment on a PRSP will not automatically result in better policy. Nevertheless, it can be a handy tool to facilitate the environmental integration process. The integration of environmental sustainability in strategic policy-documents is of key importance as it might trigger the 'trickling down' of these principles down to the decentralised policy levels, where the implementation of the strategic measures needs to happen ultimately. Clearly defined strategic priorities – ideally in a 'greened' PRSP for instance – will give guidance to sectoral policy makers and lower-level decision-makers to actually fulfil their own duties towards environmental sustainability. However, successfully linking the integration of environmental sustainability at the policy level to the operational level requires attention for the institutional framework supporting these actions.

Sustainability assessments will only really contribute to sustainable development if they are part of a larger institutionally supported and politically-backed process, as has happened in recent years in Tanzania.

This points to the importance of 'greening' the 'right' policy process: the importance granted to the PRSP differs strongly from one country to another. Sustainability assessment methodologies can also be used for other strategies. This might require modifications to the assessment method but the general trends and issues to be assessed will most probably be similar. The proposed methodology can therefore be considered both as a practical tool for assessing PRSPs and as a source of inspiration for the integration of environmental sustainability in other strategic policy documents

6.2.2 The greening of Poverty Reduction Strategy Papers: a process approach to sustainability assessment

This section was integrally published in a peer-reviewed journal as: Hugé, J. & Hens, T. 2009. The greening of Poverty Reduction Strategy Papers: a process approach to sustainability assessment. Impact Assessment and Project Appraisal 27: 7-18.

Abstract

Despite their alleged comprehensiveness and the many linkages between poverty and environment, most Poverty Reduction Strategy Papers have until now insufficiently acknowledged the importance of environmental sustainability. To tackle this shortcoming, participative processes were initiated to 'green' PRSPs (meaning the integration of environmental sustainability as a cross-cutting issue). This supposes a process-approach to decision-making and implies opening up the policy process to a wide range of societal actors. This approach is conceptualised as a sustainability assessment. A descriptive analysis of the Benin PRSP-greening initiative is presented, based on interviews and on literature research. Subsequently, issues of importance in appreciating the wider impact of PRSP-greening are suggested. Besides the quality improvements of the PRSP, greening contributes to a gradual change in the way decision-making is perceived and contributes to social learning. Furthermore, it is a promising approach that contributes to the institutionalisation of environmental sustainability in Africa.

Keywords: Poverty Reduction Strategy Papers, greening, sustainability assessment, participation, Benin, Africa

6.2.2.1 The PRSP approach and environmental sustainability

Since the 1960s, developing countries all over the world have been producing strategic socio-economic development plans to outline development policy orientations and to provide general guidance to the actions of the government and the administration. The planning traditions of developing countries differ from country to country, ranging from the historically grown planning traditions of Vietnam and China to less state-centred planning. While many national development strategies are clearly country-owned and fully decided upon by the highest national authorities, others are more influenced by external pressures. The introduction of the Poverty Reduction Strategy – approach by the international aid community (inspired and led by the Bretton Woods institutions) has recently provided a -more or less compulsory- common framework for many developing countries wishing to receive international aid.

Poverty Reduction Strategy Papers are prepared by governments in low-income countries through a participatory process involving domestic stakeholders and external development partners. They describe the macro-economic, structural and social policies and programmes that a country will pursue over several years to promote broad-based growth and to reduce poverty, as well as external financing needs and the associated sources of financing (IMF, 2007).

While initially developed to ensure that recipient countries would make wise use of the money that became available through debt reduction, the PRSP has now become a mainstream approach and the production of an elaborate poverty reduction strategy is considered by many multi- and bilateral donors as a condition for increased aid flows.

Despite their shortcomings and the many pertinent criticisms (Hugé & Hens, 2007), the importance of PRSPs in the current development co-operation landscape cannot be ignored, as donors have chosen them as guiding documents for aid allocation.

Given the alleged comprehensiveness of PRSPs, and taking the numerous poverty-related sustainability issues into account, one might reasonably expect environmentally sustainable development to be a guiding principle of the PRSP approach. Indeed, the World Bank's Poverty Reduction Strategy Paper Sourcebook, which provides guidance to assist countries in the development of their poverty reduction strategies, devotes a whole chapter to the environment. The environmental chapter emphasises the fact that improved environmental conditions can help to reduce poverty. Better environmental management is presented as an opportunity to build sustainable livelihoods, as poor people are highly dependent on natural resources. The sustainable management of natural resources is said to strengthen communities by increasing their resilience (Bojö *et al.*, 2002). The World Bank thus uses a broad definition of 'the environment' in the PRSP framework. In the global aid context, Millennium Development Goal 7 further contributed to popularise the concept of environmental sustainability. Target 9 of Millennium Development Goal 7 explicitly calls for the integration of the principles of sustainable development into country policies and programmes and for the reversal of the loss of environmental resources.

In this paper, environmental sustainability is defined as the ability to maintain the socio-economic qualities that are valued in the physical environment. The definition departs from the fact that ecosystem services underpin human life and are essential for the socio-economic foundation of society. Sound natural resources management strengthens the resource base and decreases the vulnerability of the poor, enabling them to escape poverty. This conception emphasises the ecological dimension of the classical, three-pillar definition of sustainability as this dimension is often relatively neglected (Bojö *et al.*, 2002, Hugé & Hens, 2007). On the other hand, societal stakeholders can still enrich this open conceptualisation of sustainability as it leaves ample space for interpretation. Indeed, any strict definition of sustainability involves risks in concealing the values inherent in sustainability principles (Cashmore, 2007). While a detailed overview of the literature on poverty-environment linkages lies outside the scope of this paper, some authors have produced particularly valuable analyses that have served as a theoretical underpinning of this research and that will introduce the interested reader to the concept of environmental sustainability from a poverty-environment perspective (Dasgupta *et al.*, 2005; DFID *et al.*, 2002; Millennium Ecosystem Assessment, 2005).

Practice has shown that the vast majority of PRSPs have until now insufficiently acknowledged the importance of environmental sustainability for balanced development. International organisations such as the World Bank (Bojö and Reddy, 2002, 2003; Bojö *et al.*, 2004), the World Wide Fund for Nature (Tharakan and MacDonald, 2004), the World Resources Institute (World Resources Institute, 2005) and the United Nations Development Programme (UNDP, 2004) as well as own research (Hugé & Hens, 2007) recognised that PRSPs do not sufficiently address environmental sustainability issues. A checklist-based sustainability assessment performed by the authors assessed the degree to which environmental sustainability issues were considered in a selection of PRSPs. The following issues were addressed: the commitment to sustainable development; the dependence on natural resources; the access to services and natural resources; the empowerment and participation of the poor; the pressures on the environment; the vulnerability of the poor; the economic incentive mechanisms for sustainability; the policy response and the process of PRSP development. Taken together, these issues reflect the multidimensional conception of environmental sustainability. Every issue was translated in a number of questions (85 questions in total). These were then scored on a 0-2 scale, where 0 stands for 'no mention of the issue'; 1, 'the issue is mentioned but not elaborated'; 2, 'the issue is elaborated'. The sum of all scores subsequently provided an indication of the environmental sustainability of the PRSP. The general results of the assessment revealed an insufficient integration of the majority of these issues in PRSPs. Detailed results are discussed in Hugé & Hens (2007). The checklist is presented in Annex 1 of this paper for illustrative purposes.

In conclusion, the lack of integration of environmental sustainability issues (or at least their uneven consideration) in strategic documents such as PRSPs hampers the achievement of sustainable development and undermines the effectiveness of poverty reduction strategies due to an inadequate consideration of the important linkages between poverty and environment.

Two general approaches can be distinguished to respond to this major shortcoming of PRSPs.

The first approach is to consider the lack of environmental sustainability integration as a ‘technical’ problem, which can largely be solved by targeted and clearly defined actions. These include the application of conventional or enhanced environmental sustainability assessments on PRSPs, by using impact matrices or checklists. The assessment exercise is then followed by targeted improvements in the sections of the PRSP that are insufficiently considering environmental sustainability issues.

While useful to identify sustainable development opportunities, and handy to realise quick adjustments to incomplete PRSPs, this approach does not actually challenge the process by which PRSPs are drafted. Furthermore, there is no guarantee that these cosmetic changes will eventually trigger a shift towards an environmentally-sound decision-making process.

The second approach consists in the initiation of a participative process to gradually ‘green’ the PRSP. ‘Greening’ refers to the cross-cutting integration of environmental sustainability principles in policies, plans or programmes. This process involves the inclusion of a range of stakeholders in the PRSP-drafting: the process is opened up to societal actors outside the state structures to ensure that differing perspectives on environmental sustainability are reflected in the strategic policy document represented by the PRSP. Ideally, the final PRSP becomes a synthesis document. This strategy supposes a process-approach to decision-making, introducing flexibility and adaptability, while working within commonly defined environmental sustainability boundaries. The approach will ultimately trigger a change in the way strategies are developed and might contribute to a lasting integration of environmental sustainability concerns. The greening also functions as a learning process, as it might result in changed decision-making behaviour caused by a broadened perception on how to tackle complex societal challenges (Siebenhüner, 2005). The analysis of the Benin PRSP greening process will provide us with new insights on these learning outcomes.

Both approaches are to be situated at the opposing ends of a continuum reflecting one’s interpretation of sustainability assessment. At one end, a pragmatic and technical sustainability assessment will allow to screen proposals for unwanted sustainability effects, similar to an extended ‘classical’ environmental impact assessment.

While at the other end, the interpretation of sustainability assessment as an iterative and integrated process leading to strategic actions towards environmental sustainability presents the assessment exercise as an essential element in a social learning process. PRSP ‘greening’ essentially fits within this second interpretation. While authors such as Rotmans (2006) and Pope *et al.* (2004) have analysed this conceptualisation in more detail, this brief introduction allows to position ‘greening’ in the context of sustainability assessment.

The application of ‘greening’ to PRSPs is the result of two reinforcing dynamics, being the greening of the development policy of international donors and the increased environmental awareness of the Southern partner countries. Both dynamics are exacerbated due to rising global environmental problems and better knowledge of the linkages between poverty and environmental degradation. The Millennium Ecosystem Assessment (2005), as well as the reports of the Intergovernmental Panel on Climate Change (IPCC, 2007) have been instrumental in strengthening the scientific basis of these assertions. Thus two driving forces come together: on the one hand, there is the donor-driven -some say donor-imposed- push for sustainable development co-operation; on the other hand Southern

governments themselves are increasingly aware of the importance of sound environmental management for a balanced socio-economic development.

This situation has led to numerous initiatives aiming at the integration of environmental sustainability in development co-operation activities. These range from increased financing for environmental projects, to the enhanced application of environmental assessments or to the introduction of environmental management systems in international development organisations (e.g. in Belgium's Technical Cooperation (BTC, 2006) or in Australia's AusAID (Keen and Sullivan, 2005)).

The present paper focuses on a particular way of 'greening' international development activities: the greening of Poverty Reduction Strategy Papers. Analysing a particular greening experience in more detail will provide insight into its realisation and into its side effects. While PRSP-greening is certainly not a mainstream exercise (yet?), a number of African countries have recently organised PRSP-greening processes from which the international community can learn a lot. In this paper, the case of Benin is discussed. A PRSP-greening process was organised there in 2006-2007. Evidence from other African PRSP-greening experiences is presented where information was available. The final section of the paper places PRSP greening within the wider context of fostering policy change towards sustainable development.

Before turning to the Benin case, one has to define what is meant by 'a green(ed) PRSP'. A 'green' PRSP is to reflect a number of environmental sustainability issues in a satisfactory way. While the categorisation of environmental sustainability elements of a green PRSP involves some subjective judgement (e.g. emphasising the ecosystem services concept), the presented categories are based on an extensive literature study and have already been used to assess the environmental sustainability of PRSPs in Hugé & Hens, 2007. Although a 'green' PRSP cannot be defined in an 'absolute' way, as the quality of a PRSP always stands in comparison to other PRSPs (being earlier versions of the assessed PRSP or international examples of 'best practice'), a 'green' PRSP should encompass the various elements listed in Table 6.2.2.1.

Table 6.2.2.1 Key elements of a 'green' Poverty Reduction Strategy Paper

The PRSP shows a commitment to sustainable development;
The dependence of the economy on the natural resources is considered;
The access to basic social services and natural resources is considered;
The empowerment and participation of the poor are considered;
The pressures on the environment are considered;
The vulnerability of the poor is considered;
Economic incentive mechanisms for sustainability are considered;
The proposed policy response considers environmental sustainability;
The PRSP is developed in a participatory and open way;

6.2.2.2 Analysis of the Benin PRSP greening experience

This section provides insight in the structure of a specific PRSP-greening process and in the role of the various actors involved.

Methodology

The analysis is based on an extensive research of the literature and of the documents relating to the PRSP-process in Benin (e.g. ABE, 2006 and APBEE, 2007). The membership of the international steering committee in support of the PRSP II greening process in Benin offered opportunities to access inside information, as did the contacts within the Benin Environment Agency. This context

facilitated the selection of relevant actors in the PRSP greening process. Twenty-one (21) selected actors of the greening process were interviewed in Benin to get an overview of the various opinions and perspectives, in order to transcend a one-sided lecture of the process.

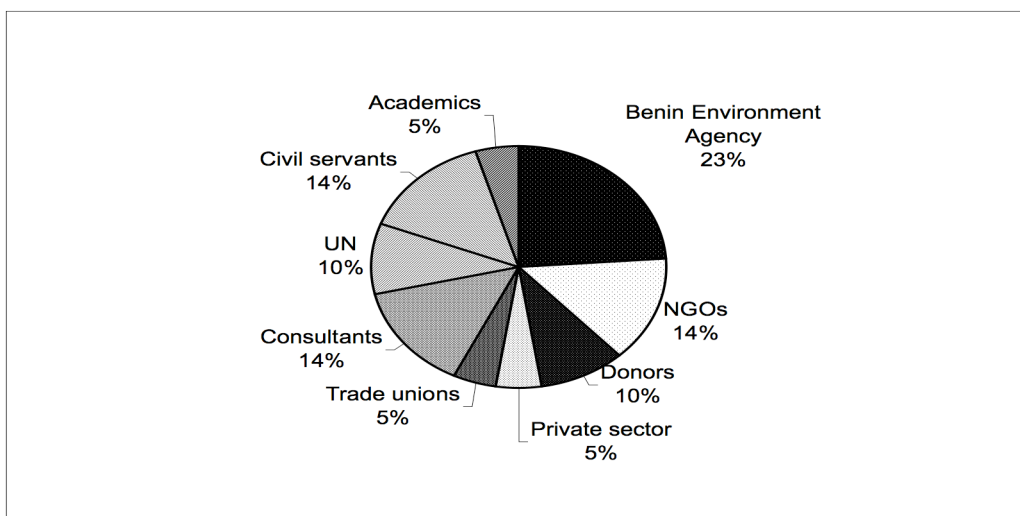


Figure 6.2.2.1: Distribution of the interviewees according to professional sector

Figure 6.2.2.1 provides an overview of the interviewees per sector.

The interviewed stakeholders were all involved in the PRSP greening process, albeit to a different degree. Some were directly involved in the PRSP drafting process, such as the civil servants from the Ministry of Finance and Development and the staff of the Benin Environment Agency. The representatives from local NGOs, the private sector and trade unions, as well as academics, consultants and donors all participated in an indirect way. Although the subsequent discussion shows that many interviewees perceived their actual influence on the PRSP process differently, the organising Beninese authorities stated that the stakeholders had the opportunity to react to the PRSP drafts and to propose amendments during the whole PRSP process. These issues are discussed in section 3 of this paper.

The interviews allowed to gather information from various societal stakeholders. The interviews were performed using a semi-structured questionnaire consisting of 31 questions in four separate sections. The first section entailed general questions on the function and role of the interviewees in the greening process. Subsequently, questions were asked on how the interviewees perceived the PRSP greening process. Aspects related to the organisation of the process and to the eventual content of the greened PRSP were considered. In a third section, particular attention was devoted to the linkages between the PRSP and other programmes / plans and to the role of the donor community. The fourth section of the questionnaire focused on the side effects of the process with regard to the long-term anchoring of environmental sustainability in the minds and habits of the involved stakeholders. Additional specific questions were aimed at particular interviewees.

Results and discussion

The PRSP Process in Benin

The intervention period of the first Benin PRSP (2003-2005) ended on December 31, 2005. The Benin government saw 2006 as a transition year towards the new PRSP for 2007-2009, which is intended to be a resource mobilising instrument and a coordination tool for the Millennium Development Goals. The official name of the second PRSP is '*Stratégie de Croissance pour la Réduction de*

la Pauvreté (Growth Strategy for Poverty Reduction) and the final version dates from April 2007. In this paper, the document is referred to as ‘the Benin PRSP II’.

The PRSP greening process in Benin

The greening process of the Benin PRSP II started as a range of societal stakeholders recognised that the first Benin PRSP did not take into account the linkages between environment and poverty and did not consider environmental sustainability as a cross-cutting issue. The decision to green the PRSP was a logical move as it can be interpreted as a concrete acknowledgement of the concerns for environmentally sustainable development as expressed by existing institutional arrangements (such as the 1990 Constitution and the 2003 Outline Law on the Environment).

Tométy *et al.* (2006) provide an analysis that sheds light on the strengths and weaknesses of the first PRSP. The results of the report were in line with the findings of the authors of this paper, granting Benin’s first PRSP a mediocre score for environmental sustainability integration (Hugé & Hens, 2007).

The greening project was led by the Benin Environment Agency, in collaboration with a cell of the Ministry of Development and Finance. Strategic environmental assessment (SEA) was chosen as the methodology to green the PRSP. The Benin Environment Agency defines SEA as ‘*a process that leads to a policy, plan or program that takes environmental issues into account adequately*’. According to ABE (2006), SEA does not aim at predicting precise impacts, but is instead meant to set out the limits within which the future activities of the particular policy, plan or program will be realised. The proposed SEA methodology contains all necessary elements of a fully elaborated assessment (see Hugé & Hens, 2007) while leaving scope for adaptation.

Without entering semantic debates about terminology, it is argued that the Benin PRSP greening process can be described as a sustainability assessment process. Even if there is no universally accepted generic definition, the objectives (quality enhancement of a socio-economic strategy towards sustainable development) and the methodology (a participative, structured but flexible approach based on SEA) of the Benin PRSP greening process allow us to conceptualise the initiative as a sustainability assessment process. Gibson *et al.* (2005) for instance, are amongst the authors advocating a broad interpretation of sustainability assessment. Table 6.2.2.2 lists the key steps of a strategic environmental assessment from the perspective of the Benin Environment Agency, compared to a selection of sustainability assessment principles according to Gibson *et al.* (2005).

Table 6.2.2.2: Principles of strategic environmental assessment *vs.* principles of sustainability assessment (adapted from ABE, 2006 and Gibson *et al.*, 2005)

Strategic Environmental Assessment	Sustainability Assessment
1. Analysis of the problem	1. Integrated analysis aiming at progress towards sustainability
2. Strategic diagnosis leading to an environmental scoreboard	2. Decision criteria and trade off rules are defined
3. Design of scenarios	3. Identification of the best option(s)
4. Definition of a vision for the future	4. Working towards a culture of sustainability
5. Definition and formulation of strategies	5. Ensure positive steps towards sustainability

It is clear that both approaches rest on common principles. While sustainability assessment is used as a generic term, well suited to describe a flexible PRSP greening process, strategic environmental assessment is a well-known concept in the development community, both in Benin and within the international donor community. SEA is mentioned in Beninese legislation and in important international documents such as the Paris Declaration on Aid Effectiveness (2005) and the Message from Paris on the Integration of Biodiversity in European Development Co-operation (IUCN, 2006). Furthermore the OECD’s Development Assistance Committee has recently drafted guidance on SEA in development co-operation (OECD, 2006). To facilitate the process, the Benin Environment

Agency drafted a customised methodological SEA guide for Benin. In practice, the guidance merely provided a general orientation for the work as it left enough space for interpretation. Indeed, the stakeholders did not stick to the guidance strictly but instead used it as an advisory tool. Ultimately, the greening process entailed a range of activities that led to tangible quality improvements, as shown by the higher score obtained by the greened Benin PRSP II using the environmental sustainability checklist developed by the authors (Hugé and Hens, 2007). It is argued that ‘sustainability assessment’ is an adequate term to describe the eventual realisation of the Benin PRSP greening process, as it emphasises the flexibility of the initiative.

Table 6.2.2.3 provides a schematic overview of the main activities undertaken as part of the greening process during each phase of the drafting of the Benin PRSP II. Both processes were carried out simultaneously and were very much intertwined, thanks to the collaboration between the responsible authorities (the Ministry of Finance and Development and the Benin Environment Agency), the thorough planning and the adaptability of the process and its main actors alike. The overview is based on the results of both the literature study and the stakeholder interviews.

Table 6.2.2.3: Overview of the main phases of the PRSP drafting procedure and the PRSP greening process in Benin (2006-2007)

Steps in the PRSP drafting	Steps in the PRSP greening process
Responsible authority: PRSP Unit of the Ministry of Finance and Development	Responsible authority: Benin Environment Agency in collaboration with the PRSP Unit of the Ministry of Finance and Development
Preparation Phase	• Report on the environmental impacts of the Benin PSRP I • Drafting of a methodological guide on strategic environmental assessment • Framing workshop and preliminary meetings
Diagnostics and Evaluation Phase – Proposal of new sectoral development strategies by the thematic working groups (later transformed into a strategic axes structure)	• Set-up of a cross-cutting working group on the environment • Provision of a thorough environmental diagnosis • National Forum on PRSP greening: major consultation and communication event
Set-up of a coherent synthesis resulting in a first draft of the Benin PRSP II	• Greening-workshop leading to specific recommendations • Inclusion of the workshop recommendations in the draft PRSP II
Consultation Phase	• Decentralised workshops to involve local communities
Finalisation phase: - Presentation of the final version of the PRSP - Elaboration of the Priority Action Plan	• Initiation of the greening of the Priority Action Plan, being an operational translation of the PRSP • Capitalisation and restitution workshop

Lessons learned from the Benin PRSP greening process

This section builds upon the observations of the Benin PRSP greening process and on the discussions with the contacted stakeholders. Given the limited number of interviewees and the partly customised questionnaires, the choice was made to integrate the results of the interviews into a synthesising section instead of focusing on individual responses.

Implementation of the PRSP greening process

The greening process was originally organised according to the planning of the PRSP II drafting itself. While the greening process covered each phase of the PRSP II drafting, the bulk of the actual greening effort -interpreted as adapting the contents of the PRSP itself- was realised during and immediately after a major workshop (referred to as the greening workshop in Table 3). This yielded satisfactory results, but the initial plan of working with a transversal / sectoral environmental working group supporting other thematic groups was never truly operational.

The Ministry of Development and Finance and the Benin Environment Agency took the lead of the greening process. This strong leadership avoided that the process was viewed as a sectoral (environmental) initiative and contributed to its success and to its acceptance by virtually all concerned stakeholders. Moreover, as the greening process occurred simultaneously with the PRSP-drafting process, adaptation and immediate reaction were possible. The PRSP greening process did not succeed in elaborating a hierarchical listing of the environmental actions to be undertaken. This should probably be done at the level of the governmental Priority Action Plan (implementing the PRSP), as the PRSP itself is only a strategic guiding document. Besides this shortcoming, the implementation of this innovative initiative was a globally successful.

Major environmental sustainability issues concerned

While the majority of the interviewed stakeholders list a similar set of environmental problems such as atmospheric pollution, unorganised urbanisation, deforestation, lack of access to decent sanitation and safe water, coastal erosion, waste management, drought etc., some objected that environmental concerns as a whole were not adequately presented in the PRSP.

Civil society interviewees stated that the environmental sustainability narrative of the PRSP is too focused on the narrowly ecological, theoretical definition of environmental problems. The link with sustainable livelihoods and with the sustainable use of natural resources is insufficiently emphasised. The narrative is said to be too donor-influenced and does not reflect the priorities of the poor populations living in biodiversity-rich areas nor does it propose practical means to solve concrete livelihood problems. When reading the final Benin PRSP II, this view needs to be nuanced. Environmental governance is well elaborated but practical and pragmatic environmental mainstreaming is also advocated throughout the document. Climate change is only briefly mentioned in the greened PRSP. This is at least partly attributable to a timing discrepancy with the drafting of the Benin National Adaptation Programme of Action (NAPA).

Linking the PRSP greening process to other national plans and programmes

Even if the PRSP is increasingly used as the main overarching development framework, this document did not 'pop up' in an empty institutional environment. A lot of strategic thinking and vision development was done before. The greening should therefore not be confined to the last version of the PRSP alone, but should also consider the related initiatives that eventually guide government action. The idea of greening the Benin PRSP was influenced by long-standing sectoral environmental programmes that were drafted in Benin in the wake of the 1992 United Nations Conference on Environment and Development (UNCED). The Environmental Action Plan, followed by the National Environmental Management Plan, indirectly influenced the PRSP greening. However none of these documents have been explicitly referred to in the greened Benin PRSP II. Moreover the governmental Priority Action Plan, while said to be a reflection of the PRSP priorities, is actually also inspired by a number of other strategic initiatives complementing the PRSP such as the Strategic Development Objectives and various sectoral plans and programmes.

The majority (62%) of interviewed stakeholders did not see any explicit complementarity between the Millennium Development Goals and the PRSP drafting process, even if the United Nations

Development Programme representatives maintained that there were operational linkages. However, the final version of the Benin PRSP II contains annexes providing information on the financial resources needed to attain the Millennium Development Goals (MDGs), suggesting some form of miscommunication about the PRSP-MDG linkages. UNDP-Benin worked on this ‘costing’ exercise, but did not involve a representative range of stakeholders. But there was a general recognition among the stakeholders of the (symbolic) importance of the MDGs for sustainable development.

Follow-up of the PRSP greening process

The Benin Environment Agency is responsible for the follow-up of the PRSP-greening in order to ‘keep the process going’. According to the Ministry of Development and Finance the environmental sector is one of the only sectors that has been allocated substantial additional resources in the Benin PRSP II. This is impossible to conclude from the respective Beninese PRSPs, as the data are not presented in a standardised way: allocated resources are presented by Ministry in 2002 and by sector in 2007 (Benin 2002, Benin 2007). In addition, every sectoral ministry is said to have incorporated environmental concerns in its action plan. This last assertion could however not be verified as all sectoral plans could not be accessed.

Many environmental actors warn for a lack of commitment towards environmental integration if donors do not keep pressuring the government. Civil society organisations are aware of the importance of following up the implementation of the PRSP and expressed their interest for post-greening activities to the authorities. Field actors emphasise the lasting discrepancy between the PRSP intentions and the reality of natural resources management in the country. The greened Benin PRSP II is an integrative and holistic document that aims to link the priorities of different stakeholders into a coherent whole, but the future will tell how this strategy will be translated on the field. While the Priority Action Plan (PAP) is the translation of the PRSP intentions into concrete actions, the Medium Term Expenditure Framework (MTEF) is its budgetary translation. Following up the implementation of both the PAP and the MTEF will be essential in order to know whether the PRSP greening has really been effective.

6.2.2.3 PRSP-greening as a first step towards environmentally sustainable development

This section analyses PRSP greening efforts in a broader context. Primarily based on the Benin PRSP greening experience, it also draws on similar initiatives in other African countries. A literature study illustrated that different approaches are followed to green PRSPs, even if the ultimate general objective is the same: ensuring an increased integration of environmental sustainability in a strategic policy document in order to achieve sustainable development. Lessons learned from Ghana, Mozambique, Tanzania and Uganda will be presented within the relevant sections.

The impact of PRSP greening

How does one measure the actual impact of a PRSP greening effort?

Only resorting to a comparison of the ‘scores’ of an initial non-greened vs. a greened PRSP using a checklist-approach as presented in the authors’ earlier work (Hugé & Hens, 2007, see also Annex 1 of this paper for the checklist) would probably be too restrictive in this context. While sustainability checklists are useful tools in quickly highlighting the strengths and weaknesses of a PRSP and allow to focus on specific needs for quality improvements, limiting oneself to checklists when evaluating the impact of greening processes would contribute to the strengthening of a technical and one-sided approach to PRSP-greening. It would also ignore the potential side effects of a sustainability assessment process, which range from individual to social learning.

In this section, alternative qualitative ways to appreciate the impact of a PRSP greening process are suggested. A selection of topics of prime importance in considering the success of PRSP greening is presented.

A qualitative and descriptive approach might be more difficult to standardise or to objectify, but it has the major advantage of pointing to the reality of a non-linear decision-making process while taking multiplier effects into account.

PRSP greening processes contribute to sustainable development by encouraging different types of learning in various actor categories (Cashmore, 2007; Fitzpatrick, 2006). The significance of these learning outcomes lies in the societal consequences beyond the strict boundaries of the greening process. PRSP greening processes may in particular give rise to two forms of learning, being a more effective integration of environmental sustainability concerns in the decision-making process on the one hand and social learning on the other hand.

Social learning is understood as being derived from social interactions over solutions to shared problems (Cashmore, 2007) and as reflecting change resulting from a new social consensus about fundamental aspects of decision-making (Connor and Dovers, 2004). One particular form of social learning refers to the understanding by individuals of other stakeholders' values, which was apparent in the Benin case. Complex societal problems such as the transition towards an environmentally sustainable development do indeed require various perspectives to yield satisfactory solutions. A PRSP greening process hence functions as a negotiation forum concretising deliberative governance for sustainability. Ideally, the process' participants develop a new, common perspective on environmental sustainability: a process of re-framing takes place. PRSP-processes are not always granted the same function in the policy process (the function differs from country to country, but also depending on stakeholders' points of view), which makes it difficult to measure the impact of greening processes in a standardised way. The function of PRSP-greening in the policy elaboration process is linked to the way knowledge is produced and used in participative exercises. In 'real' policy making, there is no unitary decision-maker nor any central steering mechanism. Instead, policy decisions are the outcome of complex actor and interest interactions (Hertin *et al.*, 2007). PRSP greening processes are prime – yet imperfect- examples of non-linear policy-making, and analysing them in this context provides new insights.

Taking the abovementioned aspects into account, suggested points of interest are presented in the next sections, aiming at a multidimensional appreciation of the impact of a PRSP greening process.

Greening at various decision-making levels

The 'signal function' provided by a greened PRSP for lower decision-making levels was repeatedly stressed by the Beninese interviewees. The symbolic significance of PRSP greening should thus not be underestimated.

At ministerial level the Benin Decree N° 2001-095 of February 20, 2001 created environmental cells in each sectoral ministry. Among other tasks, these are supposed to raise the environmental awareness of their ministries, to guarantee the respect of environmental norms and to control the quality of environmental assessments (APBEE, 2007). The environmental cells of the sectoral ministries are however not operational to this date, notwithstanding some exceptions. It is expected that PRSP greening process will revive these cells.

At local level, the municipalities are generally aware of the environmental problems and their umbrella organisation participated actively in the greening process. Some municipalities have already expressed their interest in greening their municipal development plans, following the PRSP example. The implementation problems surrounding the decentralisation process in Benin should however lead to realistic expectations. Municipalities are still facing important capacity problems.

PRSP-greening will also influence the application of environmental impact assessments at project-level. The exemplary function of PRSP-greening is an important motivating force, and the Benin PRSP II even explicitly calls for improvements in the application of environmental impact assessments.

PRSP greening has also influenced other areas of society. The 'greening' idea is starting to influence the business sector as the recruitment of environmental experts in private companies is now a reality in Benin. These are some (modest) illustrations of the multiplier effects of the Benin PRSP greening process.

Another promising example is provided by Tanzania's PRSP greening process, which was itself part of a general environmental mainstreaming dynamic in the country. The PRSP greening process was launched by the Tanzanian Vice President's Office, in collaboration with the United Nations Development Programme, WWF-Tanzania, the UK Department for International Development and the Danish International Development Agency. At the same time, milestone documents were published, such as the 'Guide and Action Plan to Mainstreaming Environment into the Poverty Reduction Strategy Review' (URT, 2004) and the 'Public Expenditure Review of the Environment' (URT, 2005). The international consortium supporting the PRSP greening and the various Tanzanian initiatives show that environmental mainstreaming really penetrated the decision-making culture of the country, even if much remains to be done at local level. Tanzanian civil society stakeholders stated that the PRSP greening process was a key element in triggering the momentum for environmental sustainability integration (Waldman, 2005).

It might still be a little early to derive general trends from these promising experiences, but the Beninese and Tanzanian examples show that PRSP greening processes have potentially huge impacts on various levels and have an important role to play in triggering change towards environmentally sustainable development.

Participation in PRSP greening as a step stone towards democratic decision-making

One of the features of a PRSP-process is the focus on participation. In the PRSP-context, donors press Southern governments to accept a significant participation of civil society organisations. As a result, closer relationships between civil society and donors have been an outgrowth of the PRSP processes in many countries. Interestingly, the inclusion of non-state actors in a PRSP greening-processes also yields secondary effects in the policy-making process as a whole. The basic claim for participation in sustainability assessment processes (such as PRSP greening) is that it contributes to the correctness or validity of decisions, by allowing assertions to be checked against the views of the interested parties. More fundamental claims for participation rest upon a deliberative ideal that better outcomes may be arrived at and that the process of deliberation is capable of inculcating environmental values that may encourage an ongoing sense of environmental responsibility in those involved in decision-making (Holder, 2004). Lafferty and Meadowcroft (1996) also stress the fact that democratic participation encourages people to view problems from a variety of related perspectives. In the Benin PRSP greening process, these key advantages of participation all influenced the position of the organisers. The interviews revealed that the organisers of the Benin PRSP greening process – the Ministry of Finance and the Benin Environment Agency- painted a positive image of the participation exercise. The interviews with the external stakeholders brought some nuance, albeit the general perception of the participatory process was generally positive. The stakeholders' perception depended on their interpretation of 'participation'. While the Beninese authorities communicated effectively about the PRSP greening (via a framing workshop and a large scale 'national forum on PRSP greening', as well as via the mass media) and while they encouraged effective participation, the concept is subject to interpretation. Arnstein's famous ladder of participation (Arnstein, 1969) distinguishes 8 different forms of participation, and some stakeholders would have liked to 'climb the ladder a little higher' to attain at least a level of 'partnership', where power is really redistributed through negotiation between citizens and authorities. In the Benin PRSP greening process, stakeholders were given the possibility to react to the drafts of the PRSP and to propose amendments to improve its quality. This was ensured through regional and national workshops and through the composition of the working groups. Ultimately, the decision to include stakeholder

comments in the final PRSP II depended on the Ministry of Development and Finance and on the Benin Environment Agency. This resulted in some stakeholder ideas being accepted while others were rejected. The acceptance / rejection process was not transparent, and that caused some frustrations. Moreover, the participation did not address power issues and control of information in a satisfactory way.

However, the participating stakeholders still perceived the exercise as a something positive, as they were given the opportunity to reflect and react on a strategic policy document. The stakeholders were aware of the importance of the PRSP and thus strongly appreciated the fact that they were involved in the process, even if they realised that the process still showed some flaws and shortcomings. All stakeholders believed that this exercise was a first step, and that participative decision-making would be strengthened in the future. The experimental and innovative character of the Benin PRSP greening exercise made the non-state stakeholders quite indulgent towards the organisers.

One of the problems that arose in Benin was that the effective participation of the NGO-sector was hampered by a lack of representative organisations, as well as by the limited policy influencing capacity of local NGOs. The local NGOs are mainly active on the field and lack the required capacity to perform underpinned lobby work. To them the PRSP greening lacks concrete linkages with the urgent improvement of the living conditions of the poor. Local NGOs are performing lots of work with respect to raising awareness of the local populations and they have in-depth knowledge of the daily living situation of the poor. But when it comes to lobbying and monitoring policies, severe weaknesses arise. The increasing distance between NGOs and the poorest population groups that has been witnessed on several occasions should of course not be encouraged (Bebbington, 2005), but the sheer complexity of high-level lobbying requires professional skills lacking in most local NGOs. Mohan (2002) warns that NGOs having a grassroots constituency are at risk of being increasingly alienated from the centres of decision-making.

Despite these limitations, the NGO-sector participated actively in the Benin greening process, thereby concretising the official partnership idea stating that all actors should negotiate a shared vision of national development. Incorporating local NGOs in strategic policy formation processes such as PRSP-drafting contributes to the trickling down of the greening ideas at the local level, while the uptake of local concerns at national level is strengthened. Indications reinforcing this assertion came out of the interviews. Trade unions were also actively involved in the greening process as exemplified by the presence of their representatives in various working groups, including the greening team. This led to the PRSP acknowledging the linkages between environment and health in the industrial sector.

A PRSP greening process can thus be interpreted as a forum where the meaning of environmental sustainability can be debated and where stakeholders' own perspectives come together in a synthesis that should be coherent (or at least consensual). The concept of (environmental) sustainability itself varies over time and space, making it necessary to constantly readjust societal views on 'the way forward'. The iterative PRSP process is suited for this kind of learning exercises. Encouraging public participation becomes a key priority under this conception of greening processes' role. One of the most successful side effects of the Benin PRSP greening thus was the enhanced participation of a wide range of societal stakeholders, which resulted in a more widely supported Benin PRSP II.

The Benin PRSP greening process has thus triggered a new interest in favour of civil society participation, even if some claim the communication about the greening process came too late and was not comprehensive, and even if the participative exercise as such was certainly not free of criticism.

In the Ugandan PRSP greening process, participation from civil society was strong from the onset. The opinions voiced by civil society organisations clearly impacted on the contents of the PRSP. The analysis of environmental sustainability integration in the Ugandan PRSP (known locally as the 'Poverty Eradication Action Plan' or PEAP), done by Mugenyi *et al.* (2005) states that the greening can be mostly explained by anecdotal evidence. The Ugandan PRSP greening process was driven by

the evolution of the participative process and the gradual realisation of the importance of the PEAP process regarding donor budget allocations. In the Ugandan case, there was no structured greening methodology such as a strategic environmental assessment, but rather a 'participation triggered' push towards greening. However, Waldman (2005) warns for overenthusiastic statements, as the example of the Ghanaian PRSP greening process shows that participation is not always that free: '*...although there was participation from civil society, people voicing alternative narratives, being critical of the state, were generally excluded*'.

A facilitating role for Northern donors

Given the position of PRSPs at the donor-recipient interface, both parties have worked together on these frameworks in numerous countries. In that context, it is not always easy to find a balance between justified advice and inappropriate infringement on the principles of country ownership.

In Benin, the German International Cooperation Enterprise GTZ and the United Nations Development Programme were the main external technical and financial supporters of the PRSP greening process. The vast majority of the stakeholders stated that this donor support did not jeopardise the country ownership of the PRSP greening process. The Beninese authorities undeniably took the initiative to improve the quality of their second PRSP.

But even the environmental 'conditionalities' imposed and/or suggested by donors are generally considered positive by the environmental stakeholders in the South. External pressure from donors may sometimes be necessary to trigger greening initiatives. In Benin, the decision to green the PRSP was taken by the Beninese themselves but donor support was a key factor of success. An interviewee puts the problem in a wider perspective by stating that new processes and ideas in the environmental field tend to be adopted with difficulty in Africa. Pressure from donors can help in fostering a change in attitude and ultimately a change in decision-making culture. External support can act as a lifeline for the local greening team, which could otherwise be subject to the whims of changing political leaders and ideas.

Mozambique is an interesting example in this respect. Even if the first Mozambique PRSP (PARPA I, 2001-2005) integrated environmental sustainability in a satisfactory way thanks to the environmental awareness of the government (Hugé & Hens, 2007), the preparatory process leading to its successor, PARPA II (2006-2009), did not reflect a strong commitment to environmental sustainability. Inputs from both donors and civil society were needed to correct the situation as to steer the contents of PARPA II towards environmental sustainability. In Mozambique, active follow-up and input from civil society and donors alike proved necessary to maintain and further enhance the quality of the PRSP.

Generally, civil society organisations stress that donors also have a practical, facilitating role. Donor presence in discussion forums and workshops ensures that the opinion of civil society is heard. Without donor presence and / or pressure NGOs and others feel the risk of being ignored or marginalised by their national authorities. Furthermore internationally backed local NGOs gain access much more easily to the decision-makers. This points to the need for donors to invest in capacity building for civil society in the South. Donors can also encourage South-South exchanges and they can provide a forum for sharing PRSP experiences. Donor organisations themselves need to pave the way for 'greening' by continuously improving the environmental quality of their own interventions.

Another major issue concerns the wider policy actions of donor countries towards the developing world. Ultimately, achieving environmentally sustainable development also depends on the sustainability of -for instance- trade agreements and the adequate consideration of trade-environment linkages. International development cooperation is only one of the ways by which North and South interact. Even if this issue lies outside the scope of the present paper, the broader context of international relations needs to be kept in mind.

6.2.2.4 Conclusion

The analysis of the Benin experience, as well as a number of examples from other African countries, allows us to draw a number of conclusions on the potential of PRSP greening processes. However, given the relative novelty of the PRSP-framework and of greening processes in particular, a prudent interpretation is required.

First of all, 'greening' Poverty Reduction Strategies can be done in a variety of ways. There is no such thing as a one-size-fits-all 'blueprint' approach. Sustainability assessment is presented as a useful conceptualisation, allowing to frame PRSP greening as a structured participative exercise fostering environmental sustainability. A promising finding is that the greening of strategic policy documents has important side effects. Indeed, the participative inclusion of a wide array of civil society stakeholders gradually changes the way policy development is perceived: non-state stakeholders' voices are heard and PRSP greening can even lead to calls for wider participation at various decision-making levels if its results are considered successful by the involved actors. While the term 'greening' itself may at first suggest a classical ecological focus, environmental sustainability is increasingly recognised as a multidimensional concept. This perspective entails that widely differing aspects of sustainable development are provided an entry point into the policy process through PRSP greening. 'Greening' an initially donor-imposed framework such as a PRSP can ultimately have positive effects that are more far-reaching than enhanced environmental integration. PRSP greening has the potential to strengthen the decision-making process as a whole. The actual experience of PRSP greening might be a first step towards a full embedding of environmentally sustainable development in African countries as it allows to concretise some abstract concepts and to popularise sustainable development to a broader audience, ranging from ministries to local NGOs. The iterative nature of the PRSP process supposes the regular actualisation of the strategy (generally with a five year periodicity). This actualisation makes it possible to integrate environmental sustainability in an already existing framework, resulting in a gradual institutionalisation of the principles of environmental sustainability. With PRSP greening, the primary objective of integrating environmental sustainability in a socio-economic strategy is completed by the reinforcement of democratic participation mechanisms, which support the institutional pillar of sustainable development. This last conclusion might sound idealistic, but the encouraging experiences of some African countries that have embarked on these processes allow this note of optimism.

Section 6.3 Impact assessment for a sustainable energy future – reflections and practical experiences

This section has been published integrally in a peer-reviewed journal as: Hugé, J., Waas, T., Eggermont, G. & Verbruggen, A. 2011. Impact assessment for a sustainable energy future – reflections and practical experiences. Energy Policy 39: 6243-6253.

Abstract

As energy issues are at the top of the policy agenda worldwide, policy-makers increasingly need better decision-supporting processes to assist them in fostering a sustainable energy future. This paper reflects on the interpretation of sustainable development, and links these reflections with the theory and practice of impact assessment applied on energy issues. An analysis of existing impact assessment approaches with regard to their contribution to sustainable development leads to a set of principles for ‘sustainability assessment’. Through a study of a participatory impact assessment supporting the development of a radioactive waste management plan in Belgium, the interpretational limits of sustainable development in a nuclear energy context are discussed. This paper sheds light on the complex context in which impact assessment exercises must contribute to sustainable energy development, with a focus on the nuclear energy – (un)sustainability nexus.

Keywords: sustainable energy, sustainability assessment, radioactive waste management

6.3.1 Introduction

Today’s world faces a series of complex and wicked societal challenges. The environmental crisis is threatening human societies, and urgent actions are required to take declining resources, demographic pressure and human-induced climate change (Sachs, 2008). Energy plays a central role in many of today’s crises, be it directly (such as through the emission of greenhouse gases) or indirectly (such as through the global geopolitical battle for control over resources). Badly managed energy issues can lead to social disruption and to an aggravation of the environmental state of the planet (Scrase & MacKerron, 2009). Structural challenges, combined with recent events with planetary consequences such as the Iraq War, the highest oil prices on record, the ever better documented consequences of rapid anthropogenic climate change (IPCC, 2007; Onishi, 2007), the oil spill in the Gulf of Mexico, the Fukushima incident and the emerging economies’ increasing energy needs, have promulgated a shift towards ‘sustainable’ energy production and consumption. The 2009 World Energy Outlook (IEA, 2009), states that the continuation of current energy trends would have profound implications for environmental protection, energy security and economic development, as well as dire consequences for climate change. In the same vein, Lior (2010) warns: *‘to prevent disastrous global consequences, it would increasingly be impossible to engage in large scale energy-related activities without ensuring their sustainability’*.

Policy-makers design strategies and actions to address these energy challenges. This paper focuses on the relations between sustainable development and energy policy. Sustainable development is seen here as a decision-guiding strategy and as an action-generating concept. In order to implement sustainable development, the sustainability discourse needs to be translated into actions (Boehmer-Christiansen, 2002), and impact assessments are at the start of this process. The International Association for Impact Assessment (IAIA, 2009) defines impact assessment as ‘the process of

identifying future consequences of a current or proposed action'. Identifying potential future impacts will ideally lead to better –more sustainable– decisions through the timely integration of that information and its consequences in the design of proposed policy interventions.

From combining impact assessment with the decision-guiding strategy of sustainable development emerged 'sustainability assessment' (Gibson *et al.*, 2005).

Applying impact assessment for sustainable energy policy decisions requires:

- A conceptualisation of sustainable development and sustainable energy;
- A conceptualisation of impact assessment for sustainable development (sustainability assessment);
- Insight into the practical application of impact assessment for sustainable energy policy issues.

This paper follows the above structure, which subsequently leads to a reflection on the interpretational limits of sustainable development and a general conclusion.

6.3.2 Sustainable development and sustainable energy explored

6.3.2.1 The concept of sustainable development

The concept of 'sustainable development' or 'sustainability' was launched in the early 1980s (IUCN *et al.*, 1980) to reconcile the imperatives of development and environmental protection. Sustainable development's intuitive appeal to the 'common sense' of humankind – as well as its constructive ambiguity (Robinson, 2004)– meant that policy-makers and civil society organisations all over the world soon jumped on the train of sustainable development and made it one of the most often cited concepts in current politics. Throughout this paper, the terms 'sustainable development' and 'sustainability' will be used interchangeably, despite the fact that a minority of scholars makes a distinction in meaning between them (Dresner, 2008) – in that latter case, sustainable development is primarily about development and economic growth, whereas sustainability gives priority to environmental protection (Dresner, 2008).

At the 1992 United Nations Conference on Environment and Development, sustainable development was formally politically endorsed through the adoption of the Rio Declaration and Agenda 21. The 2002 World Summit on Sustainable Development reaffirmed the world's commitment ten years later. More recently, influential scientific reports such as the Millennium Ecosystem Assessment (2005), the Stern Review (Stern, 2007) and the work of the Intergovernmental Panel on Climate Change (IPCC, 2007) exerted a major impact on decision-makers and all made reference to the sustainability agenda. Sustainability gained high acceptance in the political discourse, but the gap between words and deeds is still large (Lafferty & Meadowcroft, 2000). Sustainable development is often labelled as a vague and fuzzy concept. On the one hand, this might explain its popularity in use for covering day-to-day political decision-making; yet on the other hand, it precludes a satisfactory implementation of its core principles.

The most famous definition stems from the influential report 'Our Common Future' (WCED, 1987): *'sustainable development is development that meets the needs of the present without compromising the abilities of future generations to meet their own needs'*. This often quoted sentence is actually the 'mission statement' of sustainable development, which points out two key concepts: the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs (WCED, 1987). Sustainable development is not a fixed state of harmony nor a defined end-state, instead it is *'a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations'* (WCED, 1987).

Robinson's (2004) definition of sustainable development, stresses that developmental and environmental objectives should be reconciled, as well as the views and interests of different stakeholders, and as well as various temporal and spatial scales. Meadows (1998) defines sustainability as 'good lives for all people in harmony with nature'.

Despite its apparent vagueness and normative nature and the plethora of definitions, sustainable development does not leave the door open to all interpretations and refers to a more or less stable set of characteristics. Sustainable development has unambiguous interpretational limits. Lele (1991) makes a distinction between 'trivial' or 'contradictory' (mis)interpretations and meaningful ones. Meaningful interpretations consider sustainable development as a process of change, harmoniously integrating traditional development objectives, such as socio-economic and institutional objectives, with environmental objectives; while trivial interpretations only use 'sustainable' in the sense of 'ongoing, lasting'. Besides this fairly obvious caveat, a meaningful definition of sustainable development has limits, which are not all to be left 'open for interpretation'. Rockström *et al.* (2009) for instance define a 'safe operating space for humanity', establishing scientifically underpinned limits to growth or 'planetary boundaries'. This endeavour points to the need for quantification of sustainability as a first step towards sustainable development (Lior, 2008).

Furthermore, sustainability is a process of directed – sustainability oriented – change; and not a fixed state of harmony, nor a defined end-state (Robinson, 2004); as society, the environment and their interaction are subject to a continuous flow of change.

Despite the disagreements on 'exact' definitions, sustainable development does refer to a more or less stable set of characteristics (Lele, 1991). These characteristics can be termed principles that 'embody' sustainable development, yet this does not exclude fruitful discussion between potentially contrasting yet mutually enriching interpretations.

Such principles of sustainable development are to be the reference for anyone making the statement of acting in a sustainable way. Sets of principles have been clarified in international declarations, guidelines and charters (e.g. IUCN *et al.*, 1980; UNCED, 1992; WCED, 1987). Within the frame of this paper, defining a common ground referring to sustainability is the priority. Sustainability principles have been proposed by scholars such as Cashmore (2007), Gibson *et al.* (2005), Haughton (1999) and Lafferty & Meadowcroft (2000) amongst others, as well as by governmental bodies such as the Belgian Federal Planning Bureau (BFPB, 2007), which compiled principles from the academic literature. All these sets of principles draw on the same understanding of sustainable development, and do not contradict each other. Following this perspective, and based on the abovementioned academic and policy documents, we propose the following list of principles, defined as 'rules of action towards sustainable development':

This means that sustainable development entails at least respecting the principles of:

- *Global responsibility* (in tackling global socio-ecological issues, which refers to international cooperation in a spirit of 'shared but differentiated responsibility').
- *Integration* (of ecological, social and economic impacts and their interactions, which refers to the reconciliation and integration of environmental and developmental objectives).
- *Inter- and intragenerational equity* (which refers to the needs and preferences of current and future generations (inter-generational equity), and also includes geographical (global North-global South) and social intra-generational equity).
- *Precaution* (in the face of uncertainty): the precautionary principle states that the lack of full scientific certainty shall not be used as a reason for postponing measures to prevent environmental degradation.
- *Participation* (which refers to the involvement of all concerned stakeholders in decision-making for sustainable development).

While sustainability principles are key in understanding the concept, they need to be operationalized in order to feed the decision-making process. This often involves quantification, because as sustainability must be made operational in each specific policy context (e.g. as a guiding strategy for

steering energy policy), appropriate methods must be designed for its long-term measurement (Bell & Morse, 2008). Indicators are developed and used to measure sustainability. They are defined as operational representations of the attributes that define the sustainability of a system, as they are variables that – together with their reference situation- give sense to the values they can take on (Bell & Morse, 2008; Gallopin, 1997). Indicators contribute to turn the general principles outlined above into tangible, measurable inputs into decision-making, thereby responding to the requirement of quantitative support tools for sustainability, as expressed by Rotmans (2006) amongst others.

As the concept of sustainable development has pervaded most –if not all- societal issues and sectors, including energy, it is now time to delve deeper into a theme-specific conceptualisation of sustainable development.

6.3.2.2 Sustainable energy

International organizations and numerous scholars propose conceptualizations of sustainable energy. The presented selection of sources is illustrative.

The International Energy Agency defines sustainable energy as a balance to be found between energy security, economic development and environmental protection. The Energy Technology Perspectives 2010 (IEA, 2010) demonstrate that these three main objectives go hand in hand in a low-carbon future.

The European Union (EU) outlined its vision on sustainable energy in the 2006 Green Paper on Energy, aiming to implement a European energy policy built on three core objectives: i. sustainability (to actively combat climate change by promoting renewable energy sources and energy efficiency), ii. competitiveness (to improve the efficiency of the European energy systems by creating a truly competitive internal energy market) and iii. security of supply (to better coordinate the EU's supply of and demand for energy within an international context). In March 2007 the EU leaders endorsed an integrated approach to climate and energy policy. They committed Europe to transforming itself into a highly energy-efficient, low carbon economy. To kick-start this process, the EU Heads of State and Governments set the 20-20-20 targets (European Commission, 2010b) by 2020. These are: a reduction in EU greenhouse gas emissions by at least 20% below 1990 levels; a share of 20% of EU energy consumption from renewable resources, and a 20% reduction in primary energy use compared with projected levels, to be achieved by improved energy efficiency.

The European Strategic Energy Technology (SET) Plan (European Commission, 2009f) aims at accelerating the development and deployment of cost-effective low-carbon technologies and forms the technology pillar of the EU's energy and climate policy package.

The European Strategy for Sustainable Development (European Commission, 2009a) also entails an important energy chapter, while the European Sustainable Energy Week is an initiative targeting the broader public. These examples underline the fact that the EU has mainstreamed sustainable development into a broad range of its policies, and has –at least at the level of political discourse- taken the lead in the fight against climate change and the promotion of a low-carbon economy. At the same time, unsustainable trends persist in many areas and the gap between discourse and practice remains huge (European Commission, 2009b).

Scholars also shape the conceptualization of sustainable energy. In discussing criteria for assessing the EU electricity market, Verbruggen (1997) lists five components of sustainable energy: conservation of energy; priority to renewables; reduction of negative environmental impacts; low vulnerability of energy systems; no threats to international security. Similarly, Saha (2003) lists options that should be followed for a sustainable energy future: widening access of energy services to the disadvantaged populations; raising the share of low-carbon energy resources in the energy mix;

energy efficiency policies; appropriate market and structural reform and a rational pricing policy; facilitation and financing of technology transfer; and international cooperation. Midilli *et al.* (2006) propose three key ‘green energy’ aspects: low environmental impact; the reliable supply of renewables; increased decentralization and local solutions and hence increasing flexibility of responses. Rosen (2009) elaborates the social component of sustainable energy by including community involvement and social acceptability, equity, economic affordability, lifestyles and aesthetics.

The conceptualizations of sustainable energy do not always explicitly refer to the five principles of sustainable development outlined in section 2.1. That selective omission of certain principles (especially equity considerations) does not only reflect emphasis, but can also be a conscious attempt at reshaping the sustainability discourse so as to discard principles that do not fit within a particular biased perspective on sustainability. Sustainability principles are key in defining the interpretational limits to sustainability. While divergence in understanding enriches the debate, essential contestability does not prevent normative concepts to be applied in policy-making (Lafferty & Meadowcroft, 2000).

6.3.2.3 Sustainable development as a decision-guiding strategy

The sustainable development discourse has not led to a satisfactory implementation. However, discourses might become powerful and might initiate societal learning and eventually steer society towards sustainable development (Petschow *et al.*, 2005). Yet there is still a great deal of work to be done to move from shared preoccupation to actual implementation. The gap between the sustainability discourse and the implementation situation on the ground is gigantic, and growing.

When it comes to addressing this gap, one should not start from an *‘autonomously derived (either logical or philosophical) interpretation of what sustainable development ‘really’ means’* (Lafferty & Meadowcroft, 2000). Instead Lafferty & Meadowcroft (2000) take sustainable development to be an expression whose sense is given by relevant usage: in this case *‘the international discussions and accords through which it has become an accepted goal of international and national policy’*. The sustainability principles of Section 2.1 reflect this view as they allow for –a degree of– interpretive flexibility. Before moving on, let us also keep in mind that the very action of trying to implement what one thinks is sustainability may change one’s vision of what it is (Bell & Morse, 2008).

Implementation means that the sustainable development discourse needs to be somehow translated into actions (Boehmer-Christiansen, 2008). Hence if sustainable development is to be a useful and ‘implement-able’ concept, we believe it should be a strategy, defined as a way forward to make happen a desired future, *in casu* the achievement of sustainability objectives and principles.

This desired future takes place within a particular context, which influences the interpretation of sustainability. Sustainability principles are the guiding elements to make decisions and hence to realize a strategy within sustainability’s interpretational limits. Decision-supporting processes like impact assessments foster sustainable decision-making.

The key societal choices are in hand of policy makers who decide upon solutions for the many societal challenges we face today. Indeed sustainable development reflects social consensus and therefore cannot be translated into a blueprint calling for unambiguous decisions (Kemp & Martens, 2007). Conceptualising sustainable development as a decision-making strategy allows to move beyond the rhetoric, and to turn sustainable development into an ‘action-generating concept’.

For sustainable development to be a decision-guiding strategy, answering three major questions is key:

- I. How can sustainable development be operationalized as a practical decision-making strategy?
- II. How can knowledge flows be structured in order to feed the decision-making process?
- III. How can sustainable development exert an actual impact on decision-making?

These three questions are reframed as three challenges, as they are also opportunities to understand the linkages between sustainable development and decision-making, and can hence improve the practice of impact assessment.

- The first challenge is the '*interpretation challenge*', as different societal actors emphasise different aspects of sustainable development, and as its interpretation is context-specific.
- The second challenge is '*the information-structuring challenge*', and refers to the need to translate sustainable development into operational information units (*e.g.* indicators) through adequate processes (*e.g.* participatory techniques) as well as to the need to generate, summarize and present this information soundly (*e.g.* in systematic assessment schemes).
- The third challenge is the '*influence challenge*', as it refers to the actual influence of sustainable development on decision-making processes and on decisions' implementation.

6.3.3. Impact assessment for sustainable energy policy: theory & practice

6.3.3.1 Impact Assessment: theory

Impact assessment is a generic term encompassing different instruments, approaches and processes, some of which are well known and widely used (Environmental Impact Assessment (EIA), Strategic Environmental Assessment (SEA), Health Impact Assessment (HIA), Risk Assessment (RA) while others are more recent or less clearly defined. These impact assessment approaches are respectively defined as such:

- Environmental Impact Assessment (EIA) is the systematic process of analysing the environmental (and sometimes broader sustainability) effects of projects.
- Strategic Environmental Assessment (SEA) refers to the systematic process of analysing the environmental effects of policies, plans and programmes in order to integrate environmental considerations into policy-making and planning (Dalal-Clayton & Sadler, 2005).
- Health Impact Assessment (HIA) systematically judges the potential effects of a policy, programme, plan or project on the health of a population and the distribution of those effects within the population (IAIA, 2006).
- Risk Assessment (RA) focuses on the probability of events, related to the extent of these events' impacts. Issue of scope (which risks are taken into consideration?) and uncertainty (probabilities and significance) are key. 'Risk' is defined as a 'situation or event in which something of human value has been put at stake and where the outcome is uncertain' (Health Council of the Netherlands, 2008).
- Sustainability Assessment (SA) is defined as a process that aims to integrate sustainability issues into decision-making by identifying sustainability impacts, but also by fostering sustainability objectives to be achieved (Pope *et al.*, 2004). This approach will be further elaborated below.

Impact assessments can have different functions in a decision-making process. These functions are not mutually exclusive, and impact assessments often take on different functions simultaneously.

Four key functions are identified:

- Information generation;
- Forum for debate and deliberation;
- Fostering attitude shifts;
- Structuring complexity;

First, impact assessment can be a tool/process to generate information for decision-makers, ensuring that a decision is taken with the best available knowledge of its full -(un)intentional- impacts. Ideally,

this leads to choose the best policy option. Impact assessment thus creates choice opportunities. 'Best' is to be defined according to the objectives of the assessment and may hence refer to the 'most environmentally friendly option' (in case of EIA or SEA), 'the best option with regard to public health implications' (in case of HIA), *etc.* Impact assessment is seen here as an objectifying instrument, providing instrumental knowledge, directly underpinning specific decisions. This supposes a rational approach to decision-making, yet this is not convincingly supported by empirical evidence.

Secondly, impact assessment can be as a forum for debate and deliberation (Baber, 2004). Hertin *et al.* (2008) describe policy-making as a 'mess', influenced by various actors, subject to power struggles and to strategic and coincidental considerations. Pre-decision deliberations enrich the decision-making process and creating new perspectives. For example, sustainability assessment can contribute to a shared understanding of sustainable development in a particular context. But there is a risk of political (ab)use of impact assessments, *e.g.* to steer decisions in a particular direction or to justify irrevocable decisions. Other risks include conflicts of interests and the 'capture' of the impact assessment by particular interest groups

A third view stresses the decision makers' shifts in attitude through impact assessment. New knowledge provides the decision-makers with new insights and perspectives, creating opportunities for policy change. Impact assessment ideally also triggers a shift in time horizon, by integrating long-term thinking in decision-making. This view emphasises learning effects as worded by Nooteboom (2007): *'The effect of an (impact) assessment procedure may well be that it will mainly benefit future decisions, while having a more limited impact on the decisions which the impact assessment was meant to inform and influence'*.

The fourth perspective emphasises impact assessment's 'structuring power'. Indeed, decision-makers face many challenges when designing policy. First, the intrinsic complexity of multidimensional societal challenges creates an ever-growing need for information and debate (Funtowicz *et al.*, 1999). Secondly, institutional complexity arising from the new realities of multilevel governance networks blurs the boundaries between actors' responsibilities and competences. These challenges demand instruments to structure both the increasing intrinsic complexity and the institutional complexity of decision-making. Impact assessment provides that systematic approach that allows policy-makers to deal with complexity and to structure the input of various actors.

Ideally, impact assessments become part of policy-making. The appeal of impact assessments lies in their systematic, stepwise approach and in their contribution to generate 'order out of the chaos' by identifying linkages in complex policy-making environments. Impact assessments are built on indicators (Cloquell-Ballester *et al.*, 2006). In the case of impact assessments for sustainable development, they are operational representations of an interpretation of sustainable development. They differ from 'principles' or 'requirements' by the fact that they derive their meaning by the linkage with the reference situation, which allows them to 'indicate' which direction the system is heading for (see also section 2.1).

Although necessary to understand complexity and to translate sustainability issues into manageable 'sub-challenges', Gasparatos *et al.* (2008) call for non-reductionist approaches to impact assessment, by moving away from single metrics indicators towards methodological pluralism. The approach of Bell & Morse (2008) aims to combine the strength of indicator-supported decision-making with a participatory development of these indicators, recognizing underlying value-laden choices.

It is important to keep in mind that impact assessments are based on a large number of –often implicit– choices (Zaccai, 2002): Which impacts are considered? Which indicators are used to assess these impacts? How are these indicators being calculated and assessed? *etc.* Hence the results of various impact assessments applied on similar cases can vary greatly. Impact assessment approaches are widely used in support of energy policy.

6.3.3.2 Impact assessment practice for energy policy

The examples are categorized according to the used impact assessment approach, as defined by these cases' respective initiators.

Table 6.3.1: Illustrative overview of the diversity of impact assessment studies in energy policy

Approach	Study	Topic	Decision-making level
EIA	Bruhn-Tysk & Eklund, 2002	Bio-fuelled Plants	Practical: case-oriented
	Ramana & Rao, 2010	Nuclear facilities	Practical: activity-oriented
	Bond <i>et al.</i> , 2003	Decommissioning of nuclear power plants	Practical: activity-oriented
SEA HIA	Finnveden <i>et al.</i> , 2008	Energy sector <i>sensu lato</i>	Strategic
	Uttinger <i>et al.</i> , 2005	Health impacts of petroleum development and pipeline	Practical: case-oriented
RA	Harman <i>et al.</i> , 2004	Energy Systems <i>sensu lato</i>	Strategic
SA	Afgan <i>et al.</i> , 2000	Energy Systems <i>sensu lato</i>	Strategic
	EC (2009e)	Strategic Energy Technology Plan	Strategic

Table 6.3.1 provides a mere illustration of the diversity of impact assessment approaches for energy policies. They are performed at various levels of decision-making (from the strategic level to the practical case-specific or activity-specific level). The scope of application varies from infrastructure development to power plant decommissioning, and to the installation of bio-fuelled plants.

A successful impact assessment ideally covers all steps of the decision-making process, and is firmly anchored in the institutional reality of decision-making (often, this means that impact assessments function in a multi-actor and multi-level environment). In Table 1, the last column indicates which level of decision-making is emphasized by the respective impact assessments.

Impact assessment exercises in support of energy policy are also built on indicators, which can take on many shapes: they range from general 'energy indicators for sustainable development' (IAEA *et al.*, 2005), to specific micro-indicators. Ideally, indicators should provide key information on the environmental, social and economic dimensions of a policy issue, as well as allow decision-makers to understand the interactions between these dimensions (Binder *et al.*, 2010). This requires a holistic view of energy systems and a careful interpretation of –necessary- quantification endeavours (Lior, 2008). The question of each of Table 1's impact assessment approaches' contribution to sustainable development is key. Indeed, some of the cited examples do not adequately take sustainable development principles into account. Bruhn-Tysk & Eklund (2002) for example, state that, in the case they analyzed: '*...global effects and effects on the management of natural resources are not assessed, excluding aspects that may affect future generations (..) it is concluded that ELA practice (in Sweden) may not, to a full extent, serve as a tool to promote sustainable development*'. Similarly, the impact assessment performed on the European Energy Technology Plan (EC, 2009e; EC, 2009g) fails to provide a satisfactory overview of sustainable development impacts, although it is supposed to follow the European Commission's

Impact Assessment guidelines (EC, 2009a), which require to ‘identify economic, social and environmental impacts’.

From the information given in the above case study accounts, it is not easy to state if these initiatives do amount to a ‘sustainability assessment’ at first sight. Yet to improve future practice – and hence foster an increasingly sustainable energy future- the characteristics of a sustainability assessment for energy policy need to be clarified. Section 4 proposes characteristics of an ideal-typical sustainability assessment. Subsequently, in Section 5, an assessment case in support of radioactive waste management will be assessed against the proposed characteristics.

6.3.4 Sustainability assessment for energy policy

Based on Devuyst (2001), Gasparatos *et al.* (2008), Gibson *et al.* (2005) and Pope (2006), sustainability assessment is defined as a process that aims:

- i. to integrate sustainability issues into decision-making by identifying and assessing sustainability impacts;
- ii. to contribute to a better understanding of the actual meaning of sustainability; and
- iii. to foster sustainability objectives.

Table 6.3.2 proposes key characteristics of a sustainability assessment, based on Gibson *et al.* (2005), on Hardi & Zdan’s Bellagio principles (1997) and on BFPB (2007), as well as on the authors’ own research experience in the SEPIA research project - a 2008-2010 research project on the role of integrated assessment for sustainable energy policy, supported by the Belgian Science Policy.

Table 6.3.2: Characteristics of an ideal-typical sustainability assessment in support of energy policy

1. Fostering sustainable development objectives	Global responsibility (esp. with regard to trans-boundary and global (GHG emissions) pollution issues); Integration (of environmental, social, economic and institutional issues as well as their interdependencies; of various scientific disciplines and approaches; and of quantitative and qualitative data); Equity (incl. intra-generational (vulnerable groups, burden sharing) & inter-generational (irreversible choices, lock-in) considerations); Precaution; Participation;
2. Having a holistic perspective	Assess the system as well as its parts & their interactions; Assess the environmental, social and economic impact of the proposal; Assess the environmental, social & economic risk facing the proposal;
3. Incorporating sustainability in the assessment process & procedure	Transparency regarding uncertainties, generation & use of data; Participation of various stakeholders; Avoid irreversible risks and favors a precautionary approach; Evaluation of alternatives that offer the greatest overall benefits and avoids undesirable trade offs;
4. Supporting decisions	Continuous and iterative process, starting at the onset of the decision-making process; Adequate scope and proportionality; Adapted to and integrated into the institutional context;

First of all, any sustainability assessment should be guided by sustainability principles. Some of these principles have a particular significance for sustainable energy policy, as energy production and consumption are activities with global consequences (from resource extraction to transport and eventually international pollution and greenhouse gas emissions).

Secondly, any sustainability assessment should have a holistic perspective, assessing energy policy proposals without losing sight of systemic interdependencies. Energy policy proposals' environmental (resource extraction, emissions), social (vulnerable groups, access issues, risks), and economic (prices, long-term 'lock-in' issues) impacts should be assessed. On the other hand, the environmental (infrastructure destruction, resource shortages), social (lack of social support base) and economic (high costs) risks that could endanger the energy policy proposal should also be assessed. These first two clusters of characteristics respond to the interpretation and the information-structuring challenges outlined in section 2.3.

Thirdly, sustainability principles should not only pervade the sustainability assessment's content, but also its process: transparency, participation and a precautionary stance should guide the conduct of the assessment. Undesirable trade offs should be avoided.

Fourthly, to respond to the 'influence challenge', and to actually exert an impact on decision-making, any sustainability assessment should be adapted to the institutional context, it should be an iterative

and continuous learning process and it should respect proportionality.

This generic sustainability assessment framework for energy policy is intentionally not elaborated into specific guidelines to retain general applicability.

It is interesting to look at the two approaches to sustainability assessment proposed by Rotmans (2006) and Weaver & Rotmans (2006). Both approaches are situated at the opposite ends of a sustainability assessment ‘continuum’ and both are in line with the general characteristics outlined in Table 2. Rotmans (2006) refers to SIA (sustainability impact assessment) as a practical and short-term focused, sequential and linear approach; while ISA (integrated sustainability assessment) is broader, explorative, forward-looking, iterative and long-term oriented. In an energy policy context, an ISA type approach might e.g. analyze the sustainability impacts of strategic policies such as the European Strategic Energy Technology Plan (EC, 2009f), while a SIA type approach would e.g. analyze the impacts of the siting of a bio-fuel plant in a particular area. The typology of Rotmans (2006) and the hypothetical examples illustrate that a common definition of sustainability assessment characteristics still allows for different, complementary approaches to sustainability assessment to co-exist. Typically, an ISA type assessment will be performed to support strategic decision-making and will be mostly qualitative, while ISA type assessments will entail a more detailed, pragmatic and more quantitative assessment in support of decisions at the operational level (Weaver & Rotmans, 2006).

6.3.5 Case Study: impact assessment and radioactive waste management in Belgium

6.3.5.1 Case description

NIRAS, the Belgian Institute for Radioactive Waste and Fissile Materials is the Belgian federal government’s agency responsible for the management of radioactive waste. Radioactivity decays naturally, but until the radioactivity in waste has decreased to a level that is acceptable for public health, measures must be taken to ensure that the radiation cannot cause any harm (NIRAS, 2010). NIRAS is to set up a program of actions for the long-term management of all radioactive waste, embodied in a Waste Management Plan that NIRAS will submit to the Belgian federal government in 2011. As the Waste Management Plan will give rise to a strategic decision, it is subject to a SEA (strategic environmental assessment), according to the Belgian Law of 13 February 2006. A SEA emphasizes the qualitative description and comparison of different management alternatives that are not yet site-specific.

The consultation of the public on the management of highly and long-living radioactive waste is an essential part of the decision-making process – both for intrinsic and for legal reasons. NIRAS has chosen to organize a societal consultation prior to the legally compulsory SEA procedure. This consultation consisted of two main elements:

- the NIRAS dialogues and the inter-disciplinary conference, where NIRAS collected participants’ opinions and concerns with regard to long-term radioactive waste management;
- the Public Forum, which yielded information on the values, norms, arguments and considerations that should underpin decisions regarding the long-term management of radioactive waste.

NIRAS commissioned the King Baudouin Foundation to organize a Public Forum in full independence. The King Baudouin Foundation is an independent and pluralistic foundation performing third party projects, acting as a forum for debate and supporting a wide diversity of projects pursuing sustainable ways to bring about justice, democracy and respect for diversity (King Baudouin Foundation, 2011).

This decision to initiate the Public Forum was taken after the poor results of previous NIRAS-organized public dialogues and after critics issued by external experts airing their concerns about possible conflicts of interest and lack of transparency (Laes *et al.*, 2009). During that Public Forum,

32 Belgian citizens debated (together with experts) the long-term management of long-living and highly radioactive waste. The citizens' input was collected in a report (King Baudouin Foundation, 2010), which is a reflection of the discussions.

The Public Forum is as an empirically tested example of participatory impact assessment, inspired by the 'consensus conference' developed by the Danish Board of Technology (Zurita, 2009). The approach belongs to a broader class of procedures influenced by participatory technology assessment and grants a prominent role to lay people (Joss & Bellucci, 2002). This means that these people are not direct stakeholders, they are not directly involved in the decision-making process on the topic in question but they contribute to it through their own perspectives, concerns and ideas.

This Public Forum experience can be seen as a step in a learning process towards the design and application of participatory impact assessment for sustainable development in Belgium. Although interesting, the Public Forum's consensus conference approach entails some risks, such as the risk for trivialization of complex scientific facts and the risk of a manipulation of the debate by powerful actors.

Nevertheless, the Public Forum, its results and the influence of these results on the decision-making process related to the management of radioactive waste in Belgium, is a fruitful case for analysis in the context of this paper, as:

- the Public Forum's final report explicitly suggests recommendations to NIRAS (King Baudouin Foundation, 2010);
- NIRAS itself claims the Public Forum is an important input to a legally compulsory strategic environmental assessment (NIRAS, 2010), which is –by definition– supposed to foster sustainable development (Dalal-Clayton & Sadler, 2005) and hence the Public Forum is also supposed to inform NIRAS' Draft Radioactive Waste Management Plan.
- the case is centered on energy issues;
- the case raises the question of the interpretational limits of sustainable development;

The case study will shed light on the practice of an operational impact assessment exercise in support of a real-life decision-making process; and given the nature of the issues at hand (radioactive waste management) it will also feed the reflection on the interpretational limits of sustainable development as reflected in an impact assessment exercise.

6.3.5.2 Case study methodology

The case study mainly builds on qualitative document analysis. Two main documents are analyzed in detail: the Public Forum's final report (King Baudouin Foundation, 2010) and the NIRAS Draft Radioactive Waste Management Plan (NIRAS, 2010). The Public Forum's final report is analyzed through the lens of the sustainability assessment characteristics identified in Table 2. Structuring concepts, ideas, categorizations, and the use of storylines were analyzed, in line with the recommendations of Hajer (2006) on performing document analysis.

The NIRAS Draft Radioactive Waste Management Plan is analyzed to identify to which degree the sustainability assessment characteristics of the Public Forum exercise are reflected in it. The aim of this qualitative analysis is to provide an indication for the Public Forum's influence on the final product –of this phase– of the decision-making process.

Additional insight in the case was gathered through the involvement of one of the authors in the NIRAS dialogues and through his privileged overview of the whole process that led to the Public Forum.

6.3.5.3 Sustainability Assessment?

The qualitative analysis of the Public Forum's final report (King Baudouin Foundation, 2010) based on the characteristics of sustainability assessment outlined in Table 6.3.2 allows us to appreciate the Public Forum's degree of accordance with these ideal-typical sustainability assessment characteristics. The scores in Table 6.3.3 are qualitative, 0 stands for 'the characteristic is not reflected in the report'; 1 stands for 'the characteristic is reflected in the report' and 2 stands for 'the characteristic is considered to be a central element of the report'. The ideal-typical characteristics are reflected in various ways: some of them are mentioned explicitly in the report, others are reflected indirectly through the formulation and wording used in the report, while the reflection of other characteristics can be inferred from the Public Forum's approach as such. The results of the analysis are summarized in Table 6.3.3. A subsequent qualitative analysis of the NIRAS Draft Radioactive Waste Management Plan (NIRAS, 2010) sheds light on the actual uptake of the Public Forum's sustainability assessment characteristics in the policy document. This narrative analysis gives an indication of the influence of the impact assessment on the decision-making process.

Table 6.3.3: Reflection of the characteristics of an ideal-typical sustainability assessment in the Public Forum in support of the NIRAS Draft Radioactive Waste Management Plan

Cluster of SA characteristics	SA characteristics	Reflection in the Public Forum
1. Fostering sustainable development objectives	Global responsibility	1
	Integration	1
	Equity	1
	Precaution	1
	Participation	2
2. Having a holistic perspective	Assess the system as well as its parts & their interactions	1
	Assess the environmental, social and economic impact of the proposal	1
	Assess the environmental, social & economic risk facing the proposal	0-1
3. Incorporating sustainability in the assessment process & procedures	Transparency regarding uncertainties, generation & use of data	1
	Participation of various stakeholders	1
	Avoid irreversible risks and favors a precautionary approach	2
	Evaluation of alternatives that offer the greatest overall benefits and avoids undesirable trade offs	1
	Continuous and iterative process, starting at the onset of the decision-making process	0-1
4. Supporting decisions	Adequate scope and proportionality	1
	Adapted to and integrated into the institutional context	1

The reflection of the ideal-typical sustainability assessment characteristics in the Public Forum and their translation into the NIRAS Draft Radioactive Waste Management Plan (from here on referred to as ‘the NIRAS Plan’), is discussed below.

The *global responsibility* principle is implicitly reflected in the Public Forum’s report: ‘*we advocate to explore the possibilities for cooperation with other countries*’. The NIRAS Plan includes the issue with regard to an internationally shared geological waste disposal solution, yet underlines the expected difficulties regarding responsibilities.

Integration is reflected in the acknowledgement of the multifaceted character of the radioactive waste issue in the Public Forum’s report: ‘*..it has many aspects, a broad impact and lots of stakeholders –if not the whole of society- both now and in the distant future*’. This realization is linked to participation, as the Report goes on stating: ‘*that’s why we find it important to think about this issue. It concerns everyone. There is no one single group that can offer a solution*’. Integration is also reflected in the NIRAS Plan, both from the multidimensional perspective of the impacts to be considered (referring to the SEA which includes the environmental, health, technical, scientific, economic and societal dimensions), as well as regarding the integration of stakeholders in the decision-making process (through the Public Forum itself).

The Public Forum reflects the *equity* principle by explicitly mentioning it: ‘*it is important to apply the equity principle. This amounts to the fact that no one can take unidirectional advantage from a good whose disadvantages are carried by others*’...or ‘*we want to show the future generations how we thought about this issue and explain why we made this choice*’. The NIRAS Plan reflects intra- and inter-generational equity from a basically instrumental point of view. Indeed, the NIRAS Plan states (NIRAS, 2010 p.126) that the geological disposal solution should be implemented rapidly, so as not to keep the municipalities in uncertainty and to keep the management costs down (intra-generational equity), and so as to avoid putting the responsibility on the future generations (inter-generational equity).

Precaution is implicitly guiding the stakeholders’ decisions in the Public Forum, yet it is not mentioned explicitly in the Report. One of the leading questions of the Report is ‘*how can we guarantee that our environment and health will not be damaged?*’. The precautionary approach is actually used as a strategy to deal with uncertainties, especially in the long run, as indicated by the fact that the decision that will be taken through the NIRAS Plan is a ‘decision in principle’, forming the first step of a long decision-making process. The Public Forum report also states ‘*we want maximum certainty and the necessary resources to achieve that certainty need to be ensured*’. And further: ‘*there need to be enough resources for at least two scenarios: the reference scenario and the backup scenario*’. This ‘keeping options open’-stance is a typical feature of the precautionary principle. This approach ultimately led the Public Forum stakeholders to issue a recommendation to NIRAS inspired by inter-generational equity (see above), stating that the NIRAS proposal (deep underground waste storage) should be reversible for a period of at least 100 years. However, financial means to realize this are not guaranteed.

Participation was self-evidently a key element of the Public Forum, which was explicitly set up to include non-experts (lay people) in the decision-making process. The Report states: ‘*we provide information about the values, norms, arguments and considerations that need to be considered when taking a decision on the long-term management of radioactive waste (...)*’, thereby acknowledging the fact that such a decision cannot be based on scientific inputs alone. The NIRAS Plan’s participation section leaves ample space for interpretation, as the organization of the participation is said to be dependent of the principle decision as well as of the decision-making phase (NIRAS, 2010 p.139). This is a reflection of NIRAS’ stated stepwise approach, and time will tell how this situation evolves.

The holistic perspective is reflected in the Public Forum, although the issue of risk is –logically– fraught with uncertainty. The process and procedural aspects guiding the Public Forum reflect the sustainability assessment characteristics, yet are not made explicit in the Report. The uptake of some of the Public Forum’s explicit recommendations in the NIRAS Plan is an indication of the actual influence of the exercise, although the influence stretches beyond that, as illustrated by the reflection of many sustainability assessment characteristics in the NIRAS Plan itself.

The Public Forum allowed to pinpoint the variety choices in the radioactive waste management debate, refuting the image of decisions generated in relative secrecy through mere scientific input. The Public Forum's recommendations have been partly taken up by the NIRAS Plan, although assigning particular sections of the plan to particular remarks made during the Public Forum is challenging.

Rooted in the principles of sustainable development, the Public Forum's initiation as a major input into the formal SEA as well as the recommendations it yielded, does amount to a 'sustainability assessment', although there remains space for improvement (see Table 3).

So is all for the best in the best of all worlds? Well, not exactly, as any sustainability assessment exercise is performed within a particular institutional, intellectual and discursive context. The context in which a sustainability assessment is performed will influence the terms according to which particular issues are discussed, and will define the perceived possibilities to act (Hajer & Versteeg, 2005). The importance of context means that the definition of policy problems should not be taken for granted, as it will be influenced by many external factors (institutions, pervasive discourses on the issue at hand, political culture *etc.*).

In our case study, the management of radioactive waste is framed within the sustainable development debate, but this again is a normative choice with far-reaching consequences. To put it bluntly, can an assessment exercise, performed on an aspect of the nuclear energy chain, be a sustainability assessment when there are fundamental discussions on the sustainability of nuclear energy itself (Mourov, 2000, Verbruggen, 2008)?

6.3.6 Reflections on nuclear energy and the interpretational limits of sustainable development

Yet the key question remains: is nuclear energy sustainable 'at all'? If it is not the case, any sustainability assessment on aspects of the nuclear energy chain (power plant location, decommissioning, radioactive waste management *etc.*) will actually be performed in an un-sustainable frame, due to the very nature of the operations it assesses. Off course, the *existing* waste problem needs to be solved anyway, regardless of ethical considerations on the wider context. The question whether sustainability assessments then act as a smokescreen to grant nuclear energy a 'green' or 'sustainable' image is complex, and scholars disagree on the answer to provide. The answer often depends on normative views. Various scholars stress different sustainability principles, and these differences in emphasis greatly influence positions on nuclear energy (and hence on assessments performed within this field).

Here again, what one calls intergenerational equity will be determined by normative views and values. The Public Forum of the radioactive waste management case study recommends the 100 years reversibility check and as such takes a pragmatic stance towards the principles of inter-generational equity. Meadows (1998) defines sustainability as 'good lives for all people in harmony with nature'. Is nuclear energy in harmony with nature?

Every sustainability assessment needs to have a defined scope to avoid endless discussions and to ensure manageable recommendations. But this does not preclude stakeholders (initiators and participants) in a sustainability assessment exercise within the nuclear energy chain to reflect on the sustainability of nuclear energy as such. Recently, the debate on the sustainability of nuclear energy is centered on the avoided greenhouse gas (GHG) emissions. Duffey (2005) for instance, raises relevant issues when stating that conservation, renewables and efficiency alone will not significantly reduce the GHG burden. However, it is overly un-critical to state '*...nuclear energy supports and enables the World in its journey to a sustainable, safe and secure energy future*' (Duffey, 2005). Others seem to partly elude the question. The International Atomic Energy Agency's Nuclear Energy System Assessment (NESA)

assists Member States in assessing their long range strategic planning for existing or future nuclear energy systems. The Nuclear Energy System Assessment is a holistic approach that uses an internationally validated tool — the INPRO methodology — to support long-term planning and strategic decision-making on nuclear energy development and deployment. The sustainability of nuclear energy production as such is not explicitly questioned (Sokolov & Beatty, 2010).

Adamantiades & Kessides (2009) hold a more balanced view. Although they recognize the contribution of nuclear energy to the reduction of GHG emissions, they list a series of ‘significant issues’ that explain the reservations of the public and decision-makers alike: nuclear safety, radioactive wastes and proliferation. Verbruggen (2008) decomposes sustainability in ten dimensions, on which nuclear energy scores badly: *e.g.* on democratic participation, nuclear energy is mainly characterized by technocratic decision-making; on global accessibility it scores badly as it is capital-intensive and as it entails proliferation risks. On ecological aspects: it is a low-carbon technology, yet the waste problem is still unsolved. The risks posed by nuclear energy are not insurable and safety remains an issue. Furthermore, the technological evolution of nuclear energy is uncertain, *etc.* Added to these findings, Verbruggen (2008) shows that nuclear power and renewable energy are opponents, what leads him to reject nuclear energy as a sustainable energy source. Eggermont & Hugé (2011b) argue for a (time-)limited contribution of nuclear energy in energy production yet warn for vulnerability and proliferation risks.

This brief elaboration on sustainability and nuclear energy illustrates the wide array of views. Most scholars’ and citizens’ opinions are to be situated somewhere on that continuum of perspectives, yet the basic principles and the interpretational limits of sustainable should guide any decision on our energy future. Impact assessments -and especially sustainability assessments- can only contribute to a more sustainable energy future if the context in which they are applied, fosters sustainability.

The (un-)sustainability of nuclear energy itself should always be kept in mind when applying sustainability assessments on aspects of the nuclear energy chain. This should not lead to intellectual paralysis, nor to discarding assessment processes in that field. Instead, this reflection aims to trigger transparent discussions on a sustainable energy future, which will necessarily be an continuous learning process.

6.3.7 Conclusion

The description of sustainable development and of a sustainable energy future is open to interpretation. Within the interpretational limits of the sustainability concept however, basic principles require respect if they are to foster sustainable development. Decision-supporting processes like impact assessments must turn sustainable development into a decision-making strategy. Various types of impact assessments contribute to the energy policy debate by structuring information flows, yet the characteristics of ‘sustainability assessments’ in support of energy policy decisions remained vague. This paper proposes a set of characteristics for sustainability assessments: any assessment should foster sustainability; it should have a holistic perspective; it should integrate sustainability into process and procedure and it should actually support decision-making.

A sustainability assessment being performed within a broader framework (*e.g.* on sub-aspects of the nuclear energy chain), it should critically consider and evaluate that framework. Through a case study on an assessment initiative in support of the development of a radioactive waste management plan we aim at broadening the debate to include the wider context in which impact assessments are performed. Although the analyzed assessment exercise reflected most of the characteristics of an ideal-typical sustainability assessment to some degree, its influence on the decision-making process leading up to the actual radioactive waste management plan did not go as far as questioning the sustainability of the choice for nuclear energy. This is not to say that the exercise did not yield interesting results –indeed it contributed to the societal debate on the management of radioactive waste which is a topical and urgent issue regardless of one’s stance towards nuclear energy- yet the context within which the assessment was framed was not explicitly questioned.

The controversy on the sustainability of nuclear energy is still ongoing and should imperatively be kept in mind when performing sustainability-oriented impact assessments on nuclear energy issues. This is not to say that sustainability assessments should not be performed on aspects of the nuclear energy chain, but it underlines the need for a critical stance towards their actual contribution to sustainable energy futures, especially when the source technology is subject to debate.

CHAPTER 7: CONCLUDING DISCUSSION

7.1 Setting the stage

7.1.1 The sustainable development meta-discourse

Sustainable development rings a bell with anyone involved in (public) decision-making in the early 21st century. It seems to refer to anything akin to the quest for a ‘better future’ and is hence considered to be a good thing that everyone should try to achieve. Despite this overall –and sometimes superficial- agreement, the actual content of the concept as well the actions needed to realize it, are subjected to heated debate.

Sustainable development is an umbrella concept that can be interpreted in a variety of ways by various societal actors in different contexts: its constructive ambiguity is both a strength –as it allows to gather everyone behind its banner- and a weakness –as the risks of terminological and political misuse are manifold. Yet its interpretation cannot be stretched to infinity: it is contained by so-called interpretational limits. Sustainable development – used synonymously and interchangeably with sustainability- does refer to a stable set of principles such as: global responsibility, integration, intra- and intergenerational equity, a prospective approach, precaution and participation.

However this set of principles again entails different understandings. As a normative and value-laden concept, the interpretation of sustainable development will always be controversial; this contestability is indeed one of its inherent characteristics.

This multi-interpretability is reflected in the view of sustainable development as a meta-discourse, encompassing a series of shared, structured ways of speaking, thinking, interpreting and representing the world.

The modern (re-)emergence of sustainable development was underpinned by a series of ‘milestones’ in the form of influential reports, international political events and civil society initiatives, but this was not a directed process with assigned responsibilities. The concept rose to the centre of policy debates almost organically as a result of lessons learned.

A literature analysis allowed to identify different sustainable development (sub-)discourses. We suggested a categorization into four ideal-typical discourses, which are in reality often consciously or unconsciously intertwined and whose boundaries are not absolute, but which help to anchor thoughts at the beginning of the research journey. All of these are situated within the realm of general sustainability principles, but some do indeed seem more at risk of being interpretively stretched to triviality.

- The first discourse presents sustainable development as the integration of environmental and developmental objectives;
- The second discourse states that sustainable development builds on the idea of limits (to economic growth for instance);
- The third discourse interprets sustainable development mainly as a process of societal and behavioural change, and
- The last discourse emphasizes the consensual and unifying character of sustainable development.

7.1.2 Sustainable development: from concept to decision-guiding strategy

This divergence of understanding expressed in the multiple sustainability sub-discourses does not prevent it from being a decision-guiding strategy.

The assumption underpinning sustainable development as a decision-making strategy is rooted in the belief that assessing the sustainability of the outcome of (public) decisions will contribute to improve the quality of these decisions, and their subsequent results.

Assessing the sustainability of the future outcome of decisions however, is not an easy task. It has evolved into a field of science and practice of its own, termed sustainability assessment.

Sustainability assessment describes a series of stepwise processes aimed at operationalizing sustainable development as a decision-guiding strategy through the identification of the future consequences of current and planned actions.

The overall objective of this thesis was to analyse sustainability assessment as a bridge between the concept of sustainable development and public decision-making (Figure 7.1).

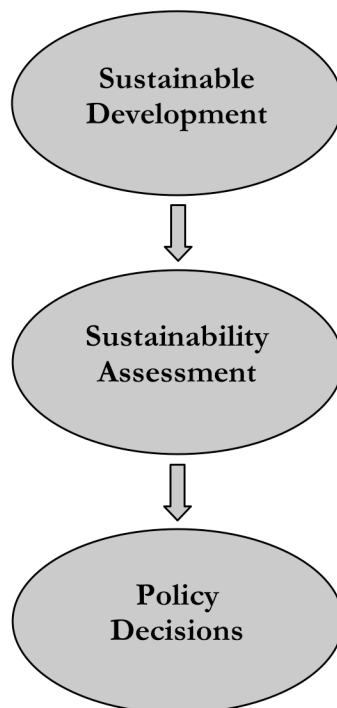


Figure 7.1 Sustainability assessment: a bridge between sustainable development and policy decisions

If sustainable development is to be a decision-guiding strategy in practical situations, decision-makers need to know the answers to three questions:

- How can sustainable development be interpreted as a practical decision-guiding strategy?
- How can knowledge flows be structured in order to feed the decision-making process?

- How can sustainable development influence decision-making?

These three questions are reframed as three challenges:

- the interpretation challenge
- the information-structuring challenge
- the influence challenge

These questions and challenges are the starting points of this thesis, which aims at shedding light on how sustainable development can be used as a decision-guiding strategy through the assessment of the sustainability of -public policy- proposals.

7.1.3 Understanding sustainability assessment: the dynamics of discourse and institutions

Understanding and fostering sustainable development requires both intellectual and institutional capital: generating and managing knowledge is essential to realize the ambition of sustainable development as a decision-guiding strategy, yet knowledge can only feed into public decision-making if the characteristics of the decision-making process itself (*in casu* public policy making) are duly considered. The intellectual capital on which actions towards sustainability need to be built is hence always linked to the institutional environment in which sustainability is to act as a guiding strategy.

The context in which sustainable development needs to be achieved is complex, fraught with uncertainty and influenced by normative views and values. The accelerating pace of global change requires a transformation in human perceptions and actions, yet the complexity of the global socio-ecological system, the uncertain evolution of future environmental, economic and social trends and the value-influenced perspectives of different actors demand a novel approach to knowledge production and use.

These new approaches have been conceptualized as ‘mode 2 science’, ‘post-normal science’ and ‘sustainability science’: key characteristics of all these conceptualizations include openness to various perspectives (and humility on what is not yet known), and an awareness of normative assumptions in knowledge generation and use. In order for these views to penetrate the decision-making process, adapted institutions are required: sustainable development requires a ‘governance’ approach based on shared responsibility of various societal actors. Strengthened participation is at the centre of governance for sustainable development for substantial, institutional and normative reasons (see Chapter 2).

In order to analyze sustainability assessment from a conceptual and practical perspective, this thesis follows a discourse analysis approach (Chapter 4).

We hereby follow Hajer’s definition of discourse. Discourse is an ensemble of ideas, concepts and categorizations that are produced, reproduced and transformed in a particular set of practices and through which meaning is given to physical and social realities (Hajer, 1995).

The methodology of discourse analysis explicitly appreciates sustainable development as a contested notion. Discourse analysis is typically based on a range of different methods, of which we used expert interviews, focus groups, surveys, document analysis and the Delphi approach.

As different discourses shape what can and what cannot be thought, they delimit the range of possible policy options (*e.g.* these options that can be considered in a sustainability assessment) and thereby serve as precursors for policy outcomes.

This means that –potentially competing- sustainable development (sub-)discourses may influence the

–potentially competing– way in which sustainability assessments are performed, and *vice versa* (Runhaar, 2009). Any particular sustainability assessment approach depends on a particular interpretation of sustainable development.

In summary, discourse analysis -which allows us to analyse and understand the social processes behind shifting perceptions, definitions of problems and approaches to solutions- is combined with a focus on the institutional aspects shaping sustainability assessment.

In doing so, this thesis provides an additional lens through which sustainability assessment can be approached.

7.1.4 Theory of sustainability assessment

Sustainability assessment still is more an orientation of practice than a blueprint approach. However a set of characteristics of an ideal-typical sustainability assessment approach is proposed. These characteristics entail:

- fostering sustainable development objectives;
- having a holistic perspective;
- incorporating sustainability in the assessment process and procedure;
- supporting decisions;

This ideal-typical sustainability assessment approach can be fine-tuned (into strategic *versus* pragmatic types of assessment), but the ‘chosen’ approach will ultimately be influenced by the perceptions and expectations of actors in the policy-making process.

Different views on policy-making (*e.g.* the policy cycle *vs.* policy as interaction dichotomy) are influencing the expectations with regard to the functions of sustainability assessment, reflecting different emphasis in perspectives on policy-relevant learning processes. Hence the key functions of sustainability assessment can be (see Chapter 5):

- Information generation.
- Acting as a forum for debate and deliberation.
- Fostering attitude shifts.
- Structuring complexity.

Different tools are used in sustainability assessments of which sustainability indicators are the most well known. Through the Delphi approach, sustainability indicators are developed based on the iterative questioning of experts. It was applied to compile a set of sustainability indicators for Clean Development Mechanism projects in Vietnam.

In summary, sustainability assessment is a decision-supporting process, which is not strictly codified and institutionalized. This allows for experimental sustainability assessment approaches to be applied yet it also carries with it the risk of trivialization of the exercise, hence the importance of keeping key characteristics in mind.

Ultimately, analyzing the practice of sustainability assessment is essential to understand and improve the integration of sustainability in the decision-making process. This is the underlying motivation for the case study approach followed in this thesis.

7.2 Zooming in: practice of sustainability assessment

7.2.1 Three case studies

Three cases of sustainability assessment were analyzed in detail.

- The first case study focuses on the emergence, the development and the pilot application of sustainability assessment in Flanders, Belgium's northern region (Section 6.1).
- The second case study focuses on the sustainability assessment of national Poverty Reduction Strategies and consists of an analytical section and of a detailed case study account from Benin, West-Africa (Section 6.2).
- The third case focuses on the conceptualization and application of sustainability assessment for energy policy in particular in the specific context of radioactive waste management in Belgium (Section 6.3).

The choice for a case study approach is motivated by our view on sustainable development as a political reality going beyond a mere conceptual reflection. In agreement with Lafferty & Meadowcroft (2000), we believe that the observed discursive and practical behaviour of policy-makers should contribute to interpret sustainable development in a particular context. Similarly discourse analysis recognizes that sustainability assessments cannot be grasped outside their context because their function and meaning are intrinsically dynamic.

In the same vein the terms according to which specific issues are discussed, define the way in which a topic is experienced and thereby also define perceived possibilities to act (Hajer & Versteeg, 2005). As these terms differ between different settings, a case study approach is considered pertinent.

Context can be broadly defined as the circumstances in which a sustainability assessment is performed. It refers to a range of factors that give meaning to and shape sustainability assessment. Context may refer to the characteristics of sustainability challenges (complexity, uncertainty and change, value-laden perspectives), and to the institutional and cultural environment in which a sustainability assessment is conceptualized and applied.

The institutional context describes the characteristics of the decision-making process and the institutional setting, which influences the functions of sustainability assessment (Runhaar & Driessen, 2007), and which differs between the chosen case studies.

The socio-economic and cultural context differs between a European, high-income OECD country (Belgium) and an African least developed country (LDC), Benin. No single model of sustainability assessment can work across all countries (Ramakrishna, 2003) and an analysis of the theory and practice of sustainability assessment will be of higher quality when different cases are analysed (Bond *et al.*, 2001).

According to Pope *et al.* (2004), in order to be effective, sustainability assessment should be applied by all sectors of society, and to existing practices across all sectors. The three analysed cases provide an insight in the practice of sustainability assessment in different sectors (energy policy, development co-operation); involving non-state actors (all cases build at least in part on participatory methods) and performed in different institutional environments (the sub-national level of a high-income country; the national level of a least developed country and the sector level (energy policy)).

Despite the contextual and substantive differences between the cases, each case focuses on proposals that are expected to have economic, social and environmental consequences. In each of the case studies, sustainability impacts are taken into account –at least partly- by means of the involvement of external actors.

Each case includes an application and/or an analysis of participatory sustainability assessment. Through the following reflections we intend to shed light on how sustainability assessment fulfils its purpose of turning sustainable development into a decision-guiding strategy.

7.2.2 Interpretation in practice: discourse & assessment

The case studies show that the interpretation challenge of sustainable development is central in sustainability assessment, as:

- sustainability assessment is a forum where actors holding potentially divergent interpretations of sustainable development meet and discuss which may lead to shifts in the involved actors' interpretations and hence shifts in discourse; and as
- the purpose, content and process of the analyzed sustainability assessments are all influenced by a series of discourses (interpretive schemes) beyond the realm of the actual sustainability assessment.

Sustainability assessment and discourse are linked in a two-way relationship. The interpretation of sustainable development in a particular context, expressed through converging or competing discourses, influences the conceptualization and the practice of sustainability assessment.

But the relationship also works the other way around: performing a sustainability assessment influences the interpretation of sustainable development in a given context. Sustainability assessment may foster discourse reflection: it can foster a reframing of the interpretation of sustainable development by leading to reconsider initial discourses, thereby indirectly influencing -future- decision-making (see also § 7.2.5).

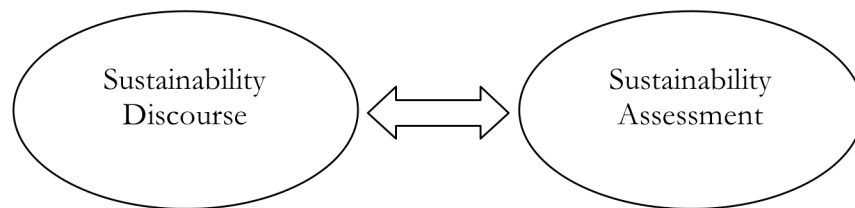


Figure 7.2 Two-way relationship between sustainable development discourse and sustainability assessment

In the following qualitative analysis, indications of the two-way relationship between sustainability discourses and sustainability assessment are discussed. The presence of discourse elements from the main sustainable development sub-discourses introduced in Chapter 2 is discussed.

The approach is based on the results of the case studies (see Chapter 6), which included an analysis of the linkages between sustainability assessment and discourse based on a various methods (document analysis, expert interviews, focus groups).

Case study 1: Sustainability assessment in Flanders, Belgium

The interpretation of sustainable development was discussed in an open debate (involving civil society representatives and officials) during the drafting of the second Flemish Regional Sustainable Development Strategy (*Vlaamse Strategie Duurzame Ontwikkeling*) in 2010.

A sustainability assessment framework was subsequently developed centred on this –partially-participatory interpretation of sustainable development, which was deemed relevant and sufficiently inclusive by civil society representatives and officials during open discussions and which emphasized ‘transition management’ as a novel approach to sustainable development policy in Flanders. Transition management reflects the ‘sustainable development as change’ sub-discourse, and although challenging for government actors, as it requires a strong motivation for changing embedded practices, it also offers interesting opportunities for innovative solutions to pressing societal challenges (Paredis, 2010). Yet this recently officially endorsed transition management approach is not the only interpretive scheme influencing sustainability assessment in Flanders. Based on the case study results the concept was probably too ‘new’ to exert an identifiable influence on the stakeholders in the impact assessment-focus group for instance.

To fully understand the conceptualization of sustainable development in a Flemish sustainability assessment perspective, the indirect influence of the converging discourses underpinning both regulatory impact assessment (RIA) and sustainability assessment (SA) need to be kept in mind. Although the RIA dynamics (discourse, reform process, practice) did not interfere with the Regional Sustainable Development Strategy initiatives, the –partly unjustified- economic connotation of RIA will probably have a lasting influence on the interpretation of sustainable development in sustainability assessments in Flanders (Hugé & Waas, 2010). In the case study this was apparent in the interpretations of Flemish officials –who were familiar with RIA- but not in the citizens’ interpretations of sustainability. Indeed until now RIA has been a merely administrative process. However the ongoing merger of RIA and SA –initially through the set-up of the ‘quick scan for sustainable development’ (early 2012)- will probably lead to opening up the closed RIA process to other actors.

Pilot sustainability assessment exercises with citizens provided an interesting opportunity to fine-tune this preliminary conclusion. The evolving Regional Sustainable Development Strategy framework (the first version dates from 2006; the second version dates from 2010), provided a bird’s eye view of what sustainability means in Flanders, and helped the actors involved in the pilot exercise to make sense of what sustainability impacts ‘were all about’ although the renewed Regional Strategy focus on transitions did not percolate yet. At the same time citizens were given the opportunity to suggest new aspects complementing the politically endorsed interpretation of sustainable development. It appeared slightly more difficult for citizens to view sustainability beyond their immediate experiences with the tangible ‘sustainability’ challenges of everyday life (traffic jams, fair trade products, public transport *etc.*), and sustainability assessment might not be sufficient as a forum to broaden the interpretation of the concept, as it typically focuses on one particular policy issue or sector (in the case of the pilot exercise spatial planning). In later stages of the research we initiated a reflection together with regional officials to start to codify and structure a sustainability assessment approach for Flanders. The Regional Sustainable Development Strategy soon appeared to be quasi unknown to Flemish officials and alternative interpretations of sustainable development were proposed in informal meetings to broaden the basis of an updated Flemish sustainability assessment system.

The case study findings indicate that sustainability assessment acts as a process to ensure a contextually adapted, and in part case-specific interpretation of the dynamic sustainability concept. The participants in the impact assessment-focus group indicated (through an *ex post* evaluative questionnaire) that their interpretation of sustainability had been broadened after the exercise.

On a more general level, the interpretation of sustainability discourse and of sustainability assessment among government officials are both influenced by the RIA experience.

Although the participatory drafting of the updated Regional Sustainable Development Strategy can be a start for mutual discourse reflection, it does not provide a sensible base for a generally accepted operationalization of sustainable development in assessment exercises in Flanders. The interplay between the better regulation and sustainable development discourses, and its expression in the

shifting conceptualization of impact assessment in Flanders, can be considered initial signs of discourse reflection.

Case study 2: Sustainability assessment and Poverty Reduction Strategies

The Poverty Reduction Strategy (PRS) case (Section 6.2) entailed a ‘prescriptive’ section where a holistic vision of sustainability -as synthesised from the academic literature and from reference documents of international organizations- is developed and used to give an indicative ranking of the sustainability of various countries’ Poverty Reduction Strategies. This sustainability assessment was a desk exercise that allowed us to ‘flag’ topical sustainability challenges that could/should then be tackled in a contextually adapted way. The interpretation of sustainable development used to assess the PRSPs reflects the integration discourse, as expressed in the conceptual framework of ‘ecosystem services’, linking ecology with human wellbeing. This discourse ‘fits’ with the intertwined development and environmental challenges inherent in current development cooperation practice. The term ‘environmental sustainability’ was chosen to describe the focus on the (socio-)ecological dimension(s) of sustainable development in the context of PRSP greening (Hugé & Hens, 2007).

In practice the dominant sustainability discourse reflected in the case study of the sustainability assessment of the Benin Poverty Reduction Strategy, conducted by a Beninese team of officials from the environmental and financial administration, was actually heavily influenced by a classical ‘development through growth’ discourse embodied in the ‘Western-backed’ concept of the Poverty Reduction Strategy Paper (PRSP). This view is akin to the consensus and integration discourses of sustainable development, and does not consider limits to human activities as pertinent.

Although dissonant opinions were openly aired by some civil society participants (*e.g.* concerning the lack of a more ‘social’ poverty-environment narrative in the Benin PRSP), these alternative views did not reach beyond the assessment process into the final document.

There are two possible ways to analyze these observations: one is to focus on the signal function of sustainability assessment that allowed to reflect on the relevance of sustainable development for a least developed country: lessons were learned on the conceptualisation of sustainability (Hugé & Hens, 2009), the views and concerns of state and non-state actors were heard and although not all views trickled down to the final strategic document, no explicit conflicts emerged and the public debate on PRSPs was -somewhat- strengthened.

The other view emphasizes the dominance of Western economic paradigms in the PRSP approach – and maybe even in most sustainable development (sub-)discourses- and concludes that sustainability assessments conducted on an institutionalized aid conditionality mechanism such as the PRSP are too constrained by this sensitive political context to yield alternative interpretations of sustainable development (*e.g.* focussing on change or limits). By co-opting potentially critical voices in the development debate, the sustainability of PRSPs could potentially turn into a superficial exercise reminiscent of ‘green-washing’ intrinsically un-sustainable power relations between North and South.

Yet the analysis of the process in Benin teaches that donors are sometimes considered as necessary promoters of a more sustainable development by African civil society actors so as to put pressure on the ruling elites (Hugé & Hens, 2009). The caricature of growth-obsessed donors *versus* community-driven African policy-makers is counterproductive and untrue. The influence of donors can be potentially positive if it allows to introduce sustainable development in a context of dialogue. But finding a balance between a country-own interpretation of sustainability and an open mind to new conceptualizations is difficult in the historically charged context of development co-operation. Sustainability assessment may at best form a modest contribution to the operationalization of an adapted sustainability interpretation respecting ‘universal’ interpretational limits.

Case 3: Sustainability assessment for energy policy

When applied in support of sector policy decisions, the main lesson learned is that the practice of sustainability assessment cannot be understood in isolation from firmly anchored policy choices.

Framing the participatory assessment of the Belgian radioactive waste management plan in the sustainable development discourse, as done by NIRAS, is a normative choice. This means that the source technology of the chain of actions and actors involved in a sustainability assessment should be critically considered.

In the energy policy case the participants did not call into question the choice for nuclear energy as such with regard to the interpretation of sustainable development. The consensus conference setting provides the space to reflect on this issue, as indicated by a similar exercise in the United Kingdom, where the panel called for a non-expansion of the nuclear energy sector (Zurita, 2006). The Belgian case did however contribute to tangible recommendations that contribute to the interpretation of sustainability principles such as inter-generational equity but failed to explicitly consider the ‘bigger picture’.

The questions underpinning any sustainability assessment should include a reflection on the (un-)sustainability of the broader context (be it development co-operation, Western lifestyles as such or nuclear energy). Sustainability assessment may not serve to justify practices that lie beyond the interpretational limits of sustainable development. Notwithstanding this *caveat* sustainability assessment can trigger a reflection on the long-term sustainability of energy sector policy decisions that may at first seem non-questionable due to their embedding in everyday habits and institutional frames.

The interpretation challenge of sustainability assessments is dealt with in a variety of ways, but in every case sustainability assessment functions as a forum for debate. In some cases, this may lead to the refinement or to the emergence of contextually adapted interpretations of sustainability, while in other cases, it may lead to the instrumentalization of sustainability assessment to advance specific, self-interested interpretations of the concept. The experimental, not (yet) institutionalized nature of the analyzed sustainability assessments may explain these divergent perspectives. The potential of sustainability assessment to influence dominant discourses through an open reflection exists, and indications of initial discourse reflection were identified, yet sustainability assessment seems not sufficient to induce discourse reflection on its own.

7.2.3 The information-structuring challenge: participation in practice

Influential discourses within and outside the realm of sustainable development not only shape the interpretation of sustainability in a sustainability assessment, but also shapes the way information emerges and the way it is structured, as argued by Rozema *et al.* (2012). Indications for this construction of both the content (see 7.2.3) and the process (this section) of sustainability assessment arose in the case studies.

Case 1: Sustainability assessment in Flanders, Belgium

The inclusion of citizens in the Flemish sustainability assessment case is in itself the consequence of a broader evolution towards increasing non-state participation in decision-making in Flanders. In the impact assessment focus groups, the participating citizens were provided with supporting tools (a mindmap and an impact matrix) to facilitate the sustainability assessment. Although they explicitly appreciated these tools, the participants were also critical: questions were asked concerning the hierarchic ranking of sustainability aspects as this was not visible in the ‘mind-map’ representation. A matrix representation may hence seem more appropriate, yet depending on the dominant discourse, ranking sustainability impacts in terms of significance must also be –at least partly- participatory.

It is interesting to note that the participants' remarks clearly link the interpretive dimension of sustainability assessment with the way in which information is conveyed. Both challenges are indeed intrinsically linked.

The impact assessment focus group method was favourably evaluated by the participants: the confrontation of scientific background information with a participatory sustainability discussion yielded fruitful results, but the government seems reluctant to go beyond the pilot stage when it comes to such open, non-classical methods of citizen inclusion. This can probably be explained both by the existence of many institutionalized participation mechanisms such as advisory boards and by scepticism towards opening up the decision-making process 'too much' in an early stage.

Case 2: Sustainability assessment and Poverty Reduction Strategies

The Benin Poverty Reduction Strategy sustainability assessment was duly planned according to a SEA (strategic environmental assessment)-inspired stepwise approach yet organizational problems occurred. This did not stop the exercise nor did it break the momentum: instead of a planned working group-based iterative process, the bulk of the actual participatory sustainability assessment work was realized at a workshop where most of the involved actors gathered, as well as through informal networking and formal reporting.

This does not mean that structured assessment frameworks such as the initially proposed SEA-scheme or such as the PRSP assessment framework (Hugé & Hens, 2007) are useless. Instead they provide an indication of the way in which sustainable development information can be presented and analysed: the ecosystem services approach, the sector approach, the classical 'pillars' approach or the Flemish transition approach divided in 'components of daily life' can all be useful, as long as decision-makers are provided with user-friendly and valid information-structuring frameworks. In the Benin case a classical sector-based structuring of information flows was proposed by way of the working groups, reflecting the integration and consensus sustainability discourses.

Participatory sustainability assessment is said to be particularly relevant in countries with a young democratic trajectory according to Munton (2003). Sustainable development –at least in its consensual interpretation- has become an acceptable frame for criticizing governmental policies in a covert way (Munton, 2003).

In Benin the forum function of sustainability assessment allowed civil society actors to criticize the dominant sustainability narrative in the Poverty Reduction Strategy Paper (PRSP). The characteristics of participatory sustainability assessment in the South are not as clear-cut: Munton (2003) states that citizens are mainly called upon for their local knowledge, and less for proposing alternative policy options. In the Benin case however local grassroots NGOs were found to have difficulties in 'talking the talk' of sustainability at strategic policy-level, despite their good knowledge of the situation on the field. The risk of marginalization is high for grassroots NGOs that do not have capacity to involve in lobbying and sustainability assessment apparently did not provide grassroots NGOs with a voice in Benin (Hugé & Hens, 2009).

Case 3: Sustainability assessment for energy policy

Participatory structuring of information on complex issues (such as nuclear energy policy) which are classically dealt with through technocratic decision-making, is a serious challenge. The case taught us that sustainability assessment can contribute to a better public understanding of the sustainability implications of the waste management aspect of the nuclear energy chain, and subsequently to policy recommendations on the issue. The structuring of information in the report of the consensus conference (where citizens discussed the sustainability implications of a radioactive waste management plan) is interesting: it follows a process- and principles-based approach to sustainable development, entailing chapters on participatory decision-making; (ir-)reversibility; safety, risks &

recycling; national and international policy frameworks; long-term financing of waste management and communication (King Baudouin Foundation, 2010).

The information-structuring challenge in the analyzed cases materialized through the perspectives and the organisation of public participation. The practice of participatory sustainability assessment yields encouraging results regarding information structuring: from gathering new –citizen- knowledge for policy-makers to contributing to the translation of scientific findings into the public realm, participation also increases the relevance of somewhat abstract sustainability principles (e.g. by suggesting a ‘translation’ of inter-generational equity into the 100 year reversibility check regarding the geological disposal of radioactive waste). However, the case studies also point to persistent challenges such as the degree and the timing of participation, symbolic participation and the lack of transparency with regard to the inclusion of non-state stakeholders’ views.

7.2.4 The influence challenge: from policy recommendations to discourse reflection

The influence of a sustainability assessment (on public decision-making) is equated to its policy impact *sensu lato*. What constitutes policy influence depends on which functions one assigns to the sustainability assessment process. Hence the way in which policy influence is defined ultimately depends on one’s view of policy-making as well as on one’s view of sustainable development itself (see section 5.2.3).

One perspective is to see the emergence of sustainability assessment as a positive evolution anyhow as it embodies a participatory interpretation of policy-making by taking value judgements into consideration and by being in line with multi-actor decision-making. The findings of the case studies as well as the findings of Rozema *et al.* (2012) indicate that ‘naïve’ sustainability assessment enthusiasm is not pertinent, as in reality sustainability assessments are rife with external motivations and as their influence on policy decisions is at best uneven.

Another perspective on policy influence looks at the actual developmental outcomes of sustainability assessment. These outcomes refer to the assessment’s influence on the social, economic and environmental outcomes of a policy proposal. The directly assignable developmental outcomes are often limited and/or difficult to identify and could not be attributed with certainty in any of our cases. However a proxy for these developmental outcomes is provided by the *post*-sustainability assessment policy documents. In the Benin case and in the energy policy case, these documents (respectively the ‘greened’ PRSP and the radioactive waste management plan) were analyzed and some recommendations resulting from the sustainability assessment were taken up (see sections 6.2 and 6.3).

A third perspective focuses on the contribution of sustainability assessment to ‘policy-relevant learning’ (Busenberg, 2001) or to ‘discourse reflection’ (Runhaar *et al.*, 2010) as a way of influencing policy. The policy influence of sustainability assessment can only be grasped by moving beyond immediate instrumental learning effects. Although these can be important sustainability assessment positions itself in the shift from a ‘prediction and control’ interpretation of impact assessment to a management approach fostering conceptual learning which ideally leads to new perspectives, a broadening of policy horizons, a reframing of policy issues and ultimately to social learning and societal change.

Measuring policy influence is difficult. Policy-relevant learning can be analyzed through semi-structured interviews or surveys (Jha-Takur *et al.*, 2009) while an analysis of discourse reflection

demands a combination of methods (*e.g.* document analysis, participant observation, interviews..) (Runhaar *et al.*, 2010). The policy influence of the analyzed cases is summarized below.

Case 1: Sustainability assessment in Flanders, Belgium

In the Flemish case, sustainability assessment-induced learning was limited to the participants of the pilot exercise who expressed a general sense of satisfaction based on the idea that they had gathered new insights, yet the policy influence was limited as the recommendations were not taken up by government officials.

The very development of a Flemish sustainability assessment framework, still ongoing at the time of writing (April 2012), however, has probably already led to broadening the policy horizon of at least a small group of government officials and policy advisory boards who were actively involved in drafting the framework in a series of working group meetings. Further research is needed here (*e.g.* through interviews to follow up on the 2009 survey (Hugé, 2009)). The future evolution of sustainability assessment in Flanders will tell to what degree these learning effects will be verified and strengthened.

Case 2: Sustainability assessment and Poverty Reduction Strategies

Analyzing the policy influence of sustainability assessment in least developed countries (LDCs) is challenging. Some scholars (Dryzek, 2005) describe LDCs as less structurally hospitable contexts for sustainable development, particularly due to institutional weaknesses, yet the potentially productive ‘discursive malleability’ in the South contrasts with the more inert ideas on sustainability in Northern established interest groups (as indicated by the divergent approaches to sustainability expressed by the main actors of the Benin PRSP greening *vs.* the approaches of the grassroots NGOs).

Policy-makers and participating actors alike may however distrust sustainability assessment and perceive it as a ‘Trojan horse for bringing in western values such as participation’ (Runhaar, 2009).

Generalizations are tricky in this respect and even if the Benin sustainability assessment was clearly framed in a North-South development co-operation perspective some civil society participants were actually demanding donor pressure to keep sustainable development high on the national agenda (Hugé & Hens, 2009).

The sustainability assessment of the Benin Poverty Reduction Strategy yielded stimulating results with regard to policy influence through policy-relevant learning. The inclusion of a relatively wide range of stakeholders in the drafting of a national development strategy indeed contributed to change the way policy-making is perceived and performed. The direct influence of the sustainability assessment on the PRSP was considered positive but may not have stimulated ‘out of the box thinking’ sufficiently, as it was steered by state actors, supported by an international steering group. Indirect policy influence through conceptual learning was mentioned by the interviewed participants and might increase in the future as this pilot exercise has created expectations about next steps in the iterative PRSP process. Research on the developmental outcomes of the ‘greened’ PRSP in Benin is needed to fully assess the policy influence of sustainability assessment.

Case 3: Sustainability assessment for energy policy

The radioactive waste management case proved useful in triggering learning about social interactions (thanks to the consensus conference approach to sustainability assessment), as well as in inducing instrumental learning for the participants with regard to the technical complexity of the nuclear energy chain. However a broader reflection on nuclear energy as such did not emerge out of the sustainability assessment. The limits of sustainability assessment were visible in this case as the analyzed sustainability assessment did not have a major influence on the heavily politicized societal debate on the future of nuclear energy in Belgium. Discussions on nuclear phase out, risk and

sustainability are the result of a long process and are still ongoing (see Laes *et al.*, 2007).

Despite the sector's prudent interest for participatory methods in guiding nuclear energy governance -including sustainability assessment- (as illustrated by the 2011 SKB Spring Talks on societal approaches to nuclear waste management (Hugé & Eggermont, 2011)), the nuclear energy debate is still influenced by many divergent interests and ideologies.

Sustainability assessment is for now –at best- one of the many strategies that will contribute modestly to guide the future of nuclear energy technology. Sustainability assessment has its role to play in shaping the broadened conceptualization of technology assessment which now fosters learning processes to broaden the knowledge base on which societal decisions are built (Eggermont & Hugé, 2011b; Kastenhofer *et al.*, 2011).

The policy influence of sustainability assessments is uneven: its analysis benefits from a broad interpretation of policy influence, going beyond mere instrumental learning and including conceptual learning and discourse reflection. The long-term policy influence of sustainability assessment exercises cannot be determined from the cases, and follow-up research is needed to determine this.

7.2.5 Synthesis: what factors shape sustainability assessment?

The conceptualization and the application of sustainability assessment in various contexts is in part the result of the translation of context-dependent (sub-)discourses of sustainable development in – eventually institutionalized- practice.

But sustainability assessment is also influenced by other factors besides sustainable development discourses: perspectives about the production and use of knowledge (science for sustainable development) as well as overarching perspectives on governance for sustainable development, all contribute to ‘shape’ sustainability assessment exercises.

Figure 7.3 illustrates this view, and situates the three case studies (1. Flanders; 2. Benin; 3. Energy) in their dominant sustainable development sub-discourses. Each case was also influenced by the broader knowledge and governance landscape. The double-sided arrows indicate that the factors shaping sustainability assessment are also influenced by the sustainability assessment itself.

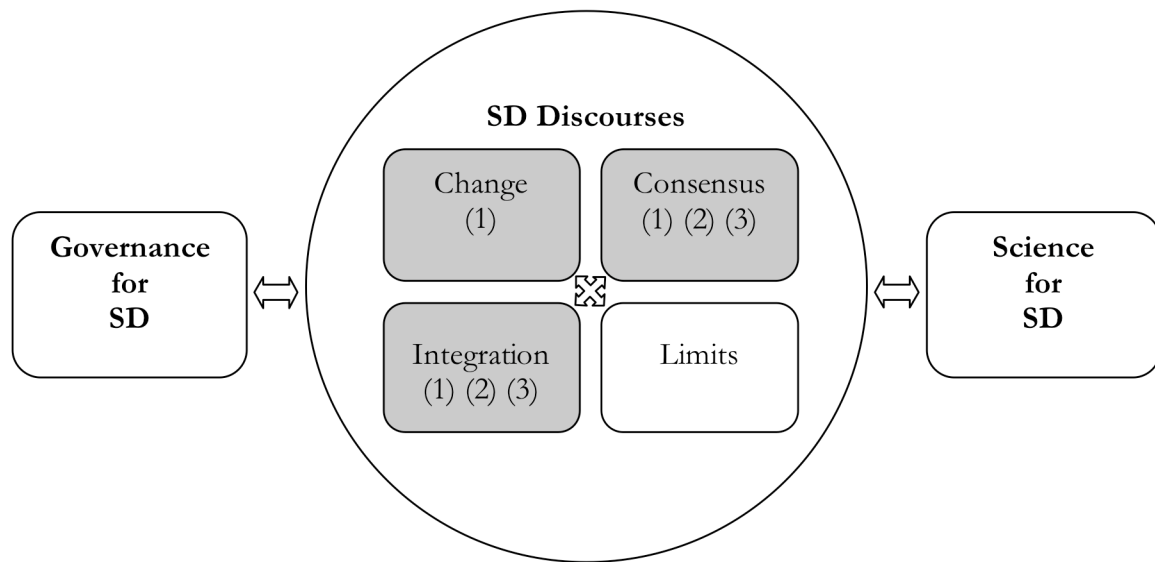


Figure 7.3 Factors shaping sustainability assessment

The numbers in the ‘discourse boxes’ refer to the case studies (1: Flanders; 2: Benin; 3. Energy). Their location in the different boxes indicate which SD discourses were dominant in the respective sustainability assessment cases. The four-sided arrows point to the interrelationship between the different SD discourses. The outer boxes refer to the influence of broader science and governance for SD discourse and practice.

The emergence of sustainability assessment – first as a concept, and increasingly as a practice – testifies to the role of discourse in transforming policy practice.

The rise of the sustainable development discourse(s), triggered by the policy challenges of accelerating global change enters the policy practice through sustainability assessment. Sustainability assessment is part of the shifting institutional arrangements that allow sustainable development to penetrate public policy-making as a decision-guiding strategy.

In an alternative illustration starting from the initial scheme of this thesis sustainability assessment can be presented as the result of the interplay between discourse and institutions in any particular context (Figure 7.4). Institutions playing a role in the various case studies are listed (left side of Figure 7.4), as are influential discourses, which include both sustainable development discourses as discourses –mostly- ‘outside’ the sustainability realm (right side of Figure 7.4).

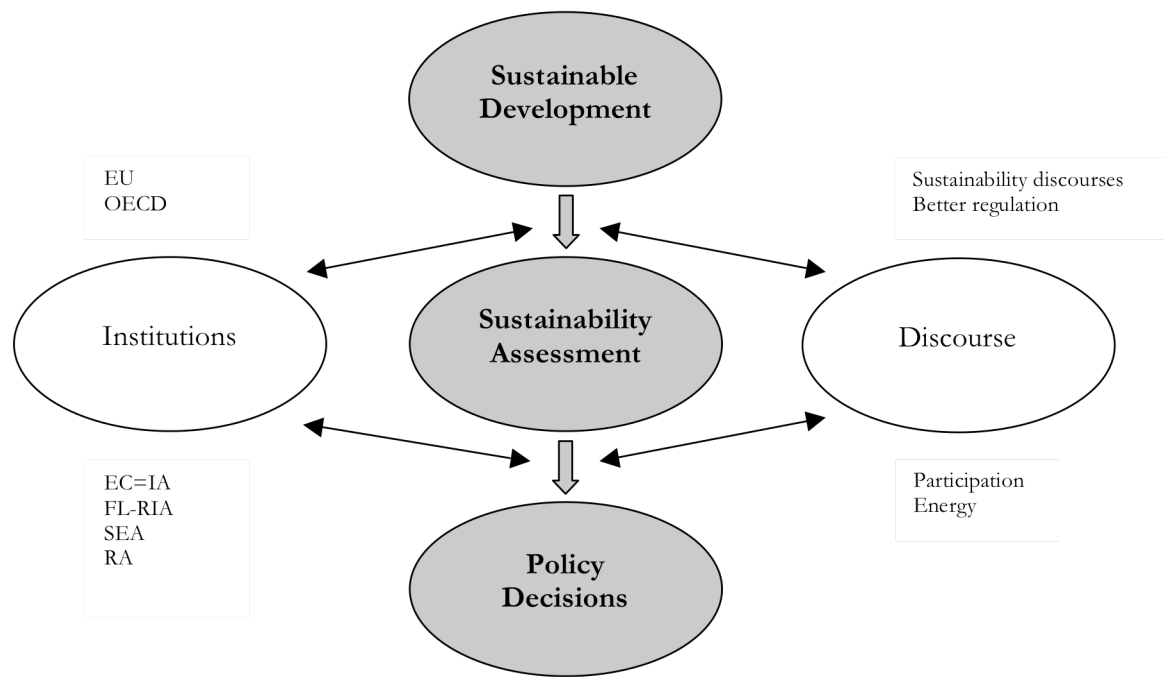


Figure 7.4 Sustainability assessment as a result of the interplay between discourse and institutions

Sustainability assessment is never introduced in a virgin institutional landscape, and depending on a society's experience with impact assessment frameworks and on the institutional mechanisms in place to foster sustainable development –i.e. institutional compatibility- sustainability assessment will take on different forms. Moreover the actual format of a sustainability assessment will be influenced by the position taken by sustainability assessment within the policy-making process: it can range from an exploratory process exploring different policy options to a process closely related to actual, tangible policy proposals.

The interplay between discourses and institutional landscape is illustrated by the convergence of the better regulation and sustainable development discourses in Flanders. Together with the existing regulatory impact assessment framework in reform -which provided a window of opportunity- this influenced the conceptualization of sustainability assessment in Flanders and started to anchor the approach in the minds of policy-makers.

The nascent experience with sustainability assessment in Benin, in Flanders and in the nuclear energy sector is no guarantee for its anchoring into day-to-day policy-making. Sustainable development is still a rather fragile concept subjected to interpretive capture and marginalization. There is no guarantee that an approach like sustainability assessment will prevail in the future but it certainly builds on the failures of past fragmented assessment approaches who consistently failed to consider specific types of risks and impacts that were –sometimes strategically- considered to be out of their scope.

Discursive dynamics are unpredictable in many ways, as institutional fields are susceptible to the influence of changes in broader discourses (e.g. environmental policy discourses, discourses on the role of the state in society *etc.*) (Philips *et al.*, 2004) and as discourses are sometimes used consciously as vehicles for policy influence, as analyzed by Lehtonen (2009) with regard to the OECD. Concerning assessments, the OECD's influence on the diffusion of strategic environmental

assessment (SEA) in development co-operation (*e.g.* through OECD, 2006 b) has been an important element in the application of sustainability assessment-type approaches in developing countries. The OECD –just like other actors- launches ideas and shapes a certain terminological and practical repertoire that gradually influences policies, in this case through emerging sustainability assessment approaches.

The position and reputation of players such as the OECD increases the influence of the discourses it carries and diffuses (Lehtonen, 2009). This is an important factor as discourses compete for hegemonic status in policy-making (Richardson & Jensen, 2000) and hence also influence the conceptualizations of sustainability assessment. This power-dimension influencing sustainability assessment is discussed in section 7.3.2.

7.2.6 Synthesis: ‘What does sustainability assessment do?’

We have seen through the case studies that sustainability assessment potentially influences policy in a variety of ways, and that its influencing power is constrained or facilitated by the discourses and institutions that shape the assessment exercise in a particular context.

In summary sustainability assessments may lead to policy recommendations (as clearly identifiable in the three cases), to changes in discourse and in institutions (Figure 7.5), and ideally also to developmental outcomes. The policy recommendations were clearly identifiable in the three case studies while indications for discursive and institutional shifts were also present, although the direct ‘causal’ link with sustainability assessment is more difficult to assess.

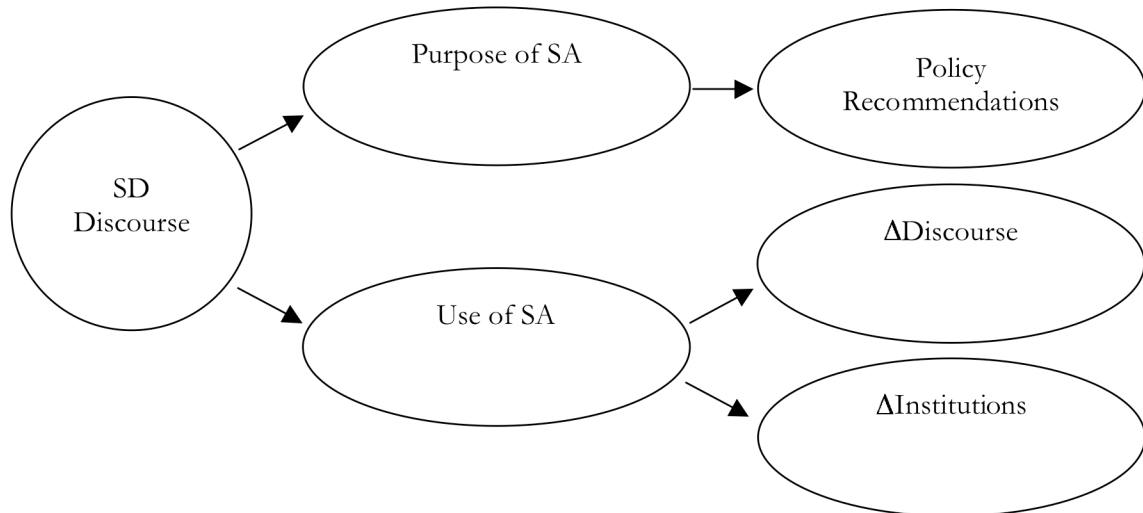


Figure 7.5 Policy influences of sustainability assessment

Although the influence between discourses and institutions works both ways sustainability assessment is most probably not sufficient on its own –or not mature enough- to fundamentally challenge discourses competing with sustainability. Yet it can play a key role in redirecting and reshaping existing *ex ante* assessment approaches.

Let's look at two contrasting views in the recent literature:

Runhaar *et al.* (2005) state that discourses have a tendency to be stable as they make reality understandable, predictable and thus safe, and because they can function as a justification for one's action. Sustainable development has the advantage to provide an umbrella concept allowing for reframing discourse– in particular through sustainability assessment. Sustainable development, as a meta-discourse regrouping various tendencies, might hence be rather 'malleable' (subject to reframing).

On the other hand sustainability assessments can be constrained by the policy being developed and by existing power balances (see for instance Sneddon *et al.*, 2006). Therefore they have limited possibilities for contributing to a reframing of sustainability and hence do not have the potential to trigger discursive shifts (Hildén, 2011).

Sustainability assessment should be able to contribute to discursive shifts so as to allow discourse not only to precede, but also to follow sustainability assessment (Runhaar *et al.*, 2005).

The Flemish case is an example of discursive convergence preceding sustainability assessment, even creating the institutional environment in which sustainability assessment could be introduced.

In the radioactive waste management case, sustainability assessment might actually precede future discursive shifts: although the assessment's participants did not question the sustainability of nuclear energy in the exercise, they provided interesting reflections.

In the Benin case indications for a –potential- two-way relationship between discourse and practice were present: the sustainable development discourse has influenced the development cooperation sector, which led to the sustainability assessment of the Benin Poverty Reduction Strategy. This initiative in turn may have led to modest changes in perceptions and discourse on sustainability in the country.

The conceptualization of the functions of sustainability assessment is to be viewed in the wider context of the anticipated importance of sustainability issues in future public debate and policy-making (discourse), as well as in light of the prevailing perspectives on the organization of –'participatory'- societal decision-making processes (institutions).

7.2.7 The ambiguity of an ad hoc approach to sustainability assessment

Despite the contextual and substantive differences between the cases, each case focuses on policy proposals that are expected to have economic, social and environmental impacts. In each of the case studies sustainability impacts are taken into account –at least partly- by means of the participation of external actors.

Yet the emergence and application of sustainability assessment evidently differed between the cases, which is hardly surprising given the different influences and context. This points to the need for diversity in sustainability assessment approaches.

An *ad hoc* approach to sustainability assessment is warranted in order to propose answers to the interpretation, information-structuring and policy influence challenges:

- in different institutional, historical and socio-economic contexts, embodying so-called path dependency (respectively the regulatory impact assessment (RIA)-influenced Flemish context, the development cooperation context and the nuclear energy context);
- for different proposals and actions (respectively a spatial planning strategy, a national development strategy, a national radioactive waste management plan).

The Flemish focus groups, the participatory workshops of the Benin PRSP sustainability assessment,

and the consensus conference in support of the drafting of a radioactive waste management plan were all useful methods in the analyzed cases but the choice for each particular approach was not the only one possible. Every case was a learning experiment for the initiators, the researcher(s) and the participants alike.

An *ad hoc* approach is inevitable to foster policy-relevant learning in different settings and to create the opportunities for an actual influence of sustainability assessment on public decision-making. However flexibility and adaptability could rapidly turn into buzzwords masking the enduring lack of consensus on what constitutes a good sustainability assessment approach. Characteristics of an ideal-typical sustainability assessment approach are proposed in this thesis, but whether sustainability assessment will ever be as codified as environmental impact assessment (EIA) and strategic environmental assessment are (SEA) (*e.g.* both are described in European Union directives) remains to be seen.

Codification would create a base for the institutional uptake of sustainability assessment by many jurisdictions but it might also mean that sustainability assessment would lose some of its power – resting in its added value compared to classical impact assessment instruments. The dynamism of sustainable development demands an open approach to sustainability assessment explicitly leaving space for experimentation and social learning. Mandatory sustainability assessments face the risk of being constrained by the power of policy-makers and may not be sufficiently innovative nor imaginative (Hildén, 2011).

On the other hand, Fischer & Gazolla (2007) warn that flexibility is likely to serve existing political interests by functioning as an excuse for inertia. They advocate clear, rigid and prescriptive government provisions for assessment approaches, especially in the context of the interpretive dynamics of sustainability.

It will be interesting to watch the evolution of sustainability assessment, *e.g.* in Flanders: will the open-minded perspective remain once the planned integration of sustainability assessment concepts and methods within the reformed regulatory impact assessment (RIA) is completed, or will sustainability assessment effectively be swallowed up by bureaucracy and turn into a mere theoretical concept and/or a tick-box exercise? Although the European Commission's Impact Assessment system proves that an integrated assessment framework may contribute to sustainable development (Bäcklund, 2009), the terminological 'neutrality' as well as the uneven implementation of the European Impact Assessments (TEP, 2007) indicate that the evolution of sustainable development needs to be watched closely: will sustainable development be fostered? Or is it just the sustainability discourse that was superficially adopted?

The challenge in designing and applying sustainability assessment is to find an appropriate balance between the need for independence, innovation and pilot applications, whilst keeping sufficient authority within the relevant governance structure for the assessment's recommendations to influence policy.

7.3 *Quo vadis* sustainability assessment?

Throughout the research journey outlined in this thesis the theory and practice of sustainability assessment have been analyzed, which led to deeper insight in the challenges one faces when using sustainable development as a decision-guiding strategy. The next sections provide an informed reflection on the 'universality' of sustainable development as a decision-guiding strategy and on the role of sustainability and its assessment in societal transitions.

7.3.1 Sustainable development in an era of global change

Sustainable development's constructive ambiguity may well be an advantage with respect to the acknowledgement of its importance, it also makes it challenging to denounce 'improper' interpretive flexibility. The risk of trivialization overhangs sustainable development like the sword of Damocles.

Although sustainable development encompasses many different discourses, the omnipresence of 'sustainable' buzzwords and the integration –and abuse– of the concept in the most diverse situations seem to point towards a dominance of the consensus interpretation. Sustainable development becomes a negotiated compromise between actors with divergent views and interests. As no one seems to be –allowed to be– against sustainable development, everyone formulates its wishes and objectives within the concept. Just like Fukuyama's (1992) metaphor of the end of history sustainable development seems to become the ultimate goal according to a shared, utopian idea about what society ought to be.

However a rising sense of cultural identities, geopolitical power shifts, increasingly polycentric governance structures and the uncertain consequences of global change give shape to what Heisbourg (2007) calls the world's 'thickness'. Global change encompasses climate change, habitat alteration, land degradation, chemical pollution, the alteration of ecosystem processes (Cox, 2010), as well as major socio-economic changes on a global scale. Although sustainable development aims to contribute to develop responses to these challenges it is not a self-evident beacon for policy-makers, who are faced with a rejection of the changing world's pervasive complexity by some of their constituents.

So are there reasons to be optimistic about the enduring use and usefulness of sustainable development? We believe so. Indeed the consensus interpretation of sustainable development did not just pop up unexpectedly. The concept does not carry the neo-colonialist connotation of 'development', it does not suffer from a heavy historical load and it explicitly acknowledges the importance of multidisciplinary and multi-actor cooperation. It also allows to bring environmental issues in the political realm without *a priori* polarizing positions and it responds to generally recognized urgent challenges.

But is sustainable development a universally applicable decision-guiding concept? A definitive answer to that question is difficult, yet sustainable development has some definite strengths in order to remain relevant in a culturally diverse world where universalism is a contested idea.

On the one hand the ambition to create a unified social space guided by key concepts such as sustainability is fed by frustrations about the risk of global environmental and socio-economic collapse. Yet on the other hand, the threat of homogenization is also lingering as diversity is positively associated with the potential for innovation, creativity and new solutions and universalism may threaten these advantages.

Sustainable development needs to fully incorporate this diversity and needs to represent a shared vision of what direction human society should head for. If we are to avoid that sustainable development's consensus interpretation is perceived as confined within the boundaries of classical development thinking (linear modernization) and as such does not actually challenge the causes of the global environmental crisis, it needs to acknowledge cultural diversity (Nurse, 2006).

Culture is defined here in its 'minimal' form following Gerring & Barresi (2003 in Cochrane (2006)) as 'a set of beliefs or behaviours that are constructed socially'. Culture shapes and communicates the identity, values and hope of a society (Nurse, 2006).

Sustainable development is a culture-sensitive model as it has the potential to reconcile competing cultures in a contemporary context of seemingly contradictory demands (Vargas, 2010). Furthermore, it emphasizes the value of traditional knowledge to complement modern scientific knowledge (Rist & Dahdouh-Guebas, 2006).

Although the importance of cultural diversity is acknowledged in a sustainable development perspective both for intrinsic (respect for the other, participation, ...) and pragmatic reasons (finding solutions to global change challenges requires adapted knowledge and actions (O'Faircheallaigh, 2010)), the idea of societal progress embodied in the modernization ideal has created a strong tendency towards homogenization.

Sustainable development sits at the heart of a paradox: it is presented as a universal concept that will help humanity to tackle the adverse effects of anthropogenic global change, yet it must also respect the cultural sensitivities and it must act as a counterbalance against the often negatively connotated idea of globalization. Valdez (in Baber, 2004) even argues that a shared –sustainability- vision contributes to cultivate intercultural solidarity as well as the moral, cognitive and affective character traits that are supportive of such solidarity.

The characteristics of different cultures –such as the strength of social norms and the tolerance of deviant behaviour (Gelfand *et al.*, 2011)- will also determine to what degree cultures are potentially in line with the sustainable development concept. Culture *e.g.* affects the management and the use of natural resources for sustainable development. Cochrane (2006) proposes a framework to analyze the role of culture in facilitating or constraining sustainable development, by focusing on three main areas of cultural influence: management objectives, efficiency with which natural capital is used, and demand.

It is clear that there is no single best way to achieve a transition to sustainable development. This is visible in the North/South tension in sustainable development, recognized by Vargas (2000) and popping up at every major international conference (as at the 2009 Copenhagen Conference of the Parties of the United Nations Framework Convention on Climate Change). This –not always creative- tension climaxes in the political instrumentalization of historical events and contingencies and culminates in –the abuse of- ideas such as the ecological debt (Paredis *et al.*, 2008) and the right to ‘pollute now and clean up later’ (Azadi *et al.*, 2011).

Sustainable development can however also bridge international, universal values and local culture and norms; it can ideally function as a conflict mediation concept (Vargas, 2000). Building on integration (and to a lesser extent consensus) as key elements of the sustainable development meta-discourse it is interesting to reflect on the link between sustainable development and globalization – the accelerated movement of goods, services, capital, people and ideas across national borders (Little & Green, 2009). Globalization affects the socio-economic and cultural spheres in highly contradictory and uneven ways and cannot be seen as a linear or inevitable process (Little & Green, 2009), just like sustainable development is also interpreted differently in various contexts and is also no linear process. The future of the conceptualisation and the achievement of sustainable development and globalization will depend not only on technology and economics but also on politics and on societal choices in North and South. Transitions to sustainability can potentially be positively influenced by globalization, depending on how global forces interact with local socio-political landscapes (Berkhout *et al.*, 2010)

How globalization is understood will depend on how we understand development: if we see globalization as a gradual convergence of the global economy along the lines of the current neo-liberal growth paradigm, we will tend to favour one unique development path. If on the contrary, we recognize that one can react differently to globalization, one may also favour alternative successful development paths (Sen, 1999). This remark is especially relevant in light of the bad sustainability track record (illustrated by the ecological footprint of respectively North America (Senbel *et al.*, 2003) and China (Galli *et al.*, 2011)) of both the Western neo-liberal development path and the Chinese development path (Ramo, 2004), which is sometimes heralded as an alternative development model (Nordtveit, 2009).

Strategies of globalization are successful only if they are sustainable and if they do not deplete resources in a way that compromises the ability of future generations to fulfil their own needs (Little

& Green, 2009). In this line of thought Nordtveit (2009) warns for the un-sustainability (with regard to environmental protection and redistribution) of exported Western and Chinese development practices to sub-Saharan Africa.

Cultural differences in the interpretation of sustainable development should at the same time not be overestimated: the dynamics of society are influenced by many institutional, social and cultural factors (Angel & Rock, 2009); and while focusing on culture may contribute to a better understanding of what sustainability means in a particular context, it should not become a reductionist lens.

Sustainable development has the potential to bridge cultural differences, yet the origins and the current political use of the concept risk to cloud its integrated perspective into triviality or conflict. Anyone involved in sustainability assessment should be aware of these risks.

7.3.2 Power & politics of sustainable development: linking discourse and actors

While this thesis focuses on the linkages between discourse and sustainability assessment, the actors carrying and shaping discourses and the power of actors have not been analyzed in detail. While the power dimension of sustainable development and its assessment lies outside the core subject of this thesis, it is too important to be ignored. The lack of attention for power issues risks to cloud key analytical and influencing factors as recognized in section 2.1.4.

In this section we propose an approach to integrate power and discourse in the study of sustainability assessment in the future.

Power, defined as the mobilisation, division and deployment of resources (Arts *et al.*, 2006) is linked to the battle of influence over sustainability's meaning and over the appropriate way to 'achieve' or 'implement' it. Societal stakeholders seek domination over the meaning of sustainable development, trying to mould it in favour of their interests and view (Hajer, 1995). Other actors resist against sustainable development and use their power to do so.

Hence the importance of the politics, defined as bargaining, negotiation and compromise in pursuit of a desired end (Pielke, 2007) *in casu* sustainable development. The politics of sustainable development (Baker, 1997) and recently the politics of sustainability transitions in particular (Meadowcroft, 2011) are recognized as important topics in order to draw lessons from practice and in offering theoretical insights.

Sustainability assessments are part of the political game and may be used as such and they are constrained by existing power balances (Hildén, 2011; Sneddon *et al.*, 2006) and hence risk of having only limited policy influence if power issues are not taken into account.

Discourse-centred research on sustainability assessment would benefit from approaches that explicitly consider power relations.

The policy arrangement approach (Arts *et al.*, 2006) is a useful methodology to analyze the mutual influences between discourse and the other dimensions of a policy arrangement, defined as the way in which a certain policy domain is shaped in terms of organisation and substance consisting of four analytical dimensions:

- discourses
- rules
- actors
- resources

By studying the evolving relationship between the four dimensions of a policy arrangement, the approach explicitly links discourse with other key elements such as power ('resources') and actor (coalitions). The role that sustainability assessments play in a policy arrangement will be context-dependent and the policy arrangement approach (PAA) allows to understand the different dimensions of such an arrangement. Runhaar (2009) applied the policy arrangement approach to analyze strategic environmental assessment and provides an inspiring example for the application of the PAA on sustainability assessment.

This approach will strengthen future discourse-centred research on sustainability by explicitly considering power relations.

7.3.3 Radical change versus prudent reformism embodied in the potential and the limitations of sustainability assessment

Expectations with regard to sustainability assessment are high and the delivered outcomes can be analyzed in a variety of ways, reflecting perspectives on policy-making, discourses and institutional landscape. The question is if sustainability assessment can be an instrument for change and if so, what kind of change are we talking about?

Two interpretations of sustainability assessment's potential for change co-exist:

- The first one is akin to the discourse of sustainable development as consensus, as a non-radical yet imaginative reform path (Dryzek, 2005). Sustainability assessment is then seen as a process allowing to translate sustainable development into tangible decisions and subsequent actions.
- The second interpretation of sustainability assessment's potential builds on the idea of radical change embodied in some of sustainability's sub-discourses. Sustainability assessment might contribute to discursive shifts that change fundamental assumptions and values.

While the first interpretation fosters gradual reform of the current socio-economic system, the second interpretation stresses fundamental changes in thinking about and organizing society, hence representing a profound version of discursive shift and its operationalization in policy and practice.

In reality sustainability assessment's contribution to a gradual reform of policy-making practice already seems to be relatively limited. Although the analyzed case studies of this thesis indicate that the greatest added value of sustainability assessments may lie not so much in their contribution to particular policy proposals on which they are performed but rather in their potential to indirectly influence policy and in providing better anticipatory decision-support for policy-making, their power of influence is shaped by the broader discursive-institutional landscape.

Sustainability assessment will not generate significant changes if its messages are not considered legitimate and necessary by the policy-makers themselves (as well as by other societal actors). The relationship between sustainability assessment and discursive shifts is characterized by positive feedbacks. Sustainability assessment will only truly influence decision-making when its results are in line with the dominant discourses, yet sustainability assessment itself will also influence the way sustainability is conceptualized through sustainability discourses.

Sustainability assessment as a policy practice can lead to a transformation of discourse. In turn when the dominant discourse is more in tune with sustainability thinking, this will lead to a better uptake of the outcomes of future sustainability assessments.

Sustainability assessment is only one influencing factor amongst others in changing assumptions and values. If unrealistic expectations rest on sustainability assessment it will lose its credibility. Policy-makers just like society as a whole, are 'locked-into' specific patterns of interpretations and actions,

and sustainability assessment alone will not change this overnight as inertia and path dependence are involved (Söderbaum, 2007).

Rather sustainability assessment's position in the consensual –yet dynamic- discourse of sustainability together with its experimental character still make it a potentially strong contributor to change be it not necessarily in the directly influencing specific policy-decisions.

7.4 Recommendations

These recommendations are intended to contribute to the further development of the theory and practice of sustainability assessment. They are not directed to a particular target group, they are rather directed towards anyone involved in sustainability assessment exercises in the future -be it initiators, researchers, citizens and/or policy-makers.

Recommendation 1: Sustainability assessment should be a forum for interpretation

1.1 Divergent perspectives on sustainable development (both with regard to content as with regard to methodology) should not be excluded from contributing to shape sustainability assessment. Any 'mainstream' interpretation of sustainable development in a particular context should be scrutinized and debated critically.

1.2 Sustainability assessment should be a forum giving sense to the interpretational challenge of sustainability within the boundaries set by essential sustainability principles (global responsibility, integration, intra- and intergenerational equity, a prospective long-term time horizon, precaution and participation).

Recommendation 2: Sustainability assessment has various functions and a set of common characteristics

2.1 Sustainability assessment should contribute to translate sustainable development from a discourse into a decision-guiding strategy.

2.2 Sustainability assessment can have different functions:

- Forum for debate and deliberation
- Information generation
- Structuring complexity
- Fostering discourse and attitude shifts

Different functions reflect different views on policy-making, and will be translated into different approaches to sustainability assessment, which lie on a continuum between rational, pragmatic and interactive, strategic approaches. This continuum-perspective as well as the context-dependent character of sustainability assessment demand experimental applications.

2.3 Notwithstanding this variety of functions, an ideal-typical sustainability assessment should ideally:

- foster sustainable development objectives
- have a holistic perspective
- be performed through a sustainable procedure and process
- support decision-making.

Recommendation 3: Discourse and institutions shape sustainability assessment

3.1 A discourse-analytic lens implemented through a variety of research methods (focus groups, expert interviews, Delphi, surveys, document analysis) contributes to understand the dynamics of sustainability assessment.

3.2 There is no blueprint approach for developing and applying sustainability assessment. The discursive-institutional interplay will heavily determine how sustainability assessment is conceptualized and applied.

Hence any 'result' of a sustainability assessment needs to be interpreted keeping the context-specific discursive and institutional dynamics in mind.

3.3 Windows of opportunity for introducing and applying sustainability assessment may arise unexpectedly due to possible discursive and institutional convergences facilitated by the interpretational width of the sustainability concept, and these should be used.

3.4 Sustainability assessment advocates should be able to react flexibly to capitalize on changing societal, political and institutional interpretations of sustainability 'boundaries'.

Recommendation 4: Sustainability assessment's policy influence is to be interpreted broadly

4.1 The influence of sustainability assessment consists of policy recommendations, developmental outcomes and changes in discourses and institutions. While the influence is not always easily assignable, users and participants of sustainability assessment should be aware of its potential instrumental and conceptual learning effects and would benefit from a broad interpretation of policy 'influence'.

4.2 Participatory sustainability assessments should ideally foster a policy-relevant learning approach and should encourage discourse reflection as well as institutional innovation, while considering effectiveness and efficiency in fostering sustainable development.

Recommendation 5: Participation is key in sustainability assessments, yet should be considered critically

5.1 Participatory approaches are key in performing sustainability assessment, for both intrinsic and for pragmatic reasons. The experimental nature of many sustainability assessment exercises provides opportunities for applying various methodologies (focus groups, consensus conferences,...)

5.2 Synergies between citizen knowledge and expert knowledge can be realized in sustainability assessments yet the uptake of this knowledge by decision-makers is not guaranteed. This can damage the credibility of sustainability assessment. Sustainability assessment must be considered and used as part of a broader governance framework for sustainable development.

5.3 Participatory sustainability assessments ideally include participation in every stage (from framing to indicator development and monitoring), but are embedded in a broader institutional context, which may limit their quality and influence. Any application and analysis of sustainability assessment should acknowledge this context-dependence.

5.3 Sustainability assessment should recognize that any meaningful model of knowledge generation necessarily omits parts of reality to serve a specific purpose. Representing the total complexity of a phenomenon is often neither feasible nor desirable although a holistic perspective will be necessary to link different approaches to reality.

Recommendation 6: The limitations of sustainability assessment must be considered

6.1 Sustainability assessment's potential and actual influence on decision-making depends on its place in the existing decision-making structures and should not be uncritically overestimated.

6.2 Sustainability assessment is most probably not sufficient on its own to trigger a change in societal discourses and subsequent actions as indicated by practical experiences. Its role in the necessary transition to 'a sustainable world' lies in its learning forum function and in its capacity of facilitating the gradual maturation of mindsets towards sustainability.

6.3 Sustainability assessments are particularly suited for scientists' role as honest brokers of policy alternatives whereby scientists clarify and expand the scope of choice available to public decision-makers.

Recommendation 7: Sustainability assessment should be dynamic

7.1 Sustainability assessment should be designed as a de-polarizing process bringing the co-production of knowledge and decisions into practice.

As sustainability faces the risks of instrumentalization just like any popular policy concept, sustainability assessments need to reflect the ever-evolving interpretation and use of sustainable development.

7.2 Sustainability assessments are never definitive nor are they absolute. They should be flexible and adaptable processes acknowledging the dynamic conceptualization of sustainable development.

7.5 Epilogue

Sustainable development is a meta-discourse that embodies many sub-discourses. Although it is a well known and widely (ab-)used concept for more than two decades now, it penetrates daily policy-making practice through tangible processes such as sustainability assessment.

The emergence of sustainability assessment might actually restrict the interpretational width of sustainable development. Overly conservative as well as overly radical interpretations will most probably be implicitly discarded because sustainability assessment is conceptualized as a process designed and applied in order to contribute to solve decision-making problems in a context of sustainability challenges. This problem-solving approach discards business-as-usual approaches as well as sudden ‘revolutions’.

Whichever the dominant perspective in different contexts is, performing sustainability assessment will always be complex and contestable regardless of an improved scientific understanding of the human-environment relationship: values will always influence society’s way of conceptualizing what is sustainable and what is not. Some ways to measure sustainability may indeed make ‘dirty look clean’ (Morse & Fraser, 2005). Nonetheless sustainability assessment’s important –yet arguably modest- strength is to contribute to keep societal whims within a sustainability-acceptable range and in doing so, to depolarize heated societal debates. In the words of Ravetz (2000): sustainability assessment is both essential and impossible.

We do not know in what direction sustainability assessment is heading. Issues of power and sudden systemic crises, as well as peaks of societal attention and other unexpected events may change society’s perspective and as a consequence may alter the conceptualization of sustainability assessment.

The application of participatory sustainability assessment emphasized that dialogue about competing sustainable development discourses is possible. The capacity of sustainable development to ‘capture’ the major challenges of our time (such as widespread poverty, climate change, resource depletion *etc.*) by providing a decision-guiding framework will need to be improved and fine-tuned, and that’s where sustainability assessment –as a tool and process in support of science for sustainable development- can contribute to a transition to a sustainable society. Indeed sustainability assessment contributes to the acknowledgement of ‘political convergence’ entailing an increased awareness of the overlap between different areas of public policy. Reducing the fragmentation of public policies is a necessity to foster sustainability in a changing world.

The dynamics shaping sustainability assessment are a fascinating research topic and explicitly ‘force’ scientists to reflect on their role(s) in public decision-making. Transparency in the role scientists play is key. Following Pielke’s terminology (2007) we believe scientists should act as ‘honest brokers of policy alternatives’ in sustainability assessments; meaning that they should clarify and expand the scope of choice available to public decision-makers. The ultimate decision lies in the hands of policy-makers. As researchers working on a prescriptive concept such as sustainable development however, warning about overstretching the interpretation of sustainable development can also be a task of the scientist, who may then act as an issue advocate – in all transparency.

Sustainability assessment is not a cherry-picking exercise, it needs to actually support decision-makers and that’s why scientifically and participatory designed beacons are needed – a challenge where scientists act as analysts and brokers and keep an open mind on the intrinsically dynamic meaning of sustainability.

The strength of sustainability assessment lies in its potential to generate a shared perspective on what sustainability means in a given context, and in clarifying how this perspective can lead to better—more sustainable—decisions through structuring information flows for decision-makers.

BIBLIOGRAPHY

- ABE 2006. Guide méthodologique pour une évaluation environnementale stratégique. Agence Béninoise pour l'Environnement. *Methodological Guide for a Strategic Environmental Assessment. Benin Environment Agency (ABE). Ministry of Environment and Nature Protection, Benin.* Cotonou, Benin.
- Adamantiades, A., Kessides, I. 2009. Nuclear power for sustainable development: current status and future prospects. *Energy Policy* 37: 5119-5166.
- Afgan, N.H., Carvalho, M.G., Hovanov, M.V. 2000. Energy system assessment with sustainability indicators. *Energy Policy* 28: 603-612.
- Allotey, J. A. & Gyan-Baffour, G. 2004. Report of the strategic environmental assessment of the Ghana Poverty Reduction Strategy. Ghana Environmental Protection Agency (EPA) and the National Development Planning Commission (NDPC). Accra, Ghana.
- Alshuwaikhat, H. M. 2005. Strategic environmental assessment can help solve impact assessment failures in developing countries. *Environmental Impact Assessment Review* 25: 307-317.
- Andersson, K. 2008. *Transparency and accountability in science and politics – The Awareness Principle*. Palgrave MacMillan. Basingstoke, United Kingdom and New York, United States of America.
- Angel, D. & Rock, M. 2009. Environmental rationalities and the development state in East Asia: Prospects for a sustainability transition. *Technological Forecasting and Social Change* 76: 229-240.
- APBEE 2007. Verdissement de la Stratégie Béninoise de Croissance pour la Réduction de la Pauvreté: Histoire sociale, méthodologie, processus et acteurs, leçons. Association Professionnelle Béninoise pour l'Evaluation Environnementale. *Greening of the Benin Growth Strategy for Poverty Reduction: Social History, Methodology, Actors and Lessons learned. Benin Association of Environmental Assessment Professionals.* Cotonou, Benin.
- Arnstein, S.R. 1969. A ladder of citizen participation. *Journal of the American Institute of Planners*, 8: 217-224.
- Arts, B. & Buizer, M. 2009. Forests, discourses, institutions. A discursive-institutional analysis of global forest governance. *Forest Policy and Economics* 11: 340-347.
- Arts, B., Leroy, P. & van Tatenhove, J. 2006. Political modernisation and policy arrangements: a framework for understanding environmental policy change. *Public Organization Review* 6: 93-106.
- Arts, B. & van Tatenhove, J. 2004. Policy and power: a conceptual framework between the 'old' and 'new' policy idioms. *Policy Sciences* 37: 339-356.
- Athanasios, I.C. & Pilavachi, P.A. Technological, economic and sustainability evaluation of power plants using the Analytic Hierarchy Process. *Energy Policy* 37: 778-787.
- Au, E., 2002. Impact assessment in the corporate context. Impact assessment, sound business operation, and corporate responsibility for sustainable development, vol. 1. IAIA Business and Industry Series; 2002. http://www.iaia.org/Members/Publications/Special_Pubs/Bi1.pdf/

Azadi, H., Verheijke, G. & Witlox, F. 2008. Pollute first, clean up later? *Global and Planetary Change* 78: 77-82.

Baber W. 2004. Ecology and democratic governance: toward a deliberative model of environmental politics. *The Social Science Journal* 41: 331-346.

Bachus, K. 2005. Governance for sustainable development and civil society participation. In: *The World Summit on Sustainable Development – The Johannesburg Conference*. Edited by L. Hens & B. Nath. Springer. Dordrecht, The Netherlands.

Bachus, K. & Spillemaeckers, S. 2010. Governance models for sustainable development: comparative analysis. Research Paper in the framework of the Flemish Policy Research Centre for Sustainable Development. www.steunpuntdo.be Accessed January 20, 2010.

Bäcklund, A. K., 2009. Impact assessment in the European Commission – a system with multiple objectives. *Environmental Science & Policy* 12: 1077-1087.

Baker, S., Kousis, M., Richardson, D. & Young, S. 1997. *The Politics of Sustainable Development – Theory, policy and practice within the European Union*. Routledge. London, United Kingdom & New York, United States of America.

Bapuji, H. & Crossan, M. 2007. Knowledge types and knowledge management strategies. In: *Strategic Networks, Learning to compete*. by Gibbert, M. and Durand, T.. Blackwell Publishing Ltd. Oxford. United Kingdom.

Barrutia, J.M., Aguado, I. & Echebarria, C. 2008. Networking for Local Agenda 21 implementation: Learning from experiences with *Udaltalde* and *Udalsarea* in the Basque autonomous community. *Geoforum* 38: 33-47.

Barry, J. & Proops, J. 1999. Seeking sustainability discourses with Q methodology. *Ecological Economics* 28: 337-345.

Baumgartner, R.J. 2011. Critical perspectives of sustainable development research and practice. *Journal of Cleaner Production* 19: 783-786.

BBL 2009. *Bond Beter Leefmilieu*. Personal communication from Erik Grietens, Brussels.

Bebbington, A 2005. Donor-NGO relations and representations of livelihood in non-governmental aid chains. *World Development* 33: 937-950.

Bebbington, J., Brown, J. & Frame, B. 2007. Accounting technologies and sustainability assessment models. *Ecological Economics* 61: 224-236.

Beder, S. 2006. *Environmental principles and policies. An interdisciplinary introduction*. Earthscan, London, United Kingdom.

Bekker, M.P.M, Putters, K., & Van der Grinten, T.E.D. 2004. Exploring the relation between evidence and decision-making: a political-administrative approach to health impact assessment. *Environmental Impact Assessment Review* 24: 139-149.

Belgian Federal Planning Bureau (BFPB) 2007. Accelerating the transition towards sustainable development. Federal Report for Sustainable Development 2007 (in French & in Dutch). Task Force Sustainable Development. Brussels. Belgium.

Bell, S. & Morse, S. 2003. *Measuring sustainability. Learning from doing*. Earthscan, London, United Kingdom.

Bell, S. & Morse, S. 2008. *Sustainability Indicators – Measuring the Immeasurable*. Second Edition. Earthscan. London, United Kingdom.

Bell, S. & Morse, S. 2010. The role of sustainability indicators within evidence-based policy for sustainable development in the European Union. Proceedings of the 16th Annual Conference of the International Sustainable Development Research Society. Hong Kong, China. 30 May-1 June 2010.

Benin (Republic of) 2002. Benin Poverty Reduction Strategy Paper 2003-2005. National Committee for Development and Fight against Poverty. December 2002. Available at www.imf.org.

Benin (Republic of) 2007. Stratégie de croissance pour la réduction de la pauvreté. *Growth and Poverty Reduction Strategy*. April 2007.

Berger, G. & Pohoryles, R.J. 2004. Policy integration and capacity-building in regional sustainable development. Analysis of experiences in Europe. Paper presented at Berlin Conference on the Human Dimensions of Global Environmental Change, 3-4 December 2008. Berlin.

Berkhout, F., Angel, D. & Wieczorek, A.J. 2009. Sustainability transitions in developing Asia: Are alternative development pathways likely? *Technological Forecasting and Social Change* 76: 215-217.

Biermann, F. 2007. Earth system governance as a crosscutting theme of global change research. *Global Environmental Change* 17: 326-337.

Binder, C.R., Feola, G. & Steinberger, J.K. Considering the normative, systemic and procedural dimensions in indicator-based sustainability assessments in agriculture. *Environmental Impact Assessment Review* 30: 71-81.

Blanchard, A. & Vanderlinden, J.P. 2010. Dissipating the fuzziness around inter-disciplinarity: the case of climate change research. *Sapiens* 3 (1): 65-70.

Block, T., Van Assche, J. & Goeminne, G. 2011. Unravelling urban sustainability – how the Flemish city monitor acknowledges complexities. *Ecological Informatics* *in press*.

BMI 2009. Guidance for Impact Assessment. German Interior Ministry (*in German*) http://www.bmi.bund.de/cae/servlet/contentblob/565864/publicationFile/31426/ah_gfa.pdf

Boehmer-Christiansen, S. 2002. The geo-politics of sustainable development: bureaucracies and politicians in search of the holy grail. *Geoforum* 33: 351-365.

Bogner, A., Littig, B. & Menz, W. 2009. Interviewing experts. Palgrave MacMillan. New York, United States of America & Houndmills, United Kingdom.

Böhringer, C. & Löschel, A. 2006. Computable General Equilibrium models for sustainability impact assessments: status quo and prospects. *Ecological Economics* 60: 49-64.

Boissière, B. 2009. The EU sustainable development discourse – an analysis. *L'Europe en formation* N°352. Summer 2009. Brussels. Belgium.

Bojö, J, Bucknall, J, Hamilton, K, Kishor, N, Kraus, C and Pillai, P. 2002. Chapter 11: Environment. In: *Poverty Reduction Strategy Paper Sourcebook*. World Bank. Washington DC. USA.

Bojö, J. & Reddy, R.C. 2002. Mainstreaming environment in poverty reduction strategies. Environment Strategy Note no 4, August 2002. World Bank. Washington DC. USA.

Bojö, J. & Reddy, R.C. 2003. Status and evolution of environmental priorities in the PRS. The World Bank Environment Department. Washington DC. USA.

Bojö, J., Green, K., Kishore, S., Pilapitiya, S. & Reddy, R.C. 2004. Environment in poverty reduction strategies and poverty reduction support credits. World Bank Environment Department Paper N° 102. Washington DC. USA.

Bond, A., Bussel, M., O'Sullivan, P. & Palerm, J. 2003. Environmental impact assessment and the decommissioning of nuclear power plants—a review and suggestion for a best practicable approach. *Environmental Impact Assessment Review* 23: 197-217.

Bond, A., Curran, J. Kirkpatrick, C. & Lee, N. 2001. Integrated impact assessment for sustainable development: a case study approach. *World Development* 29: 1011-1024.

Bond, A. & Morrison-Saunders, A. 2009. Sustainability appraisal – jack of all trades, master of none? *Impact Assessment and Project Appraisal* 27: 321-329.

Bosshard, A. 2000. A methodology and terminology of sustainability assessment and its perspectives for rural planning. *Agriculture, Ecosystems and Environment* 77: 29-41.

Boulanger, P.M. & Bréchet, T. 2005. Models for policy-making in sustainable development: The state of the art and perspectives for research. *Ecological Economics* 55: 337-350.

Brand, F. 2009. Critical natural capital revisited: Ecological resilience and sustainable development. *Ecological Economics* 68: 605-612.

Brocklesby, M.A. & Hinshelwood, E. 2001. Poverty and the environment: what the poor say. An assessment of poverty– environment linkages in participatory poverty assessments. Centre for Development Studies, University of Wales. Swansea. United Kingdom.

Brown, L. 2011. *World on the edge – How to prevent environmental and economic collapse*. Earth Policy Institute. Norton & Company. New York, United States of America & London, United Kingdom.

Bruhn-Tysk, S. & Eklund, M. 2002. Environmental Impact Assessment – a Tool for Sustainable Development? A case study of bio-fuelled energy plants in Sweden. *Environmental Impact Assessment Review* 22, 129-144.

Bruyninckx, H. 2006. Sustainable development: The institutionalization of a contested policy concept. In: *International Environmental Politics*, edited by M. M. Betsill, Hochstetler, Kathryn, and Stevis, Dimitris. Palgrave MacMillan. New York, United States of America.

BTC 2006. Environmental statement of the Belgian Technical Co-operation. BTC / EMAS. Brussels. Belgium. Available at http://www.btcctb.org/doc/UPL_2007022814045521678.pdf.

Buizer, M. & Van Herzele, A. 2012. Combining deliberative governance and discourse analysis to understand the deliberative incompleteness of centrally formulated plans. *Forest Policy and Economics* 16: 93-101.

Burgman, M., Carr, A., Godden, L., Gregory, R., McBride, M., Flander, L. & Maguire, L. 2011. Redefining expertise and improving ecological judgment. *Conservation Letters* 4: 81-87.

Busenberg, G.J. 2001. Learning in organizations and public policy. *Journal of Public Policy* 21: 173-189.

Carson, R. 1962. *Silent Spring*. A Mariner Book. Houghton Mifflin Company. Boston & New York, United States of America.

Carter, C., Clegg, S. & Wahlin, N. 2011. When science meets strategic realpolitik: the case of the Copenhagen UN climate change summit. *Critical Perspectives on Accounting* 22: 682-697.

Cashmore, M. 2007. The contribution of environmental assessment to sustainable development: toward a richer conceptual understanding. In: *Impact Assessment and Sustainable Development – European Practice and Experience*. Edited by Clive George and Colin Kirkpatrick. Edward Elgar Publishings. Cheltenham, United Kingdom & Northampton, United States of America.

Cashmore M. 2004. The role of science in environmental impact assessment: process and procedure versus purpose in the development of theory. *Environmental Impact Assessment Review* 24:403-426.

Chambers, S. 2003. Deliberative democratic theory. *Annual Review of Political Science* 6: 301-326.

Chapin III, F.S., Kofinas, G.P. & Folke, C. 2009. *Principles of ecosystem stewardship. Resilience based natural resource management in a changing world*. Springer Science + Business Media LMC. New York, United States of America.

Chapin III, F.S., Carpenter, S.R., Kofinas G.P., Folke, C. Abel, N., Clark, W.C., Olsson, P., Stafford Smith D.M., Walker, B., Young, O.R., Berkes, F., Biggs, R., Grove, J.M., Naylor, R.L., Pinkerton, E. Steffen, W. & Swanson, F.J. 2010. Ecosystem stewardship: sustainability strategies for a rapidly changing planet. *Trends in Ecology and Evolution* 25: 241-249.

Chopra, K. (ed.) 2005. Ecosystems and human wellbeing: policy responses. Findings of the Responses Working Group. Millennium Ecosystem Assessment. Island Press, Centre for Resource Economics. Washington, Covelo. United States of America. London. United Kingdom.

Christen, M. & Schmidt, S. 2011. A formal framework for conceptions of sustainability – a theoretical contribution to the discourse in sustainable development. Sustainable Development DOI 10.1002/sd.518.

Christens, B. & Speer, P.W. 2006. Tyranny/Transformation: power and paradox in participatory development. Review Essay: Bill Cooke & Uma Kothari (Eds.) (2001). Participation: The New Tyranny? / Samuel Hickey & Giles Mohan (Eds.) (2004). Participation: From Tyranny to Transformation? *Forum: Qualitative Social Research* 7: Art. 22.

Chu, H. C. & Hwang G. J. 2008. A Delphi-based approach to developing expert systems with the cooperation of multiple experts. *Experts Systems with Applications* 34: 2826-2840.

CIDSE (Coopération Internationale pour le Développement et la Solidarité) and Caritas 2004. PRSP as theatre — backstage policy-making and the future of the PRSP approach. A CIDSECaritas Internationalis Background Paper. September.

Clark, W.C. & Dickson, N. 2003. Sustainability science: the emerging research program. *Proceedings of the National Academy of Sciences of the United States of America* 100 (14): 8059-8061.

Cloquell-Ballester, V.A., Cloquell-Ballester, V.A., Monterde-Diaz, R. & Santamarina-Siurana, M.C. 2006. Indicators validation for the improvement of environmental and social impact quantitative assessment. *Environmental Impact Assessment Review* 26: 79-105.

Cochrane, P. 2006. Exploring cultural capital and its importance in sustainable development. *Ecological Economics* 57: 318-330.

Coelho P, Mascarenhas A, Dores A & Ramos T. 2010. A framework for regional sustainability assessment: developing indicators for a Portuguese region. *Sustainable Development* 18: 211–219.

Collier, M.J. & Scott, M. 2010. Focus group discourses in a mined landscape. *Land Use Policy* 27: 304-312.

Commission on Global Governance 2005. *Report of the Commission on Global Governance: Our Global Neighbourhood*. Oxford University Press. Oxford, United Kingdom

Connor, R. & Dovers, S. 2004. *Institutional Change for Sustainable Development*. Edward Elgar Publishing. Cheltenham, United Kingdom & Northampton, United States of America.

Cooke, B. & Kothari, U. 2001. *Participation: the new tyranny?* Zed Books. London. United Kingdom.

Cordova-Novion, C. & Jacobs, S. 2004. Regulatory Management and Administrative Simplification in Belgium and Flanders. Jacobs & Associates, Washington; *Dienst Wetsmatiging*, Brussels.

Costanza, R., d'Arge, A., de Groot, R., Farber, S., Grasso, M., Hannon, B., Limburg, K., Naeem, S., O'Neill, R.V., Paruelo, J., Raskin, R.G., Sutton, P. & van den Belt, M. 1998. The value of the world's ecosystem services and natural capital. *Ecological Economics* 25: 3-15.

Cox, G.W. 2010. *Bird migration and global change*. Island Press. Washington. United States of America.

Crabbé, A. & Leroy, P. 2008. *The Handbook of Environmental Policy Evaluation*. Earthscan. London, United Kingdom & Sterling, United States of America.

Craig, D. & Porter, D. 2003. Poverty Reduction Strategy Papers: a new convergence. *World Development Studies* 31: 53–69.

Crotty, M. 1998. *The Foundations of Social Research: Meaning and Perspective in the Research Process*. St Leonards NSW: Allen & Unwin.

Dalal-Clayton, B. & Bass, S. 2002. *Sustainable Development Strategies: a Resource Book*. Earthscan Publications. London. United Kingdom.

Dalal-Clayton, B. & Sadler, B. 2005. *Strategic Environmental Assessment: a Sourcebook and Reference Guide to International Experience*. Earthscan. London. United Kingdom.

Daly, H. 1991. *Steady-state Economics*. Second edition. Island Press. Washington DC. United States of America.

Dasgupta, S, U Deichmann, C Meisner and D Wheeler 2005. Where is the poverty–environment nexus? Evidence from Cambodia, Lao PDR, and Vietnam. *World Development*, 33: 617–638.

Dasgupta, S., K. Hamilton, K. D. Pandey & Wheeler, D. 2006. Environment during growth: accounting for governance and vulnerability. *World Development* 34: 1597–1611.

DBR 2004. A comparative analysis of regulatory impact assessment in ten EU countries. A Report prepared for the EU Directors of Better Regulation Group. Italian, Irish and Dutch Presidencies of the Council of the European Union. Formez, Italy. http://www.betterregulation.ie/attached_files/Pdfs/Report%20on%20RIA%20in%20the%20EUa.pdf. Accessed December 12, 2010.

De Duve, C. 2011. *Genetics of original sin – the impact of natural selection on the future of humanity*. Yale University Press.

Denzin, N.K. & Lincoln, Y.S. 2004. Methodological issues in the study of social problems. In: Ritzer, G. (ed.): *Handbook of Social Problems: A Comparative International Perspective*. Thousand Oaks, London, United Kingdom, & SAGE Publications, New Delhi, India.

De Peuter B. Evidence-based policy: An exploration of drivers and challenges in Belgium. Paper for the Symposium on Evaluation in the Knowledge Society 2007; Odense, Denmark. Available: at: <http://soc.kuleuven.be/sbov/ned/publicaties/formulier/sforpdf.php?id=s2A0406001>

Derkzen, P. 2008. The politics of rural governance: case studies of rural partnerships in the Netherlands and Wales. Unpublished PhD dissertation. Wageningen University. Wageningen. The Netherlands.

Devuyst, D., Hens, L. & De Lannoy, W. 2001. *How green is the city? Sustainability Assessment and the Management of Urban Environments?* Columbia University Press. New York. United States of America.

Devuyst, D., Nierynck, E. & Hens, L. 1993. Environmental impact assessment in Flanders, Belgium: an evaluation of the administrative procedure. *Environmental Management* 17: 395-408.

Devuyst D, van Wijngaarden T and Hens L. 2000. Implementation of SEA in Flanders: attitudes of key stakeholders and a user-friendly methodology. *Environmental Impact Assessment Review* 20:65-83.

DFID, Department for International Development (2004). Contribution of the environment and natural resources to pro-poor growth: a checklist examining these issues within a poverty reduction strategy. Policy Division Info Series Ref. PD Info 063. London. United Kingdom.

DFID (Department for International Development), EC (European Commission), UNDP (UN Development Programme) and WB (World Bank) 2002. Linking poverty reduction and environmental management. Policy challenges and opportunities. London. United Kingdom.

Dietz, S. & Neumayer, E. 2007. Weak and strong sustainability in the SEEA: concepts and measurement. *Ecological Economics* 61: 617-626.

Donnelly, A, Jones, M, O'Mahony, T. & Byrne, G. 2007. Selecting environmental indicators for use in strategic environmental assessment. *Environmental Impact Assessment Review* 27: 161-175.

Dresner, S. 2008. *The principles of sustainability*. Earthscan. London, United Kingdom.

Dryzek, J.S. 2005. *The Politics of the Earth. Environmental Discourses*. Oxford University Press. United Kingdom.

D'Silva, J. & van Calster, G. 2010. For me to know and for you to find out? Participatory mechanisms, the Aarhus convention and new technologies. *Studies in Ethics, Law and Technology* 4(2) – Article 3.

Duffey, R.B. 2005. Sustainable futures using nuclear energy. *Progress in Nuclear Energy* 47, 535-543

Dupasquier A .2008. (in French) *Evaluation de la durabilité de projets: importance des aspects institutionnels*. Assessment of the sustainability of projects: importance of institutional aspects. Paper presented at the international conference 'Sustainable development twenty years on' 2008; Lille France.

DuPisani, J. 2006. Sustainable development – historical roots of the concept. *Journal of Integrative Environmental Sciences* 3: 83-96.

Dürrenberger, G., Kastenholz, H. & Behringer, H. 1999. Integrated assessment focus groups: bridging the gap between science and policy? *Science and Public Policy* 26: 341-349.

Eagan, P., Cook, T. & Joeres, E. 2002. Teaching the importance of culture and interdisciplinary education for sustainable development. *International Journal of Sustainability in Higher Education* 3: 48-66.

Eberlei, W 2004. Umweltrelevante Aspekte in Poverty Reduction Strategies: expertise für den Wissenschaftlichen Beirat der Bundesregierung. WBGU (German Advisory Council on Global Change). Duisburg. Germany.

ECI 2008. Earth Charter Initiative. www.eartcharterinaction.org Accessed January 30, 2012.

EcoLogic, IEEP, VITO & Vrije Universiteit Amsterdam 2007. Improving Assessment of the Environment in Impact Assessment. Final Report. http://ec.europa.eu/environment/enveco/impactassessment/pdf/2007_improvingassess_finalrep.pdf Accessed February 28, 2012.

Edwards, A. 2005. *The Sustainability Revolution – portrait of a paradigm shift*. New Society Publishers. Gabriola Island. Canada.

Eggermont, G. & Hugé, J. 2011a. New perspectives for radiation protection concepts in the frame of sustainability. Nordic Society for Radiation Protection (NSFS) Conference 'Current Challenges in Radiation Protection'. August 2011. Reykjavik, Iceland. Available at <http://nsfs.org/NSFS-2011/documents/session-11/S11-01.pdf>. Accessed February 2nd, 2012.

Eggermont, G., Hugé, J. 2011b. Nuclear Energy Governance. Deliverable 4.1 SEPIA Project. Belgian Science Policy 2011 – 102 p. Research Program Science for Sustainable Development. Brussels. Belgium.

Ehrlich, P.R. 1968. *The Population Bomb*. Buccaneer Books. Cutchogue, New York. United States of America.

Ekins, P., Simon, S., Deutsch, L., Folke, C. & de Groot, R. 2003. A framework for the practical application of the concepts of critical natural capital and strong sustainability. *Ecological Economics* 44: 165-185.

Esteva, G. 1992. Development. *In: The Development Dictionary – A Guide to Knowledge as Power*. Edited by W. Sachs. ZED Books. London, United Kingdom.

EU 2003. Structural policies and European territories – Competitiveness, sustainable development and cohesion in Europe – From Lisbon to Gothenburg. European Commission. Directorate General for Regional Policy. Brussels. Belgium.

European Commission (EC) 2006. Review of the EU Sustainable Development Strategy (EU SDS) – Renewed Strategy. Brussels. Belgium.

European Commission 2009a. Impact Assessment Guidelines. SEC (2009) 92. http://ec.europa.eu/governance/impact/docs_en.htm.

European Commission (EC) 2009b. Impact Assessment Board Report 2008. Commission Staff Document accompanying the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Third Strategic Review of Better Regulation in the European Union. http://ec.europa.eu/governance/impact/key_en.htm.

European Commission (EC) 2009c. Lisbon Strategy for Growth and Jobs. http://ec.europa.eu/archives/growthandjobs_2009/ Accessed December 20, 2011.

European Commission (EC) 2009d. European Strategy for Sustainable Development. <http://ec.europa.eu/environment/eussd/> Accessed February 10, 2011.

European Commission (EC) 2009e. Commission Staff Working Document accompanying the document to the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on Investing in the Development of Low Carbon Technologies (SET-Plan). Impact Assessment. SEC (2009) 1297. Brussels. Belgium.

European Commission (EC) 2009f. Investing in the Development of Low-Carbon Technologies. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and The Committee of the Regions. Brussels, October 2009. COM (2009) 519 final.

European Commission (EC) 2009g. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Mainstreaming sustainable development into EU policies : 2009 Review of the European Union Strategy for Sustainable Development. COM/2009/0400 final. Brussels. Belgium.

European Commission (EC) 2009h. Impact Assessment Board Report 2008. Commission Staff Document accompanying the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.

Third Strategic Review of Better Regulation in the European Union. Brussels, Belgium. http://ec.europa.eu/governance/impact/key_en.htm.

European Commission (EC) 2010a. Lisbon Strategy Evaluation Document. Commission Staff Working Document. http://ec.europa.eu/growthandjobs/pdf/lisbon_strategy_evaluation_en.pdf

European Commission (EC) 2010b. http://ec.europa.eu/environment/climat/climate_action.htm Accessed September 1, 2010.

European Commission (EC) 2010c. Green Paper – EU Development Policy in Support of Inclusive Growth and Sustainable Development. Increasing the Impact of EU Development Policy. COM(2010) 629 final.

European Union 2009. Spain-Belgium-Hungary program. Draft of the team Presidency of the Strategic Framework. Brussels, Belgium.

ECI 2008. The Earth Charter Initiative Handbook. www.earthcharterinaction.org. Accessed January 6, 2012.

ExternE 2005. Externalities of Energy. A Research Project of the European Commission. <http://www.externe.info/> Accessed July 12, 2011.

Fadeeva, Z. 2004. Promise of sustainability collaboration – potential fulfilled? *Journal of Cleaner Production* 13: 165-174.

Fairclough, N. 2003. *Analysing discourse – Textual analysis for social research*. Routledge. London, United Kingdom & New York, United States of America.

Faucheux, S. & Froger, G. 1995. Decision-making under environmental uncertainty. *Ecological Economics* 15: 29-42.

Feindt, P.H. & Oels, A. 2005. Does discourse matter? Discourse analysis in environmental policy making. *Journal of Environmental Policy & Planning* 7: 161-173.

Fiorino, D.J. 1990. Citizen participation and environmental risk: A survey of institutional mechanisms. *Science, Technology & Human Values* 15: 226-243.

Fine, B. 2002. Economics imperialism and the new development economics as Kuhnian paradigm shift? *World Development* 30: 2057-2070.

Finnveden, G., Nilsson, M., Johansson, J., Persoon, A., Moberg, A. & Carlsson, T. 2003. Strategic environmental assessment – applications within the energy sector. *Environmental Impact Assessment Review* 23, 91-123.

Fischer T.B. 2002. Strategic environmental assessment performance criteria – the same requirements for every assessment? *Journal of Environmental Policy and Management* 4:83-99.

Fischer, T.B. 2007. *Theory and practice of strategic environmental assessment – towards a more systematic approach*. Earthscan. London, United Kingdom.

Fischer, T.B. & Gazolla, P. 2007. SEA effectiveness criteria – equally valid in all countries? The case of Italy. *Environmental Impact Assessment Review* 2006: 396-409.

Fitzpatrick, P. 2006. In it together: organizational learning through participation in environmental assessment. *Journal of Environmental Assessment Policy and Management* 8: 157-182.

Flemish EIA Unit 2010. www.mervlaanderen.be Accessed October 4, 2010.

Flemish Government 2004a. Note on Regulatory Impact Assessment 2004 / 13 (in Dutch). Brussels. Belgium.

Flemish Government 2004b. Flemish Spatial Planning Strategy. *In Dutch: Ruimtelijk Structuurplan Vlaanderen*. Brussels, Belgium.

Flemish Government 2005. Note to the Flemish Government. Concerning: Lisbon Strategy, Mid-term review – addendum to the standpoint of the Flemish Government of November 24, 2006 (*in Dutch*). Brussels. Belgium.

Flemish Government 2006a. Moving boundaries together. The Flemish Regional Strategy for SD (*in Dutch*). Flemish Government. Brussels. Belgium.

Flemish Government 2006b. Guidance for Regulatory Impact Analysis (*in Dutch*). Flemish Government. Brussels. Belgium.

Flemish Government 2008a. Communication to the members of the Flemish Government. Concerning: Draft Flemish Standpoint w.r.t. the consultation on the draft Impact Assessment Guidance of the European Commission (*in Dutch*). VR 2008 1807 MED. 0383. Brussels. Belgium.

Flemish Government 2008b. *Decreet ter bevordering van duurzame ontwikkeling*. July 2008. Brussels. Belgium. <http://do.vlaanderen.be/nlapps/data/docattachments/Decreet%206-09-2008.pdf>. Accessed October 4, 2010.

Flemish Government 2009. *Medeling aan de Vlaamse Regering. Betreft: Eerste aanzet van visie van de Vlaamse Overheid m.b.t. de Lissabonstrategie na 2010. Minister-president van de Vlaamse Regering*. Brussels. Belgium.

Flemish Government 2009b. Flemish Lisbon Report 2009. Communication to the Flemish Government. (*in Dutch*). Brussels. Belgium. http://www.vlaandereninactie.be/nlapps/data/docattachments/vlaamse_lissabonrapportering_2009_volledig.pdf. Accessed August 6, 2010.

Flemish Government 2010. Flemish Sustainable Development Strategy. Moving Boundaries Together. (*in Dutch*). Brussels, Belgium.

Flemish Government 2011a. Start Note. Development of the Flemish Spatial Planning Strategy. Flemish Government, January 28, 2011. Brussels. Belgium. *In Dutch: Opmaak Beleidsplan Ruimte Vlaanderen – Startnota*.

Flemish Government 2011b. Beleidsplan Ruimte. www.ruimtelijkeordening.be. Accessed November 17, 2011.

Flemish Parliament 2008b. Regional Law on SD (*in Dutch*). Brussels. Belgium. <http://do.vlaanderen.be/nlapps/data/docattachments/Decreet%206-09-2008.pdf>. Accessed August 6, 2010.

- Flyvbjerg, B. 1998. *Rationality and Power: Democracy in Practice*. Chicago University Press. Chicago. United States of America.
- Folke, C. 2006. Resilience: the emergence of a perspective for social-ecological systems analyses. *Global Environmental Change* 16: 253-267.
- Foucault, M. 1972. *The Archaeology of Knowledge*. Routledge. Abingdon. United Kingdom.
- Frame, B. & Cavanagh, J. 2009. Experiences of sustainability assessment: an awkward adolescence. *Accounting Forum* 33: 195-208.
- Franz, J. & Papyrakis, E. 2011. Online calculators of ecological footprint: do they promote or dissuade sustainable behaviour? *Sustainable Development* 19: 391-401.
- Fraser, E.D.G., Dougill, A.J., Mabee, W.E., Reed, M. & McAlpine, P. 2006. Bottom up and top down; analysis of participatory processes for sustainability indicator identification as a pathway to community empowerment and sustainable environmental management. *Journal of Environmental Management* 78: 114-127.
- Fukuyama, F. 1992. *The end of history and the last man*. Avon Books. New York. United States of America.
- Funtowicz, S. O., Martinez-Allier, J., Munda, G. & Ravetz, J.R. 1999. Information Tools for Environmental Policy under Conditions of Complexity. Environmental Issues Series 9. European Environmental Agency. Copenhagen. Denmark.
- Funtowicz, S. & Ravetz, J. 1991. A new scientific methodology for global environmental issues. In: Costanza, T. (Ed.), *Ecological Economics: The Science and Management of Sustainability*. Columbia University Press. New York.
- Funtowicz, S. & Ravetz, J. 1993. The Emergence of Post-Normal Science. *In: von Schomberg (ed.): Science, Politics and Morality*. Kluwer Academic Publishing. London. United Kingdom.
- Galli, A., Kitzes, J., Niccolucci, V., Wackernagel, M., Wada, Y. & Marchetinni, N. 2011. Assessing the global environmental consequences of economic growth through the Ecological Footprint: a focus on China and India. *Ecological Indicators* DOI 10.1016/j.ecolind.2011.04.022
- Gallopin, G.C. 1997. Indicators and their use: information for decision-making, *in: Moldan, B. and Billharz, S.(Eds.) Sustainability Indicators*. Wiley. New York. United States of America.
- Gasparatos, A. 2010. Embedded value systems in sustainability assessment tools and their implications. *Journal of Environmental Management* 91: 1613-1622.
- Gasparatos, A., El-Haram, M. & Horner, M. 2008. A critical review of reductionist approaches for assessing the progress towards sustainability. *Environmental Impact Assessment Review* 28: 286-311.
- Gauthier, M., Simard, L. & Waaub, J.P. 2011. Public participation in strategic environmental assessment (SEA): critical review and the Québec (Canada) approach. *Environmental Impact Assessment Review* 31: 48-60.

Gelfand, M.J., Raver, J.L., Nishii, L., Leslie, L.M., Lun, J., Lim, B.C., Lili Duan, L., Almaliach, A., Ang, S., Arnadottir, J., Aycan, Z., Boehnke, K., Boski, P., Cabecinhas, R., Chan, D., Chhokar, J., D'Amato, A., Ferrer, M., Iris C. Fischlmayr, I.C., Ronald Fischer, R., Fülöp, M., Georgas, J., Kashima, E., Kashima, Y., Kibum Kim, K., Alain Lempereur, A., Marquez, P., Othman, R., Overlaet, B., Panagiotopoulou, P., Peltzer, K., Perez-Florizno, L., Ponomarenko, L., Realo, A., Schei, V., Schmitt, M., Smith, P.B., Soomro, Szabo, E.R., Taveesin, N., Toyama, M., Van de Vliert, E., Vohra, N., Ward, C. & Yamaguchi, S. 2011. Differences between tight and loose cultures: a 33-nation study. *Science* 332: 1100-1104.

Geneletti, D. 2003. Biodiversity Impact Assessment of roads: an approach based on ecosystem rarity. *Environmental Impact Assessment Review* 23: 343-365.

George C. 2001. Sustainability appraisal for sustainable development: integrating everything from jobs to climate change. *Impact Assessment and Project Appraisal* 19: 95 – 106.

German Federal Government 2008. Progress Report 2008 on the National Strategy for SD. 'For a sustainable Germany'. Berlin. Germany.

Gerring, J. & Barresi, P.A. 2003. Putting ordinary language to work a min-max strategy of concept formation in the social sciences. *Journal of Theoretical Politics* 15: 201-232.

Gibbons, M. 1999. Science's new social contract with society. *Nature* 402: C81-C85.

Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P & Trow, M. 1994. *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Science*. Sage. Newbury Park. United States of America.

Gibson, R. 2000. *Specification of sustainability-based environmental assessment decision criteria and implications for determining "significance" in environmental assessment*. Canadian Environmental Assessment Agency - Research and Development Monograph Series: 2000.

Gibson, R., Holtz, S., Tansey, J., Whitelaw, G. & Hassan, S. 2005. *Sustainability Assessment – Criteria and Process*. Earthscan. London, United Kingdom.

Gibson, R. 2006a. Beyond the pillars: sustainability assessment as a framework for effective integration of social, economic and ecological considerations in significant decision-making. *Journal of Environmental Assessment Policy and Management* 8: 69-80.

Gibson, R. 2006b. Sustainability Assessment: basic components of a practical approach. *Impact Assessment and Project Appraisal* 24: 170-182.

Gibson, R. 2010. Beyond the Pillars: Sustainability Assessment as a Framework for Effective Integration of Social, Economic and Ecological Considerations in Significant Decision-Making. In Sheate, W. (Ed.), 2010. *Tools, techniques and approaches for Sustainability. Collected writings in Environmental Assessment Policy and Management*. World Scientific Publishing Co. Pte. Ltd. Singapore.

Giddings, B., Hopwood B. & O'Brien, G. 2002. Environment, Economy and Society: Fitting them Together into Sustainable Development. *Sustainable Development* 10: 187-196.

Gieryn, T.F. 1983. Boundary-work and the demarcation of science from non-science: strains and interest in professional ideologies of scientists. *American Sociological Review* 48: 781-795.

Glicken, J. 2000. Getting stakeholder participation 'right': a discussion of participatory processes and possible pitfalls. *Environmental Science & Policy* 3: 305-310.

Goodin, R.E. 1992. *Green Political Theory*. Oxford, United Kingdom.

Gordon, N. & Berkovitch, N. 2007. Human rights discourse in domestic settings: how does it emerge? *Political Studies* 55: 243-266.

Graymore, M., Wallis, A. & Richards, A.J. 2009. An index of regional sustainability: a GIS-based multiple criteria analysis decision-support system for progressing sustainability. *Ecological Complexity* 6: 453-462.

Greenwood, D.J. & Levin, M. 1998. *Introduction to action research – social research for social change*. Sage Publications. Thousand Oaks. London, United Kingdom & New Delhi, India.

Griffin, L. 2010. The limits to good governance and the state of exception: A case study of North Sea fisheries. *Geoforum* 41: 282-292.

Grin, J., Rotmans, J. & Schot, J. 2010. *Transitions to Sustainable Development. New Directions in the Study of Long-Term Transformative Change*. Routledge. New York, United States of America & London, United Kingdom.

Grist, N. 2008. Positioning climate change in sustainable development discourse. *Journal of International Development* 20: 783-803.

Gundersen, A.G. 1995. *The Environmental Promise of Democratic Deliberation*. The University of Wisconsin Press. Madison, United States of America & London, United Kingdom.

Guttal, S, A Bendana and H Wanguza 2001. The World Bank and the PRSP: flawed thinking and failing experiences. Jubilee South, Focus on the Global South, AWEAPON and the Centro de Estudios Internacionales. Focus on the Global South. <http://www.focusweb.org/publications/2001/THE-WORLD-BANK-AND-THE-PRSP.html>. Accessed November 5, 2007.

Haag, D. & Kaupenjohann, M. 2001. Parameters, prediction, post-normal science and the precautionary principle – a roadmap for modelling decision-making. *Ecological Modelling* 2001;144: 45-60.

Haas, P.M. 2004. Addressing the global governance deficit. *Global Environmental Politics* 4: 1-19.

Habermas, J. 2006. Political communication in media society: does democracy still enjoy an epistemic dimension? The impact of normative theory on empirical research. *Communication Theory* 16: 411-426.

Hacking, T. & Guthrie, P. 2006. SD objectives in impact assessment. Where do they come from? *Journal of Environmental Assessment Policy and Management* 8: 341-371.

Hage, M. & Leroy, P. 2008. Stakeholder Participation Guidance for the Netherlands Environmental Assessment Agency. Raboud University Nijmegen & The Netherlands Environmental Assessment Agency. Uitgeverij RIVM. Bilthoven. The Netherlands.

Hai, L.T., Hai, P.H., Thai, C.M. & Hens, L. 2009. Software for Sustainability Assessment: a Case Study in Quang Tri Province, Vietnam. Paper presented at the 2009 Conference 'Knowledge-based Technologies and OR Methodologies for Strategic Decisions of Sustainable Development'. Vilnius, Lithuania.

Hajer, M. 1995. *The Politics of Environmental Discourse*. Oxford University Press. New York. United States of America.

Hajer, M. 2000. Politiek als vormgeving. Rede bij de aanvaarding van het ambt van hoogleraar in de politicologie aan de Universiteit van Amsterdam op vrijdag 16 juni 2000.

Hajer, M. 2006. Doing discourse analysis: coalitions, practices, meaning. In: *Words matter in policy and planning. Discourse theory and method in the social sciences*. Edited by Van den Brink, M. & Metze, T. Netherlands Geographical Studies 344. Utrecht. The Netherlands.

Hajer, M. & Fischer, F. 1999. *Living with Nature – Environmental Politics as Cultural Discourse*. Oxford University Press. New York. United States of America.

Hajer, M. & Laws, D. 2006. Ordering through Discourse. In: *The Oxford Handbook of Public Policy*. Edited by Moran, M., Rein, M. & Goodin, R. Oxford University Press. New York. United States of America.

Hajer, M. & Versteeg, W. 2005. A decade of discourse analysis of environmental politics: achievements, challenges, perspectives. *Journal of Environmental Policy and Planning* 7: 175-184.

Hajer, M. & Wagenaar, H. 2003. *Deliberative Policy Analysis. Understanding Governance in the Network Society*. Cambridge University Press.

Hall, P.A. 1993. Policy Paradigms, Social Learning and the State: the Case of Economic Policy-Making in Britain. *Comparative Politics* 25: 275-296.

Happaerts, S. & Vandenbrande, K. 2011. Sustainable development and trans-national communication: assessing the international influence on sub-national policies. *Journal of Comparative Policy Analysis* 13: 527-544.

Happaerts, S., Vandenbrande, K. & Bruyninckx, H. 2011. Sub-national governments in trans-national networks for sustainable development. *International Environmental Agreements* 11: 321-339.

Haque, S. 1999. The fate of sustainable development under neo-liberal regimes in developing countries. *International Political Science Review* 20: 197-218.

Hardi, P. & Zdan, T. 1997. Assessing sustainable development: principles in practice. International Institute for Sustainable Development. <http://www.nssd.net/pdf/bellagio.pdf>. Accessed November 23, 2010.

Hardi, P., 2007. The long and winding road of sustainable development evaluation. In: *Impact Assessment and Sustainable Development – European Practice and Experience*. Editors: Clive George and Colin Kirkpatrick. Edward Elgar Publishings. Cheltenham, United Kingdom & Northampton, United States of America.

Hardin, G. 1968. The Tragedy of the Commons. *Science* 162: 1243-1248.

Harding, R. 2006. Ecologically sustainable development: origins, implementation and challenges. *Desalination* 187: 227-239.

Harman, C.R., Aisop, W.R. & Anderson, P.D. 2004. Ecological risk assessment applied to energy development. *Encyclopedia of Energy*: 13-24.

Hartley, N. & Wood, C. 2005. Public participation in environmental impact assessment – implementing the Aarhus Convention. *Environmental Impact Assessment Review* 25: 319-340.

Hasson, F. & Keeney, S. 2011. Enhancing rigour in the Delphi technique research. *Technological Forecasting & Social Change* 78: 1695-1704.

Haughton, G., 1999. Environmental justice and the sustainable city. *Journal of Planning Education and Research* 18: 233-243.

Health Council of the Netherlands 2008. Prudent precaution. Health Council of the Netherlands. Publication N° 2008/18. The Hague, The Netherlands.

Healey, P. 1997. Collaborative planning – shaping places in fragmented societies. MacMillan Press. Houndmills, United States of America & London, United Kingdom.

Heisbourg, F. 2007. *L'épaisseur du monde*. Editions Stock. Paris. France.

Hertin J, Turnpenny J, Nilsson M, Nykvist B, Jordan A and Russel D. 2007. Rationalising the policy mess? Ex ante policy assessment and the utilisation of knowledge in the policy process. Environmental Policy Research Centre, Freie Universität Berlin. FFU Report 03-2007. Available at: http://www.polsoz.fuberlin.de/polwiss/forschung/systeme/ffu/publikationen/2007/julia_hertin_john_2007/rep_2007_03_pdf.pdf

Hertin, J., Jacob, K. & Volkery, A. 2008. Policy Appraisal. In: Jordan, A, Lenschow, A. (eds.), *Innovation in Environmental Policy? Integrating environment for sustainability*. Edward Elgar Publishing Inc. Cheltenham, UK & Northampton, USA.

Hertin, J., Turnpenny, J., Jordan, A., Nilsson, M., Russell, D. & Nykvist, B. 2009. Rationalising the policy mess? Ex ante policy assessment and the utilisation of knowledge in the policy process. *Environment and Planning A* 41 (5): 1185-1200.

Hens, L. & Nath, B. 2005. The World Summit on Sustainable Development. The Johannesburg Conference. Springer. Dordrecht. The Netherlands.

Heuberger, R., Brent A., Santos L., Sutter C. & Imboden D. 2007. CDM Projects under the Kyoto Protocol: a methodology for sustainability assessment – Experiences from South Africa and Uruguay. *Environment, Development and Sustainability* 9: 33-48.

Hezri, A.A. & Dovers, S.R. 2006. Sustainability indicators, policy and governance: Issues for ecological economics. *Ecological Economics* 60: 86-99.

Hickley, S. & Mohan, G. 2004. *Participation: from tyranny to transformation?* Zed Books. London, United Kingdom & New York, United States of America.

Hidding, M., Needham, B. & Wisserhof, J. 2000. Discourses of town and country. *Landscape and Urban Planning* 48: 121-130.

Hildén, M. 2011. The evolution of climate policies – the role of learning and evaluations. *Journal of Cleaner Production* 2011: 1-14.

Hodge, A., Hardi, P., & Bell, D. 1999. Seeing Change Through the Lens of Sustainability. Background Paper for the Workshop "Beyond Delusion: Science and Policy Dialogue on Designing Effective Indicators of Sustainable Development." International Institute for Sustainable Development. 6-9 May 1999. Costa Rica.

Holder, J. 2004. *Environmental Assessment: The Regulation of Decision-Making*. Oxford University Press. United Kingdom.

Holmes, T. & Scoones, I. 2000. Participatory Environmental Policy Processes: Experiences from North and South. Institute of Development Studies. Brighton, United Kingdom.

Holvoet, N. & Renardn R. 2005. Putting the new aid paradigm to work: challenges for monitoring and evaluation. Institute for Development Policy and Management, University of Antwerp, Discussion Paper 2005:2. Antwerp, Belgium.

Hoppe, R. 2002. Culture of public policy problems. *Journal of Comparative Policy Analysis: Research and Practice* 4: 305-326.

Hopwood, W. Mellor, M. & O'Brien, G., 2005. Sustainable development: mapping different approaches. *Sustainable Development* 13: 38-52.

Howlett, M. & Ramesh, M. 2003. *Studying Public Policy*. Oxford University Press. United Kingdom.

Hugé, J. & Eggermont, G. Impact Assessment for a Sustainable Energy Future. SKB Stockholm Spring Talks. International Conference 'Societal Approaches to Nuclear Waste Management'. 3 May 2011. Stockholm. Sweden.

Hugé, J. & Hens, L. 2007. Sustainability assessment of Poverty Reduction Strategy Papers. *Impact Assessment and Project Appraisal* 25: 247-258.

Hugé, J. 2009. Stakeholder consultation in the design of a sustainability assessment framework for Flanders, Belgium. Proceedings of the 15th Annual International Sustainable Development Research Conference. July 2009. Utrecht, the Netherlands.

Hugé, J. & Hens, L. 2009. Greening Poverty Reduction Strategy Papers: a process approach to sustainability assessment. *Impact Assessment and Project Appraisal* 27: 7-18.

Hugé, J. & Hens, L. 2010. Sustainability Assessment as an Interdisciplinary Approach to Decision-Making: Experiences from Benin and Belgium. *In: Anthropology Today: Trends and Scope of Human Ecology*. Edited by Bhasin, V. & Susanne, C. ISBN 81-85264-51-1. pp. 41-54. Kamla Raj-Enterprises. New Delhi. India.

Hugé, J. & Waas, T. 2010. Introducing sustainability assessment in a crowded institutional landscape: the case of the Flemish Region of Belgium. Proceedings of the EASY ECO Conference 'Sustainable development evaluations in Europe'. Université Libre de Bruxelles. 17-19 November 2010. Brussels. Belgium.

Hugé, J., Hai, L.T., Hai, P.H., Kuilman, J. & Hens, L. 2010. Sustainability indicators for Clean Development Mechanism projects in Vietnam. *Environment, Development & Sustainability* 12: 561-571.

Hugé, J. & Waas, T. 2011. Converging impact assessment discourses for sustainable development: the case of Flanders, Belgium. *Environment, Development and Sustainability* 13: 607-626.

Hugé, J., Waas, T., Eggermont, G. & Verbruggen, A. 2011. Impact assessment for a sustainable energy future – reflections and practical experiences. *Energy Policy* 39: 6243-6253.

Hulme, D. & Toye, J. 2006. The Case for Cross-Disciplinary Social Science Research on Poverty, Inequality and Well-Being. *Journal of Development Studies* 42: 1085-1107.

Huppes, G. & Ishikawa, M. 2007. Sustainability evaluation. Diverging routes combined? Tasks for a new working group on modelling and evaluation for sustainability. *Journal of Cleaner Production* 15: 1183-1184.

Huston, A.C. 2008. From research to policy and back. *Child Development* 79: 1-12.

IAEA (International Atomic Energy Agency), UN Department of Economic and Social Affairs, International Energy Agency, Eurostat & European Environment Agency 2005. *Energy Indicators for Sustainable Development. Guidelines and Methodologies*. http://www-pub.iaea.org/MTCD/publications/PDF/Pub1222_web.pdf. Accessed February 8, 2012.

IAIA 2006. *Health Impact Assessment. International Best Practice Principles*. IAIA Special Publication Series N° 5. International Association for Impact Assessment. Fargo, United States of America. <http://www.iaia.org/publicdocuments/special-publications/SP5.pdf>/ Accessed December 10, 2011.

IAIA 2009. What is impact assessment? http://www.iaia.org/publicdocuments/special-publications/What_is_IA_web.pdf. Accessed November 23, 2010.

IEA 2008. *World Energy Outlook 2009*. International Energy Agency. www.worldenergyoutlook.org. Accessed August 3, 2010.

IEA 2010. *Energy Technology Perspectives 2010 – Scenarios and Strategies to 2050*. OECD/International Energy Agency. Paris.

IMF 2007. *Poverty Reduction Strategy Papers*. Available at www.imf.org. Accessed 15 January 2010.

International Atomic Energy Agency, United Nations Department of Economic and Social Affairs, International Energy Agency, Eurostat & European Environment Agency 2005. *Energy Indicators for Sustainable Development: Guidelines and Methodologies*. Vienna. Austria.

IEO, Independent Evaluation Office 2004. *Report on the Evaluation of Poverty Reduction Strategy Papers (PRSPs) and the Poverty Reduction and Growth Facility (PRGF)*. Washington DC. USA.

IPCC 2007. *IPCC Fourth Assessment Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change Core Writing Team, Pachauri, R.K. and Reisinger, A. (Eds.)*. IPCC, Geneva, Switzerland. pp. 104.

Isaksson, K., Richardson, T. & Olsson, K. 2009. From consultation to deliberation? Tracing deliberative norms in EIA frameworks in Swedish roads planning. *Environmental Impact Assessment Review* 29: 295-304.

IUCN 2006. Biodiversity and development co-operation. Background document for the Paris Conference of September 19-21, 2006. World Conservation Union. Available at <http://www.countdown2010.net/paris2006/index.html>. Accessed July 26, 2007.

IUCN, WWF & UNEP 1980. The World Conservation Strategy – Living Resource Conservation for Sustainable Development.

IVM 2006. SustainabilityA-Test. Institute for Environmental Studies. Vrije Universiteit Amsterdam. The Netherlands. <http://www.sustainabilitya-test.net/>. Accessed June 29, 2011.

Jacob, K., Hertin, J. & Volkery, A. 2007. Considering environmental aspects in integrated impact assessment: lessons learned and challenges ahead. In: *Impact Assessment and Sustainable Development – European Practice and Experience*. Edited by George, C. & Kirkpatrick, C. Edward Elgar Publishing. Cheltenham, UK & Northampton, USA.

Jacobs, S. 2006. Current Trends in Regulatory Impact Analysis: The Challenges of Mainstreaming RIA into Policy-making. Washington DC: Jacobs & Associates Inc. <http://www.regulatoryreform.com/pdfs/Current%20Trends%20and%20Processes%20in%20RIA%20-%20May%202006%20Jacobs%20and%20Associates.pdf> Accessed August 10, 2010.

Jänicke, M. 1992. Conditions for environmental policy success: an international comparison. *The Environmentalist* 12: 47-58.

Jänicke, M. 2007. Evaluation for sustainable development: the Rio model of governance. In: *Impact Assessment and Sustainable Development – European Practice and Experience*. Edited by George, C. and Kirkpatrick, C. Edward Elgar Publishing. Cheltenham, United Kingdom & Northampton, United States of America.

Jerneck, A., Olsson, L., Ness, B., Anderberg, S., Baier, M., Clark, E., Hickler, T., Hornborg, A., Kronsell, A., Lövbrand, E. & Persson, J. 2011. Structuring sustainability science. *Sustainability Science* 6: 69-82.

Jha-Thakur, U., Gazzola, P., Peel, D., Fischer, T. & Kidd, S. 2009. Effectiveness of strategic environmental assessment – the significance of learning. *Impact Assessment and Project Appraisal* 27: 133-144.

Johnson, D.P. 2008. Critical Theory: Social System Requirements Versus Human Needs. In: *Contemporary Sociological Theory. An Integrated Multi-Level Approach*. Springer Science + Business Media LCC. New York. United States of America.

Jorgensen, M. & Philips, L. 2002. *Discourse analysis as theory and method*. Sage Publications. London, United Kingdom.

Joss, S. & Bellucci S. 2002. Participatory Technology Assessment – European Perspectives. Centre for Study of Democracy. University of Westminster. London. United Kingdom.

Jung, M. 2006. Host Country Attractiveness for CDM non-sink projects. *Energy Policy* 34: 2173-2184.

Kajikawa, Y., Ohno, J., Takeda, Y., Matsushima, K. & Komiyama, H. 2007. Creating an academic landscape of sustainability science: an analysis of the citation network. *Sustainability Science* 2: 221-231.

Kasemir, B., Jäger, J., Jaeger, C.C. & Gardner, M. 2003. *Public Participation in Sustainability Science. A Handbook*. Cambridge University Press. United Kingdom.

Kastenhofer, K., Bechtold, U. & Wilfing, H. 2011. Sustaining sustainability science: the role of established inter-disciplines. *Ecological Economics* 70: 835-843.

Kates, R.W., Clark, W.C., Corell, R., Hall, M.J., Jaeger, C.C., Lowe, I., McCarthy, J.J., Schellnhuber, H.J., Bolin, B., Dickson, N.M., Faucheux, S., Gallopin, G.C., Grubler, A., Huntley, J., Jäger, J., Jodha, N.S., Kasperson, R.E., Mabogunje, A., Matson, P., Mooney, H., Moore III, B., O'Riordan, T. & Svedin, U. 2001. Sustainability Science. *Science* 292: 641-642.

Keen, M. & Sullivan, M. 2005. Aiding the environment: the Australian Development Agency's experience of implementing an environmental management system. *Environmental Impact Assessment Review* 25: 628-649.

Kemp, R. & Martens, P. 2007. Sustainable Development: How to manage something that is subjective and never can be achieved. *Sustainability: Science, Practice and Policy* 3 (2): 5-14.

Kennedy, D. 2003. Sustainability and the commons. Editorial. *Science* 302.

Kestemont, B. 2010. Les indicateurs de développement durable. Fondements et applications. Thèse de doctorat. Université Libre de Bruxelles. Juin 2010. <http://theses.ulb.ac.be/ETD-db/collection/available/ULBetd-07152010-174134/> Accessed April 16, 2012.

Kestemont, B., Frendo, L. & Zaccai, E. 2011. Indicators of the impacts of development on environment: a comparison of Africa and Europe. *Ecological Indicators* 11: 848-856.

Kidd, C. 1992. The evolution of sustainability. *Journal of Agricultural and Environmental Ethics* 5: 1-26.

King Baudouin Foundation 2010. Public Forum: 'How to decide on the long-term management of highly radioactive and long-lived waste. Report. February 2010 (*in Dutch*).

King Baudouin Foundation 2011. www.kbs-frb.be. Accessed June 14, 2011.

Kirkpatrick, C. & Lee, N. 2002. Further development of the methodology for a sustainability impact assessment of proposed WTO negotiations. Final Report to the European Commission. Institute for Development Policy and Management. University of Manchester. April 2002. Manchester. United Kingdom.

Kirkpatrick, C. & Parker, D. 2004. Regulatory impact assessment and regulatory governance in developing countries. *Public Administration and Development* 24: 333-344.

Kjorven, O. & Lindhjem, H. 2002. Strategic environmental assessment in World Bank operations: experience to date —future potential. Background Paper prepared for the Environmental Strategy. ECON Centre for Economic Analysis for World Bank. Oslo. Norway.

- Kloprogge, P. & Van Der Sluijs, J. 2006. The inclusion of stakeholder knowledge and perspectives in integrated assessment of climate change. *Climatic Change* 2006: 359-389.
- Kortenkamp, K. & Moore, C. 2001. Ecocentrism and anthropocentrism: moral reasoning about ecological commons dilemmas. *Journal of Environmental Psychology* 21: 261-272.
- Kuhn, S. 1962. *The Structure of Scientific Revolutions*. The University of Chicago Press Ltd. London. United Kingdom.
- Kuo, N-W., Hsiao, T-W. & Yu, Y-H. 2005. A Delphi-matrix approach to SEA and its application within the tourism sector in Taiwan. *Environmental Impact Assessment Review* 25: 259-280.
- Laes, E. 2006. Nuclear Energy and Sustainable Development. Theoretical Reflections and Critical-Interpretative Research Towards a Better Support for Decision-Making. Doctoral Thesis. Katholieke Universiteit Leuven. October 2006. Leuven. Belgium.
- Laes, E., Chayapathi, L., Eggermont, G. & Meskens, G. 2007. *Kernenergie (on)besproken*. viWTA & Acco. Leuven, Belgium.
- Laes, E. & Couder, J. 2010. SEPIA Long-term Energy Scenarios. SEPIA Deliverable 2.1. Research Programme 'Science for a Sustainable Development'. Belgian Science Policy. Brussels. Belgium. www.ua.ac.be/SEPIA. Accessed June 29, 2011.
- Laes, E., Eggermont, G. & Bombaerts, G. 2009. A risk governance approach for high-level waste in Belgium: a process appraisal. Paper presented at the 'Managing Radioactive Waste' Conference in Göteborg, Sweden. 2009. www.cefos.gu.se/forskning/radwaste/conference/papers. Accessed December 4, 2010.
- Laes, E. & Maes, F., 2008. Sustainability assessment: concepts and methodology. SEPIA Deliverable 1.1a. Research Programme 'Science for a Sustainable Development'. Belgian Science Policy. www.ua.ac.be/SEPIA. Accessed June 29, 2011
- Lafferty, W.M. & Meadowcroft, J., 2000. *Implementing sustainable development. Strategies and initiatives in high consumption societies*. Oxford University Press. New York. United States of America.
- Lasswell, H.D. 1971. *A Pre-View of Policy Sciences*. Elsevier. New York. United States of America.
- Lee, N. 2006. Bridging the gap between theory and practice in integrated assessment. *Environmental Impact Assessment Review* 26: 57-68.
- Lehtonen, M. 2004. The environmental-social interface of sustainable development: capabilities, social capital, institutions. *Ecological Economics* 49: 199-214.
- Lehtonen, M. 2009. OECD organisational discourse, peer reviews and sustainable development: an ecological-institutionalist perspective. *Ecological Economics* 69: 389-397.
- Lele, S.M., 1991. Sustainable development: a critical review. *World Development* 19: 607-621.
- Lijphart, A. 1975. The comparable cases strategy in comparative research. *Comparative Political Studies* 8: 158-177.
- Lindblom, C.E. 1959. The science of 'muddling through'. *Public Administration Review* 19: 79-88.

Lindquist, E.A. 2001. Discerning policy influence: framework for a strategic evaluation of IDRC-supported research. School of Public Administration. University of Victoria.

Lior, N. 2010. Sustainable energy development: the present (2009) situation and possible paths to the future. *Energy* 35: 3976-3994. doi 10.1016/j.energy.2010.03.034

Little, A.W. & Green, A. 2009. Successful globalisation, education and sustainable development. *International Journal of Educational Development* 29: 166-174.

Lozano, R. 2006. Incorporation and institutionalization of SD into universities: breaking into barriers of change. *Journal of Cleaner Production* 14: 787-796.

Lubchenco, J. 1998. Entering the century of the environment: a new social contract for science. *Science* 279: 491-497.

Luck, L., Jackson, D & Usher. K 2006. Case Study: a bridge across the paradigms. *Nursing Inquiry* 13: 103-109.

Luks, F. & Siebenhüner, B. 2007. Transdisciplinarity for social learning? The contribution of the German socio-ecological research initiative to sustainability governance. *Ecological Economics* 63: 418-426.

Lyons, D. & Deutz, P. 2010. Regional sustainable development: making development work in politically contingent space. *Sustainable Development* 18: 183-186.

MacLaren, V.W. 1987. The use of social surveys in environmental impact assessment. *Environmental Impact Assessment Review* 7: 363-375.

Mandelkern Group on Better Regulation 2001. Final Report. November 13, 2001. Brussels. Belgium.

Martens, P. 2006. Sustainability: science or fiction? *Sustainability: Science, Practice and Policy* 2: 1-5.

Matzler, K., Renzl, B., Müller, J., Herting, S. & Mooradian, T.A. 2008. Personality traits and knowledge sharing. *Journal of Economic Psychology* 29: 301-313.

Mauerhofer, V. 2008. 3D-Sustainability: an approach for priority setting in situation of conflicting interest towards a sustainable development. *Ecological Economics* 64: 496-506.

Meadowcroft, J. 2011. Engaging with the politics of sustainability transitions. *Environmental Innovation and Social Transitions* 1: 70-75.

Meadows, D.H. 1972 (ed.). *The Limits to Growth. A Report of the Club of Rome's Project on the Predicament of Mankind*. Potomac Associates.

Meadows, D.H. 1998. *Indicators and information Systems for Sustainable Development*. Sustainability Institute. Hartland Four Corners. Dartmouth. United States of America

Meadows, D. H. 2008. *Thinking in Systems*. Chelsea Green Publishing. White River Junction, Vermont, United States of America.

- Mert, A. 2009. Partnerships for sustainable development as discursive practice: shifts in discourses of environment and democracy. *Forest Policy and Economics* 11: 326-339.
- Mestrum, F. 2005. Poverty reduction and sustainable development. In: *The World Summit on Sustainable Development – the Johannesburg Conference*. Edited by Hens, L. & Nath, B. Springer. Dordrecht. The Netherlands.
- Mickwitz, P. & Melanen, M. 2009. The role of co-operation between academia and policymakers for the development and use of sustainability indicators – a case from the Finnish Kymenlaakso Region. *Journal of Cleaner Production* 17: 1086-1100.
- Midilli, A., Dincer, I. & Ay, M. 2006. Green energy strategies for sustainable development. *Energy Policy* 34: 3623-3633.
- Millennium Ecosystem Assessment 2005. *Ecosystems and Human Well-Being. Synthesis*. Island Press. Washington DC. United States of America.
- MIRA. Flemish Environmental Reports 2009 (in Dutch). Available at: www.milieuraapport.be. Accessed May 2, 2010.
- Mog, J.M. 2004. Struggling with sustainability – a comparative framework for evaluating sustainable development programs. *World Development* 32: 2139-2160
- Mohan, G. 2002. Disappointments of civil society: the politics of NGO intervention in Northern Ghana. *Political Geography* 21: 125-154.
- Moldan, B. & Dahl, A. 2007. Challenges to sustainability indicators. In: *Sustainability Indicators - A Scientific Assessment*. Edited by Hak, T., Moldan, B. & Dahl, A. Island Press. Washington DC. United States of America.
- Morrison-Saunders, A. & Fischer, T. 2006. What is wrong with EIA and SEA anyway? A sceptic's perspective on sustainability assessment. *Journal of Environmental Assessment Policy and Management* 8: 19-39.
- Morse, S. & Fraser, E.D.G. 2005. Making 'dirty' nations look clean? The nation state and the problem of selecting and weighting indices as tools for measuring progress towards sustainability. *Geoforum* 36: 625-640.
- Mourogov, V.M. 2000. Role of nuclear energy for sustainable development. *Progress in Nuclear Energy* 37: 19-24.
- Mugenyi, O., Tumushabe, L. & Waldman, L. 2005. 'My voice is also there': the integration of environmental and natural resources into the Uganda Poverty Eradication and Action Plan — Uganda Country Review. Study initiated under the Poverty Environment Partnership (PEP) and jointly funded and managed by CIDA (Canadian International Development Agency), DFID (Department for International Development) and GTZ (Gesellschaft für Technische Zusammenarbeit).
- Müller, A. 2006. A flower in full blossom? Ecological economics at the crossroads between normal and post-normal science. *Ecological Economics* 45: 19-27.

Munashinge, M. 1993. Environmental economics and sustainable development. World Bank Environment Paper 3. Washington, United States of America.

Munton, R. 2003. Deliberative democracy and environmental decision-making. In: *Negotiating Environmental Change – New Perspectives for Social Science*. Berkhout, F., Leach, M. & Scoones, I. (eds.). Edward Elgar Publishing. Cheltenham, United Kingdom & Northampton, United States of America.

Mylylla, S. and Kujava, K. 2005. Societal premises for sustainable development in large southern cities. *Global Environmental Change* 15: 224-237.

Naylor, R.L., Goldburg, R.J., Mooney, H., Beveridge, M., Clay, J., Folke, C., Kautsky, N., Lubchenco, J., Primavera, J. & Williams, M. 1998. Nature's subsidies to shrimp and salmon farming. *Science* 282: 883-884.

Neergaard, M.A., Olesen, F., Andersan, R.S. & Sondergaard, J. 2009. Qualitative description – the poor cousin of health research. *BMC Medical Research Methodology* 9:52.

Nelkin, D. & Pollak, M. 1979. Public participation in technological decisions: reality or grand illusion? *Technology Review* 9: 55-64.

Ness, B., Urbel-Piirsalu, E., Anderberg, S. & Olsson, L. 2007. Categorising tools for sustainability assessment. *Ecological Economics* 60: 498-508.

Newman, L. 2006. Change, Uncertainty and Futures of Sustainable Development. *Futures* 38: 633-637.

Nguyen, Q. & Stewart, H. 2005. The PRSP process and environment– the case of Vietnam. Study initiated under the Poverty Environment Partnership (PEP) and jointly funded and managed by CIDA (Canadian International Development Agency), DFID (Department for International Development) and GTZ (Gesellschaft für Technische Zusammenarbeit).

Nilsson, M., Bjorklund, A., Finnveden, G. & Johansson, J. 2005. Testing a SEA methodology for the energy sector: a waste incineration tax proposal. *Environmental Impact Assessment Review* 25: 1-32.

NIRAS 2010. Ontwerp van Afvalplan voor het langetermijnbeheer van geconditioneerd hoogradioactief en/of langlevend afval en overzicht van verwante vragen. http://www.niras-afvalplan.be/nieuw/downloads/Ontwerpplan%202010-06-07_def.pdf Accessed September 30, 2010.

Nooteboom, S., 2007. Impact assessment procedures for sustainable development: a complexity theory perspective. *Environmental Impact Assessment Review* 22: 3-16.

Nordtveit, B.H. 2009. Western and Chinese development discourses: education, growth and sustainability. *International Journal of Educational Development* 29: 157-165.

Nowotny, H., Scott, P. & Gibbons, M. 2001. *Re-Thinking Science-Knowledge and the Public in an Age of Uncertainty*. Polity Press. Cambridge. United Kingdom.

Nurse, K. 2006. Culture as the fourth pillar of sustainable development. Prepared for the Commonwealth Secretariat. London, United Kingdom.

Nussbaumer, P. 2009. On the contribution of labelled Certified Emission Reductions to sustainable development: a multi-criteria evaluation of CDM projects. *Energy Policy* 37: 91- 101.

OECD, Organisation for Economic Co-operation and Development 2001. *Strategies for Sustainable Development. Practical Guidance for Development Co-Operation*. Paris. France.

OECD/DAC, Organisation for Economic Co-operation and Development/Development Assistance Committee (2006). *Good Practice Guidance on Applying Strategic Environmental Assessment (SEA) in Development Cooperation*. Task Team on Strategic Environmental Assessment (ENVIRONET). Paris. France.

OECD 2002. Governance for sustainable development. Five OECD Case Studies. Paris. France.

OECD 2006 a. Maximising the Impact of Regulatory Impact Analysis on Regulatory Quality. Paris. France.

OECD 2006 b. Applying Strategic Environmental Assessment – Good Practice Guidance for Development Co-operation. DAC Guidelines and Reference Series. Paris. France.

O’Faircheallaigh, C. 2010. Public participation and environmental impact assessment: purposes, implications and lessons for public policy making. *Environmental Impact Assessment Review* 30: 19-27.

Olsen, K. H. & Fenhann, J. 2008. Sustainable development benefits of clean development mechanism projects A new methodology for sustainability assessment based on text analysis of the project design documents submitted for validation. *Energy Policy* 36: 2773-2784.

Onishi, A. 2007. The impact of CO2 emissions on the world economy: policy simulations of FUGI global model. *Journal of Policy Modeling* 29: 797-819.

Ostrom, E. 2009. A general framework for assessing the sustainability of socio-ecological systems. *Science* 325: 419-422.

Otto-Banaszak, I., Matczak, P., Wesseler, J. & Wechsung, F. 2011. Different Perceptions of Adaptation to Climate Change: a Mental Model Approach Applied to the Evidence from Expert Interviews. *Regional Environmental Change*. Online First. 2 September 2010.

Owens, S. and Cowell, R., 2002. *Land and Limits: Interpreting Sustainability in the Planning Process*. Routledge. London, United Kingdom.

Owens, S, Rayner, T. & Bina, O. 2004. New agendas for appraisal: reflections on theory, practice and research. *Environment and Planning* 36: 1943-1959.

Pahl-Wostl, C., Mostert, E. & Tabara, D. 2008. The growing importance of social learning in water resource management and sustainability science. *Ecology and Society* 13: 24. <http://www.ecologyandsociety.org/vol13/iss1/art24/>

Paley, J. & Lilford, R. 2011. Qualitative methods: an alternative view. *British Medical Journal* 342: d424.

Paredis, E., Bauler, T., Boulanger, P.M., Heyerick, A., Lavrysen, L., Varone, F., Zaccà, E., Waktare, M., Bonifazi, A., Lussis, B., Thomaes, P., Risse, N. & Doom, R. 2006. Methodology and feasibility of sustainability impact assessment. Case: federal policy-making process. Scientific Support Plan for a Sustainable Development Policy. Belgian Science Policy. Brussels. Belgium.

Paredis E. 2008. Transition management in Flanders. Policy context, first results and surfacing tensions. Paper of the Flemish Policy Research Centre for Sustainable Development. Gent, Belgium. Available at: http://www.steunpuntdo.be/papers/Paper_Erik_Transition_May%202008.pdf. Accessed November 8, 2011.

Paredis, E., Goeminne, G., Vanhove, W., Maes, F. & Lambrecht, J. 2008. The concept of ecological debt – its meaning and applicability in international policy. Academia Press. Gent, Belgium.

Paredis, E. 2010. Naar een verdere onderbouwing van het Vlaamse beleid voor duurzaamheidstransities. Working Paper 19. Steunpunt Duurzame Ontwikkeling/Policy Research Centre for Sustainable Development. www.steunpuntdo.be. Accessed April 19, 2012.

Paris Declaration 2005. Paris declaration on aid effectiveness. High Level Forum. Paris, France.

Partidario, M.R. & Moura, V. 2000. Strategic sustainability appraisal: one way of using SEA in the move toward sustainability. In: Partidario, MR & Clark R (Editors): *Perspectives on SEA*. CRC Press. New York. United States of America.

PCFplus 2002. Applying sustainable development criteria to CDM projects: PCF experience. PCFplus Report 10, prepared by S. Huq. Prototype Carbon Fund. World Bank. Washington DC. United States of America.

PEI 2010. Poverty Environment Initiative. www.unpei.org. Accessed January 30, 2012.

Pelletier, N. 2010. Of laws and limits: an ecological economic perspective on redressing the failure of contemporary global environmental governance. *Global Environmental Change* 20: 220-228.

Peterlin, M., Kross, B. & Kontic, B.A. 2008. A method for the assessment of changes in environmental perception during an EIA process. *Environmental Impact Assessment Review* 28: 533-545.

Peterson, J. & Bomberg E. 1999. *Decision-making in the European Union*. Macmillan Press Ltd. Houndmills, United Kingdom.

Petschow U, Rosenau J & von Weizsäcker, EU. *Governance and sustainability: New challenges for states, companies and civil society*. Greenleaf Publishing, United Kingdom. 2005.

Phillips, N., Lawrence, T.B. & Hardy, C. 2004. Discourse and Institutions. *Academy of Management Review* 29: 635-652.

Pielke, R.A. Jr. 2007. *The Honest Broker – Making Sense of Science in Policy and Politics*. Cambridge University Press. New York, United States of America.

Pintér, L., Hardi, P., Martinuzzi, A. & Hall, J. 2012. Bellagio STAMP: Principles for sustainability assessment and measurement. *Ecological Indicators* 17: 20-28.

Piron, L. H. & Norton, A. 2004. Politics and the PRSP approach: Uganda case study. Working Paper 240. Overseas Development Institute. London. United Kingdom.

PODDO 2009. Guidance for sustainability assessment. (In French & in Dutch). www.poddo.be. Accessed December 20, 2011.

Ponting, C. 2007. *A new green history of the world - the environment and the collapse of great civilizations*. Penguin Books. London. United Kingdom.

Pope, J., 2006. What's so special about sustainability assessment? Editorial. *Journal of Environmental Assessment Policy and Management* 8: v-x.

Pope, J. 2007. Facing the Gorgon: Sustainability Assessment and Policy Learning in Western Australia. Thesis presented for the degree of Doctor of Philosophy. Institute for Sustainability and Technology Policy. Murdoch University. Western Australia.

Pope, J., Annandale, D. & Morrison-Saunders, A. 2004. Conceptualising sustainability assessment. *Environmental Impact Assessment Review* 24: 595-616.

Pope, J., Morrison-Saunders, A. & Annandale, D. 2005. Applying sustainability assessment models. *Impact Assessment and Project Appraisal* 23: 293-302.

Pope, J. & Dalal-Clayton, B. 2011. From SEA to Sustainability Assessment? In: *Handbook of Strategic Environmental Assessment*. Edited by Sadler, B., Aschemann, R., Dusik, J., Fischer, T.B., Partidario, M. & Verheem, R. Earthscan. London, United Kingdom & Washington DC, United States of America.

Potter, J. & Wetherell, M. 1987. *Discourse and Social Psychology – Beyond Attitudes and Behaviour*. Sage Publications. London, United Kingdom & Thousand Oaks, New Delhi. India.

Poulsen, P. 2006. Guidance for completing the proposed format for Poverty Impact Assessment Report based on discussion of PovNet Sub-group and consultation with others. DFID.

Prescott-Allen, R. 2001. *The wellbeing of nations - a country by country index of quality of life and the environment*. Island Press. Washington DC, United States of America.

Princen, T. 2010. Speaking of sustainability: the potential of metaphor. *Sustainability: Science, Practice and Policy* 6: 60-65.

Pross, P. 1986. *Group Politics and Public Policy*. Oxford University Press. Toronto, Canada.

Puy, N., Tabara, D., Bartroli Molins J., Bartroli Almera, J. & Rieradevall, J. 2008. Integrated Assessment of forest bioenergy systems in Mediterranean basin areas: the case of Catalonia and the use of participatory IA-focus groups. *Renewable and Sustainable Energy Reviews* 12: 1451-1464.

Quental, N., Lourenço, J.M. & da Silva, F.N. 2011. Sustainable Development Policy: Goals, Targets and Political Cycles. *Sustainable Development* 19: 15-29.

Radaelli, C.M. 2007. Whither better regulation for the Lisbon agenda? *Journal of European Public Policy* 14 (2).

Radinow, P. & Sullivan, W.M. 1987. *Interpretive Social Science – A Second Look*. University of California Press. Berkeley and Los Angeles, California, United States of America.

Ragin, C.C. 1992. Introduction: Cases of 'what is a case?' In: *What is a case? Exploring the foundations of social inquiry*. Edited by Ragin, C.C. and Becker, H.S. Cambridge University Press.

Ramakrishna, K. Citizen participation and developing country agendas. In: Kasemir, B., Jäger, J., Jaeger, C.C. & Gardner, M. 2003. *Public Participation in Sustainability Science. A Handbook*. Cambridge University Press. United Kingdom.

Ramana, M.V. & Rao, D.B. 2010. The environmental impact assessment process for nuclear facilities: an examination of the Indian experience. *Environmental Impact Assessment Review* 30: 268-271.

Ramirez, A., Hoogwijk, M., Hendriks, C. & Faaij, A. 2008. Using a participatory approach to develop a sustainability framework for carbon capture and storage systems in The Netherlands. *International Journal of Greenhouse Gas Control* 2: 136-154.

Ramo, C.R. 2004. *The Beijing Consensus*. The Foreign Policy Centre. London, United Kingdom.

Ramos, T.B. 2009. Development of regional sustainability indicators and the role of academia in this process: the Portuguese practice. *Journal of Cleaner Production* 17: 1101-1115.

Rätzhel, N. & Uzzell, D. 2009. Transformative environmental education: a collective rehearsal for reality. *Environmental Education Research* 15: 263-277.

Ravetz, J. 2000. Integrated assessment for sustainability appraisal in cities and regions. *Environmental Impact Assessment Review* 20: 31-64.

Rees, W. 1992. Ecological footprints and appropriated carrying capacity: what urban economics leaves out. *Environment and Urbanization* 4: 121-130.

Reid, W. 2006. *Millennium Ecosystem Assessment: survey of initial impacts*. Stanford Institute for the Environment. Stanford. United States of America.

Renda, A. 2009. Better regulation. In: *Policy-making in the European Union: achievements, challenges and proposals for reform*. CEPS Paperback. June 2009. Brussels. Belgium.

Renn, O., Webler, H., Rakel, P., Dienel, P. & Johnson, B. 1993. Public participation in decision-making: a three step procedure. *Policy Sciences* 26: 189-214.

Renn, O., Webler, T. & Weidemann, P. 1995. *Fairness and Competence in Citizen Participation*. Kluwer. London. United Kingdom.

Richardson, T. & Jensen, O.B. 2000. Discourses of mobility and polycentric development: a contested view of European spatial planning. *European Planning Studies* 8: 503-520.

Ridoutt, B.G., Sanguansri, P. & Harper, G.S. 2011. Comparing carbon and water footprints for beef cattle production in southern Australia. *Sustainability* 3: 2443-2455.

Rigby, D., Howlett, D. & Woodhouse, P. 2000. A review of indicators of agricultural and rural livelihood sustainability. Working Paper 2 'Sustainability indicators for natural resources management and policy. UK Department for International Development. University of Manchester. Manchester. United Kingdom.

Rist, S. & Dahdouh-Guebas, F. 2006. Ethnoscience – a step towards the integration of scientific and indigenous forms of knowledge in the management of natural resources for the future. *Environment, Development & Sustainability* 8: 467-493.

- Rittel, H. & Webber, M. 1973. Dilemmas in general theory of planning. *Policy Sciences* 4: 155-169.
- Robinson, J., 2004. Squaring the circle? Some thoughts on the idea of sustainable development. *Ecological Economics* 48: 369-384.
- Rockström, J., Steffen, W., Noone, K., Persson, A., Stuart Chapin, F., Lambin, E.F., Lenton, T.M., Scheffer, M., Folke, C., Schellnhuber, J.H., Nykvist, B., de Wit, C.A., Hughes, T. van der Leeuw, S., Rodhe, H. Sörlin, S., Snyder, P.K., Costanza, R., Svedin, U., Falkenmark, M., Karlberg, M., Corell, R.W. Fabry, V.J., Hansen, J., Walker, B., Liverman, D., Richardson, K., Crutzen, P and Foley, J.A., 2009. A safe operating space for humanity. *Nature* 461: 472-475.
- Roodman, D.M. 1998. *The Natural Wealth of Nations: Harnessing the Market for the Environment*. Norton & Company. New York. United States of America.
- Rosen, M. A. 2009. Energy sustainability: a pragmatic approach and illustrations. *Sustainability* 2009: 55-80.
- Rosenau, J. 2005a. *Strong Demand, Huge Supply: Governance in an Emerging Epoch*. In: *Multi-Level Governance*. Edited by I. Bache and M. Flinders. Oxford University Press. Oxford, United Kingdom.
- Rosenau, J. 2005b. Globalisation and Governance – Sustainability between fragmentation and integration. In: *Governance and Sustainability*. Edited by Petschow, U., Rosenau, J. & Von Weizsäcker, E.U. GreenLeaf Publishing. Sheffield, United Kingdom.
- Rosenström, U. 2006. Exploring the policy use of sustainable development indicators: interviews with Finnish politicians. *The Journal of Trans-disciplinary Environmental Studies* 5: 1-13.
- Rotmans, J., Kemp, R. & Asselt, M. 2001. More evolution than revolution: transition management in public policy. *Foresight* 3: 25-32.
- Rotmans, J. 2006. Tools for integrated sustainability assessment: a two-track Approach. *The Integrated Assessment Journal* 6: 35-57.
- Rowe, G. & Frewer, L.J. 2004. Evaluating public participation exercises: a research agenda. *Science, Technology and Human Values* 29: 512-556.
- Rozema, J.G., Bond, A.J., Cashmore, M. & Chilvers, J. 2012. An investigation of environmental and sustainability discourses associated with the substantive purposes of environmental assessment. *Environmental Impact Assessment Review* 33: 80-90.
- Ruddy, T.F. & Hilty, F.M. 2008. Impact assessment and policy learning in the European Commission. *Environmental Impact Assessment Review* 28: 90-105.
- Runhaar, H. 2009. Putting SEA in context: a discourse perspective on how SEA contributes to decision-making. *Environmental Impact Assessment Review* 29: 200-209.
- Runhaar, H.A.C. & Driessen, P.P.J. 2007. What makes strategic environmental assessment successful environmental assessment? *Impact Assessment and Project Appraisal* 25: 2-14.
- Runhaar, H., Dieperink, C. & Driessen, P. 2005. Policy analysis for sustainable development – Complexities and methodological responses. Paper for the Workshop on Complexity and Policy Analysis. Cork, Ireland, 22-24 June 2005.

Runhaar, H., Runhaar, P.R. & Oegema, T. 2010. Food for thought: conditions for discourse reflection in the light of environmental assessment. *Environmental Impact Assessment Review* 30: 339-346.

Rydin, Y., Holman, N. & Wolff, E. 2003. Local sustainability indicators. *Local Environment* 8: 581-589.

Sabatier, P. 1988. An advocacy coalition framework of policy change and the role of policy-oriented learning therein. *Policy Sciences* 21: 128-168.

Sabau, G.L. 2010. Know, live and let live: towards a redefinition of the knowledge-based economy – sustainable development nexus. *Ecological Economics* 69: 1193-1201.

Sachs, J. 2008. *Common Wealth: Economics for a Crowded Planet*. The Penguin Press. New York, United States of America.

Saha, P.C. 2003. Sustainable energy development: a challenge for Asia and the Pacific Region in the 21st century. *Energy Policy* 31: 1051-1059.

Schneiders, A., Van Daele, T., Van Landuyt, W. & Van Reeth, W. 2011. Biodiversity and ecosystem services: Complementary approaches for ecosystem management? *Ecological Indicators*. doi: 10.1016/j.ecolind.2011.06.021

Scholten, J.J. & Post, R.A.M. 1999. Strengthening the integrated approach to impact assessments in development cooperation. *Environmental Impact Assessment Review* 19: 233–243.

Scrase, J.I. & Sheate, W.R. 2002. Integration and integrated approaches to assessment: what do they mean for the environment? *Journal of Environmental Policy and Planning* 4: 275-294.

Sedlacko, M. & Gjoksi, N. 2009. Sustainable development and economic growth: Overview and reflections on initiatives in Europe and beyond. *European Sustainable Development Network Quarterly Report*. December 2009.

Segnestam, L. 2002. Indicators of Environment and Sustainable Development. Theories and Practical Experience. *Environmental Economics Series*. Paper N° 89. The World Bank Environmental Department. Washington, United States of America.

Sen, A.K. 1999. *Development as Freedom*. Oxford University Press. Oxford, United Kingdom.

Senbel, M., McDaniels, T. & Dowlatabadi, H. 2003. The ecological footprint: a non-monetary metric of human consumption applied to North America. *Global Environmental Change* 13: 83-100.

SERV 2006. *Aanbeveling – Reguleringimpactanalyse in Vlaanderen. Evaluatie en aanbevelingen*. 22 November, 2006. Brussels, Belgium.

SERV 2009 a. Pact 2020: A new plan for the future of Flanders. 20 objectives. Social-Economic Council of Flanders (*in Dutch*). January 2009. Brussels. Belgium. <http://www.serv.be/uitgaven/1450.pdf>. Accessed 10 July 2010.

SERV 2009 b. Inter-Institutional Agreement (IIA) between the Flemish Parliament, the Flemish Government, the Socio-Economic Council for Flanders and the Strategic Advisory Boards on a

common approach to Regulatory Impact Analysis (RIA) (*in Dutch*). Brussels. Belgium. <http://www.serv.be/uitgaven/1467.pdf>. Accessed 10 July 2010.

Shyamsundar, P. 2002. Poverty–environment indicators. Environmental Economics Series. Paper 84. World Bank Environment Department. Washington DC, United States of America.

Siebenhüner, B. 2005. The role of social learning on the road to sustainability. In: *Governance and sustainability: new challenges for states, companies and civil society*. Eds U J Petschow, J Rosenau and E U von Weiszäcker. Greenleaf Publishing, Sheffield, United Kingdom.

Sinclair, A.H., Diduck, A. & Fitzpatrick, P. 2007. Conceptualizing learning for sustainability through environmental assessment: critical reflection on 15 years of research. *Environmental Impact Assessment Review* 28: 415-428.

Singh, R.K., Murty, H.R., Gupta, S.K. & Dikshit, A.K. 2012. An overview of sustainability assessment methodologies. *Ecological Indicators* 15: 281-299.

Smith, A., Stirling, A. & Berkhout, F. 2005. The governance of sustainable socio-technical transitions. *Research Policy* 34: 1491-1510.

Smith, A. & Stirling, A. 2010. ‘Moving inside or outside? Objectivation and Reflexivity in the Governance of Socio-Technical Systems’. *Journal of Environmental Policy and Planning* 8: 1-23.

Sneddon, C., Howarth, R. & Norgaard, R., 2006. Sustainable development in a post-Brundtland world. *Ecological Economics* 57: 253-268.

Söderbaum, P. 2007. Issues of paradigm, ideology and democracy in sustainability assessment. *Ecological Economics* 60: 613-626.

Sokolov, Y. & Beatty, R. 2010. Sustainable Nuclear Energy. International Atomic Energy Agency <http://www.iaea.org/Publications/Magazines/Bulletin/Bull511/51104023942.html>. Accessed August 5, 2010.

Southern, A., Lovett, A., O’Riordan, T. & Watkinson, A. 2011. Sustainable landscape governance: lessons from a catchment based study in whole landscape design. *Landscape and Urban Planning* 101: 179-189.

Spangenberg, J.H. 2010. World civilisations at crossroads: towards an expansionist or a sustainable future – lessons from history. *Futures* 42: 565-573.

Stake, R.E. 2008. *The art of case study research*. Sage Publications. Thousand Oaks, United States of America; London, United Kingdom & New Delhi, India.

Stern, R., 2007. Stern Review Report on the Economics of Climate Change. Cambridge University Press. Cambridge, United Kingdom.

Steyaert, S. & Lisoir, H. 2005. Participatory methods toolkit – a practitioner’s manual. King Baudouin Foundation & Flemish Institute for Science and Technology Assessment. (viWTA). Brussels, Belgium.

Suarez de Vivero, J.L., Rodriguez Mateos, J.C. & del Corral, D.F. 2008. The paradox of public participation in fisheries governance. The rising number of actors and the devolution process. *Marine Policy* 32: 319-325.

Sumner, A. & Tribe, M. 2008. *International development studies: theories and methods in research and practice*. Sage Publications. London, United Kingdom.

Sutter, C. & Pareno, J. C. 2007. Does the current Clean Development Mechanism deliver its sustainable development claim? An analysis of officially registered CDM projects. *Climatic Change* 84: 75-90.

Swallow, B 2005. Potential for poverty reduction strategies to address community priorities: case study of Kenya. *World Development* 33: 301–321.

Swanson, A. & Lundethors, L. 2003. Public Environmental Expenditure Reviews: experience and emerging practice. Environmental Strategy Papers no 7, May 2003. World Bank. Washington DC. United States of America.

Swanson, D., Pintér, L., Bregha, F., Volkery, A. & Jacob, K. 2004. National strategies for sustainable development: challenges, approaches and innovations in strategic and coordinated actions. International Institute for Sustainable Development, Stratos Inc, Environmental Policy Research Centre (University of Berlin), GTZ. Berlin, Germany.

Swart, R., Robinson, J. & Cohen, S. 2009. Climate change and sustainable development: expanding the options. *Climate Policy* 3, Supplement 1: S19-S40.

Swartling, A.G. 2006. Focus Groups in Sustainability Assessment. *In: Advanced Tools for Sustainability Assessment*. <http://ivm5.ivm.vu.nl/sat/?chap=5>. Accessed 1 July 2011.

Tabara J. D. & Ilhan, A. 2008. Culture as trigger for sustainability transition in the water domain: the case of the Spanish water policy and the Ebro river basin. *Regional Environmental Change* 8: 59-71.

Tanasescu, I. 2006. Competitiveness and environmental policy: a failed marriage? *Journal of Contemporary European Research* 2: 92-104.

Tanasescu, I. 2009. Stakeholder involvement in the Impact Assessment procedure at the EU level. *In: The European Commission and Interest Groups – Towards a Deliberative Interpretation of Stakeholder Involvement in EU Policy-Making*. VUBPress, Brussels. Belgium.

TEEB 2010. The Economics of Ecosystems and Biodiversity – Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations of TEEB. www.teebweb.org Accessed December 17, 2010.

TEP 2007. Evaluation of the Commission's Impact Assessment System. Final Report – Executive Summary. The Evaluation Partnership. http://ec.europa.eu/governance/impact/docs/key_docs/tep_eias_final_report_executive_summary_en.pdf. Accessed 15 April 2008.

Tharakan, P. & McDonald, M. 2004. Developing and testing a PRSP evaluation methodology. WWF Macroeconomics Program Office. Washington DC, United States of America.

Thompson, W.B. 2001. Policy making through thick and thin: thick description as a methodology for communications and democracy. *Policy Sciences* 34: 63-77.

Tométy, S.N., Lanmafankpotin, G. & Guedegbe, B. 2006. Etude initiale des impacts environnementaux du premier DSRP dans le cadre d'une évaluation environnementale stratégique au Bénin. (*Initial study of the environmental impacts of the first PRSP in the framework of a strategic environmental assessment in Benin*). UNDP, MEHU, ABE, APBEE and GTZ. April 2006. Cotonou, Benin.

Tsouvalis, J. & Waterton, C. 2012. Building participation upon critique: the Loweswater Care Project, Cumbria, UK. Environmental Modeling & Software. <http://dx.doi.org/10.1016/j.envsoft.2012.01.018>. Accessed April 17, 2012.

Tukker, A. & Butter, M. 2007. Governance of sustainable transitions: about the 4(0) ways to change the world. *Journal of Cleaner Production* 15: 94-103.

UNCED 1992. United Nations Conference on Environment and Development. Agenda 21. www.un.org/esa/sustdev/agenda21text.htm Accessed January 20, 2010.

UNDP (United Nations Development Programme) 2004. UNDP review of the Poverty Reduction Strategy Paper. New York, United States of America.

UNEP 2007. *Global Environmental Outlook – Environment for Development*. United Nations Environmental Programme. Progress Press. Valetta, Malta.

UNEP 2008. Global Green New Deal - UNEP Green Economy Initiative. <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=548&ArticleID=5955&lang=en> Accessed 15 July 2011.

UN ESA 2005. Expert Group Meeting and workshop on mainstreaming environment into development processes. Practical experiences and tools from sub-Saharan Africa. Report. 3–6 October 2005. Accra, Ghana.

UNFCCC, 2006. Report of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol on its first session, held at Montréal from 28 November to 10 December 2005. Available at: <http://cdm.unfccc.int/Reference/COPMOP/08a01.pdf#page=6>. Accessed April 21, 2009.

UNFCCC, 2009. <http://cdm.unfccc.int/index.html>. Accessed April 21, 2009.

United Nations 2010. <http://www.un.org/millenniumgoals/> Accessed January 7, 2012.

URT, United Republic of Tanzania 2004. Poverty reduction strategy. The third progress report 2002/03. Dar-es-Salaam. Tanzania.

URT 2004. The guide and action plan to mainstreaming environment into the poverty reduction strategy review. Vice President's Office. February 2004. Dar-es-Salaam. Tanzania.

URT 2005. Public expenditure review of environment – financial year 2004: final report. United Republic of Tanzania. Vice President's Office. August 2005. Dar-es-Salaam. Tanzania.

Utzinger, J., Wyss, K., Moto, D.D., Yémadji, N., Tanner, M. & Singer, B.H. 2005. Assessing Health Impacts of the Chad-Cameroon petroleum development and pipeline project: challenges and a way forward. *Environmental Impact Assessment Review* 25: 63-93.

Van Assche, J., Block, T. & Reynaert, H. 2010. Can community indicators live up to their expectations? The case of the Flemish City Monitor for Liveable and Sustainable Urban Development. *Applied Research in Quality of Life* 5: 341-352.

Van Asselt, M. & Rijkens-Klomp, N. 2002. A look in the mirror: reflection on participation in Integrated Assessment from a methodological perspective. *Global Environmental Change* 12: 167-184.

Van Buuren, A. & Nooteboom, S., 2010. The success of SEA in the Dutch planning practice. How formal assessments can contribute to collaborative governance. *Environmental Impact Assessment Review* 30: 127-135.

Vancoppenolle, D. & Brans, M. 2005. *De beleidsrol van ambtenaren en kabinetssmedenwerkers in de Vlaamse Overheid nader bekeken: Resultaten van het survey-onderzoek naar de bestuurlijke organisatie van de Vlaamse beleidsvorming: Analyserapport 1. D/2005/10106/012. Steunpunt Bestuurlijke Organisatie Vlaanderen. Leuven. Belgium.*

Vandenbrande, K. 2008. The role of the subnational level of government in decision-making for sustainable development – a multilevel governance perspective. Working Paper 4. Steunpunt Duurzame Ontwikkeling. Leuven, Belgium.

Van Gossum, P., Arts, B. & Verheyen, K. 2010. From ‘smart regulation’ to ‘regulatory arrangements’. *Policy Sciences* 43: 245-261.

Van Haelst, J. 2010. JoKER. Presentation at the seminar of the Vlaams EvaluatiePlatform (VEP), April 30, 2010. Brussels. Belgium.

Van Herzele, A. 2006. A forest for each city and town: story lines in the policy debate for urban forests in Flanders. *Urban Studies* 43: 673-696.

Van Humbeeck, P. 2007. Best practices in regulatory impact analysis: a review of the Flemish Region in Belgium. Social Economic Council of Flanders (SERV). Working Paper. February 2007. Brussels, Belgium.

Van Lancker, A. 2010. Towards a Flemish Poverty Impact Assessment? Presentation at the seminar of the *Vlaams EvaluatiePlatform* (VEP), Brussels, April 30, 2010. http://www.evaluatieplatform.be/doc/100430_Va%20Lancker.pdf. Accessed November 2010.

Van Tatenhove, J., Arts, B. & Leroy, P. 2000. *Political Modernisation and the Environment – The Renewal of Environmental Policy Arrangements*. Kluwer. Dordrecht, the Netherlands.

van Zeijl-Rozema, A., Cörvers, R., Kemp, R. & Martens, P. 2008. Governance for Sustainable Development: A Framework. *Sustainable Development* 16: 410-421.

van Zon, H. 2002. *Geschiedenis en duurzame ontwikkeling - duurzame ontwikkeling in historisch perspectief; enkele verkenningen*. Nijmegen, Universitair Centrum Milieuwetenschappen/Katholieke Universiteit Nijmegen. The Netherlands.

Vargas, C.M. 2000. Sustainable development education: averting or mitigating cultural collision. *International Journal of Cultural Development* 20: 377-396.

Vedung, E. 1997. *Public policy and programme evaluation*. Transaction Publishers. New Brunswick. Canada.

Verbruggen, A., 2007. Annex 1: Glossary *In: IPCC Fourth Assessment Report. Working Group III Report 'Mitigation of climate change'*.

Verbruggen, A. 2008. Renewable and nuclear power: a common future? *Energy Policy* 36: 4036-4047.

VMM 2009. MIRA-S 2009. State of the Environment Report. Flemish Environmental Agency. *In Dutch: Milieuraapport. Vlaamse Milieumaatschappij*. Brussels. Belgium.

Voss, J.P. & Bornemann, B. 2011. The politics of reflexive governance: challenges for designing adaptive management and transition management. *Ecology and Society* 16: 9.

Waas, T., Hugé, J., Verbruggen, A. & Wright, T. 2011 Sustainable development: a bird's eye perspective. *Sustainability* 3: 1637-1661. <http://www.mdpi.com/2071-1050/3/10/1637/> Accessed December 10, 2011.

Waas, T., Verbruggen, A. & Wright, T. 2010. University research for sustainable development: definitions and characteristics explored. *Journal of Cleaner Production* 18: 629-636.

Wachter, D. 2005. Sustainability assessment in Switzerland: from theory to practice. EASY-ECO 1st Conference. 15-17 June 2005. Manchester, United Kingdom.

Wackernagel, M. & Rees, W. 1996. *Our ecological footprint - reducing human impact on the Earth*. New Society Publishers. Gabriola Island. Canada.

Waldman L., 2005. Environment, politics and poverty - Lessons from a review of PRSP stakeholder perspectives: synthesis review. CIDA, DFID, GTZ and IDS.

Walker, B. Barrett, S., Polasky, S., Galaz, V., Folke, C., Engström, G., Ackerman, F., Arrow, K., Carpenter, S., Chopra, K., Daily, G., Ehrlich, P., Hughes, T., Kautsky, N., Levin, S., Mäler, K.-G., Shogren, J., Vincent, J., Xepapadeas, T. & de Zeeuw, A. 2009. Looming Global-Scale Failures and Missing Institutions. *Science* 235: 1345-1346.

Ward, B. & Dubos, R. 1972. *Only One Earth – the care and maintenance of a small planet*. W.W. Norton & company. New York, United States of America & London, United Kingdom.

WCED, 1987. Our Common Future. Report of the World Commission on Environment and Development. Published as Annex to the General Assembly Document A/42/427. United Nations.

Weaver P.M. & Rotmans J. 2006. Further reflections on differences and complementarities between (S)IA and ISA: scaling, power and their treatment within sustainability assessment. MATISSE Working Paper 5 2006. Available at:

http://www.matisseproject.net/projectcomm/uploads/tx_article/WorkingPaper5_01.pdf. Accessed October 8, 2011.

Weaver, P.M. & Rotmans, J. 2006. Integrated Sustainability Assessment: What? Why? How? MATISSE Working Paper 1.

Williams, J.B. & McNeill, J.M. 2005. The Current Crisis in Neoclassical Economics and the Case for an Economic Analysis based on Sustainable Development. U21 Global Working Paper N° 001/2005.

Wilkins, H. 2003. The need for subjectivity in EIA: discourse as a tool for sustainable development. *Environmental Impact Assessment Review* 23: 401-414.

Winfield, M., Gibson, R.B., Markvart, T., Gaudreau, K. & Taylor, J. 2010. Implications of sustainability assessment for electricity system design: the case of the Ontario Power Authority's integrated power system plan. *Energy Policy* 38: 4115-4126.

Wood, L.A. & Kroger, R.O. 2000. *Doing Discourse Analysis. Methods for Studying Action in Talk and Text*. Sage Publications. Thousand Oaks, United States of America; London, United Kingdom & New Delhi, India.

World Bank 2005. Poverty Environment Nexus. Sustainable Approaches to Poverty Reduction in Cambodia, Lao PDR and Vietnam. http://siteresources.worldbank.org/INTEAPREGTOPENVIRONMENT/Resources/PEN_full_report.pdf Accessed December 17, 2010.

World Resources Institute 2005. The wealth of the poor: managing ecosystems to fight poverty. special section: global development policies: making the MDGs and the PRSPs work for the poor and the environment. United Nations Development Programme, United Nations Environment Programme, The World Bank, World Resources Institute. Washington DC, United States of America.

World Resources Institute 2008. World Resources 2008 – Roots of Resilience. WRI, UNDP, UNEP & World Bank. Washington DC. United States of America.

Yin, R.K. 2003. *Case Study Research: Design and Methods*. (3rd Edition, Volume 5). Sage Publications. Thousand Oaks. United States of America.

Yung, E.C. 2004. An ecological perspective on the valuation of ecosystem services. *Biological Conservation* 120: 549-565.

Zaccai, E. 2002. De la prevention à la precaution, et réciproquement. *Revue Ethique Publique* 4(2). Automne 2002.

Zaccai, E. 2012. Over two decades in pursuit of sustainable development: influence, transformations, limits. *Environmental Development* 1: 79-90.

Zellner, M.L., Theis, T.L. Karunanithi, A.T., Garmestani, A.S. & Cabezas, H. 2008. A New Framework for Urban Sustainability Assessments: Linking Complexity, Information and Policy. *Computers, Environment and Urban Systems* 32: 474-488.

Zilahy, G., Huisingh, D., Melanen, M., Philips, V.D. & Sheffy, J. 2009. Roles of academia in regional sustainability initiatives: outreach for a more sustainable future. *Journal of Cleaner Production* 17: 1053-1056.

Zurita, L. 2009. Consensus conference method in environmental issues: relevance and strengths. *Land Use Policy* 23: 18-25.