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ORIGINAL ARTICLE

A discourse-analytical perspective on sustainability assessment: interpreting sustainable development in practice

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Abstract Sustainable development is a ubiquitously used concept in public decision-making: it refers 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 society toward a sustainable future then seems desirable. Assessing the sustainability of policy decisions is, however, influenced by what sustainable development is believed to entail, as different discourses coexist under the umbrella of the sustainable development meta-discourse. This paper proposes a typology of sustainable development discourses, and, subsequently, applies a discourse-analytical lens on two practical cases of sustainability assessment in different institutional and geographical contexts (in Belgium and in Benin). The results indicate that sustainability assessments tend to be influenced mainly by the consensual 'sustainable development as integration' discourse, while also providing a forum for dialogue between different discourses. The results shed light on context-specific discursive and institutional dynamics for the development and application of sustainability assessment. Acknowledging these dynamics as well as sustainable development's inherent interpretational limits can lead to an improved use of sustainable development as a decision-guiding strategy.

Keywords Sustainable development · Discourse analysis · Sustainability assessment · Belgium · Benin

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Introduction

Almost 25 years after the publication of 'Our Common Future' by the World Commission on Environment and Development (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. Defined as development that meets the needs of the present without compromising the abilities of future generations to meet their own needs (WCED 1987), it provides an answer to the anthropogenic environmental problems that threaten the integrity of the planetary system, including current and future human livelihoods and well-being in its multiple dimensions (including basic material for a good life, freedom and choice, health, good social relations and security) (Millennium Ecosystem Assessment, MEA 2005).

Sustainable development [used synonymously in this paper with 'sustainability' (Hugé et al. 2011)] is both an appealing and a bewildering concept, as there 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 legitimises different interpretations (Söderbaum 2007).

Somewhat paradoxically, the 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 that crisis remains contested.

The array of interpretations of sustainable development reflects particular world-views. When these particular perceptions are shared amongst a group of people and/or organisations, a series of discourses emerges. A 'discourse' is a shared, structured way of apprehending the world (Dryzek 2005) or a shared meaning of a phenomenon (Doulton and Brown 2009). Although we are well aware that sustainable development as such is sometimes seen as one environmentalist discourse amongst others (Dryzek 2005), we focus on the different (sub-)discourses that are embodied *within* the sustainable development 'meta-discourse'.

Sustainable development is characterised by 'constructive ambiguity' (Robinson 2004). 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). This is especially relevant when sustainable development is advocated as a decision-guiding strategy for policy-makers, for example, through the application of sustainability assessment.

Sustainability assessment is a process aimed at operationalising sustainable development as a decision-guiding strategy through the identification of the future consequences of current and planned actions (Hugé et al. 2011). It is a process to guide decision-making towards sustainability (Bond and Morrison-Saunders 2009), hence, the key importance of knowing what sustainability refers to.

This paper applies a discourse-analytical lens on sustainable development and proposes a typology of sustainable development discourses. Subsequently, the use of sustainable development as a decision-guiding strategy is analysed by focussing on the practice of sustainability assessment. The paper draws on the authors' research experience in sustainability assessment applied on the Benin Poverty Reduction Strategy (Hugé and Hens 2009) and in support of radioactive waste management policy in Belgium (Hugé et al. 2011).

Rationale of discourse analysis in the context of sustainable development

Discourses are structured ways of representation that evoke particular understandings and may subsequently enable particular types of actions to be envisaged. 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 and Van Herzele 2012). Different social understandings of the world, thus, lead to different social actions—discourse, hence, actively constructs society (Arts and Buizer 2009; Jorgensen and Phillips 2002). 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 (Phillips et al. 2004).

We present Hajer's (1995) definition of discourse as it emphasises both the content of what is said and the produced social practices: "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."

As decision-making is dominated by particular discourses that provide a bias both in conceptualising a policy problem as well as in the solutions that can be conceived for those problems (Hajer and Versteeg 2005), analysing discourse contributes to a better understanding of sustainable development as a decision-guiding strategy. Discourse entails more than a mere description of things: it does things; as discourse both 'rules in' certain ways of talking about a topic and defining acceptable behaviour, yet, it also 'rules out', limits and restricts other ways of talking, of conducting ourselves or constructing knowledge about it (Phillips et al. 2004).

Sustainable development cannot simply be imposed to citizens in a hypothetical top-down way, but is continuously contested in a struggle about its interpretation and implementation. Although sustainable development can be characterised by a set of generally accepted principles (Gibson et al. 2005; Hugé et al. 2011), it is not possible to refer to one absolutely correct interpretation (Söderbaum 2007).

Therefore, discourse analysis is of special relevance for a better understanding of sustainability assessment. Discourse analysis can trace how sustainable development emerged as a concept and how its meaning subsequently evolved as it was moulded by institutional settings and through the application of particular sustainability assessment cases (Hajer and Versteeg 2005). Discourses not only shape discussions but are also institutionalised in particular practices (Hajer and Laws 2006), such as sustainability

assessment. On the other hand, sustainability assessment may also impact upon dominant discourses. This means that—potentially competing—sustainable development discourses influence the—potentially competing—way in which sustainability assessments are performed, and vice versa (Runhaar 2009).

Discourse analysis' main contribution to a better understanding of sustainable development and its assessment can be summarised as follows (adapted from Hajer and Versteeg 2005; Runhaar 2009; Runhaar et al. 2010):

- Discourse analysis explicitly appreciates sustainability as a contested notion.
- Discourse analysis is adapted to study issues in which the framing of information is decisive.
- Discourse analysis allows to analyse bias in the discourses and practices through which policy is made.
- Discourse analysis sheds light on the discourses that shape what can and what cannot be thought. They act as built-in filters that distinguish 'relevant' from 'irrelevant' data. They delimit the range of policy options and, thereby, serve as precursors for policy outcomes (Phillips et al. 2004).
- Discourse analysis exposes the way in which responses to sustainability challenges are reflected in ideas about the respective responsibilities of government and citizens.
- Discourse analysis sheds light on the uptake of sustainability assessment results in decision-making.
- Discourse analysis also sheds light on the influence that sustainability assessment can have on discursive dynamics.

Sustainability assessment is both a process that seeks to generate an answer to a societal problem and a critical struggle where conflicts between discourses may be exacerbated or resolved (Hajer and Versteeg 2005). Indeed, if realities are constructed through discourse, the question is what and how institutional practices (e.g. sustainability assessment) can be envisaged to conduct debates in such a way that this reality construction can take place in, for example, a more democratic way. These institutional questions become all the more pressing as policy practices are changing (Arts and van Tatenhove 2004; Hajer and Versteeg 2005): solutions for sustainability challenges now need to be found in multi-level and multi-actor governance contexts.

This paper aims to shed light on the relation between sustainability discourses and the practice of sustainability assessment. We use a discourse analytical framework to better understand how sustainability assessments are generated and influenced, and how these processes function, as well as to analyse how sustainability assessment, in turn, influences discourses. The theoretical basis of this approach is inspired by *a.o.* the work of Arts and Buizer (2009), Dryzek (2005), Phillips et al. (2004) and Runhaar (2009).

Sustainable development discourses: an overview

Methodology

There have been many attempts to categorising sustainable development discourses and to propose a clarifying typology. Inspired by the work of Du Pisani (2006), Gibson et al. (2005), Hopwood et al. (2005), Neumayer (2003), Princen (2010), Quental et al. (2011), Robinson (2004), Rozema et al. (2012) and Sneddon et al. (2006), we propose a synthesis typology based on the constitutive elements of various sustainable development discourses. These entail the language used and the common assumptions and, following Dryzek (2005), more precisely refer to:

- The basic entities recognised or constructed (how is sustainability understood?);
- The assumptions about natural relationships (impacts, causalities,…);
- Agents and their motives (key actors and their interests and motives); and
- Metaphors and other rhetorical devices used.

The typology and synthetic description of the identified discourses is based on a document analysis. However, as more than 3,000 papers are published in the field of sustainability annually (Kajikawa et al. 2007), and as the main aim of the paper was not to launch a new typology per se, we focussed on a synthesis and refinement of existing typologies instead of performing an exhaustive document analysis. The relevance of the publications feeding the discourse typology was motivated by:

- Published selections of milestone sustainability publications (as compiled in Quental et al. 2011; Waas et al. 2011).
- Journals in the field of sustainability—*sensu lato*—with an official impact factor granted by the Thomson Reuters Journal Citation Reports. Journal impact factors can be retrieved from: http://thomsonreuters.com/products_services/science/science_products/a-z/journal_citation_reports/.
- The authors' knowledge of the field of sustainability publications and the overview of the academic landscape of sustainability sciences by Kajikawa et al. (2007).

Typology of sustainable development discourses

The weak versus strong sustainable development (SSD) approach is generally central in most typologies: it refers to the 'level of intensity' of sustainability (Rozema et al. 2012). Weak sustainable development (WSD) states that

natural and human 'capital' stocks are substitutable, whereas SSD rejects this trade-off stance based on the existence of critical, non-substitutable ecosystem functions (Ekins et al. 2003; Neumayer 2003).

We distinguish three sustainable development discourses, whose boundaries are, however, not absolute:

- The first discourse views sustainable development as the pragmatic integration of development and environmental goals;
- The second discourse emphasises the idea of limitations on human activities; and
- The third discourse views sustainable development as a process of directed change.

Table 1 provides an overview of the constitutive elements (Dryzek 2005) of the three proposed discourses.

Discourse 1: sustainable development as integration

The idea of the integration of environment and society seems intuitively logical and, at first sight, does not carry a skewed or biassed connotation. Although immediately sparking questions with regard to applicability, it is a consensual approach to sustainable development. Sustainability is presented as an overarching concept integrating political, economic, social and cultural development. 'Integration' is also to be applied with regard to the views and interests of different stakeholders, and to various temporal and spatial scales (Robinson 2004). All dimensions of sustainable development are interdependent and mutually reinforcing, and, together, aim at raising human wellbeing (Mestrum 2005). 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."

The representations of this discourse reflect the multi-dimensionality of sustainable development by dividing it into environmental, social, economic and institutional 'pillars', which can also be visualised as forms of capital or assets (Mog 2004). 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 (MEA 2005) and the poverty–environment nexus (Dasgupta et al. 2005).

Although this consensual integration discourse is popular, some authors criticise its conventional approach (Gibson et al. 2005): it is said to emphasise competing interests rather than linkages and interdependencies, making the task of effective integration very difficult and promoting trade-offs, often at the expense of the environment (Pope et al. 2004).

This discourse is also akin to the view of sustainable development as both a philosophical and a political consensus. Sustainable development becomes a 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 (Räthzel and Uzzell 2009); it has become accepted as a 'Leitbild' in the development debate (Söderbaum 2007). For Hajer and Fischer (1999), sustainable development is a reform-oriented, inclusionary discourse that has always sought to facilitate a non-adversarial approach, bringing together potential opponents under a shared banner. 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 user and carrying with it the risk of trivialisation, when sustainable development is presented as "a pathway to all that is good and desirable in a society" (van Zeijl-Rozema et al. 2008).

Discourse 2: sustainable development as limits

The second sustainable development discourse emphasises the relation between human society and nature through the idea of limitations. This discourse 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 discourse, popularised by the 'limits to growth' terminology (Meadows 1972), defines sustainable development as development within the Earth's carrying capacity, and echoes Malthus' predictions regarding eventual collision between human population growth and resource availability. This means that levels of non-renewable resources need to be maintained so as to ensure the resilience of the socio-ecological system (Folke 2006; Rockström et al. 2009). Sustainable development is, thus, viewed as a strategy to deal with resource scarcities (Spangenberg 2010).

Lafferty and Meadowcroft (2000) identify yet another constraint next to environmental limits: they mention ethical constraints rooted in the imperatives of social justice. These requirements establish limits to the forms of human activity that can be pursued today. This discourse emphasises that—part of—the ecological capital is not substitutable [and, hence, refers to strong sustainability (Neumayer 2003)]. This idea of critical natural capital represents that part of the environment performing important and irreplaceable functions (Brand 2009) that cannot be substituted and should be conserved.

This means that human activity needs to be situated within the—dynamic—limits of ecosystems. Its schematic representations include 'nested' models, according to

Table 1 Overview of the constitutive elements of the three sustainable development discourses

Discourse	Basic entities	Assumptions about natural relationships	Agents and their motives	Metaphors and rhetorical devices
Integration	Integration of developmental and environmental objectives is key (Du Pisani 2006; Robinson 2004) Environmental modernisation can solve sustainable development challenges (Rozema et al. 2012) Technical fix is possible (Robinson 2004);	Trade-offs between the dimensions of sustainable development are key [e.g. through cost–benefit analysis (Doulton and Brown 2009; Robinson 2004)] Utilitarianism (Rozema et al. 2012) Anthropocentrism (Hopwood et al. 2005) Economic incentives (Du Pisani 2006)	Capitalism and markets as problem-solvers (Rozema et al. 2012) Governments as facilitators Non-adversarial approach (Hajer and Fischer 1999)	Spaceship Earth (Princen 2010) Prudent reform or *status quo* (Hopwood et al. 2005) Sustainable development as consensus (Räthzel and Uzzell 2009) Poverty–environment nexus (Dasgupta et al. 2005) Ecosystem services (Millennium Ecosystem Assessment, MEA 2005)
Limits	Critical ecosystem services need to be maintained (Ekins et al. 2003) Planetary boundaries need to be respected (Rockström et al. 2009) There are limits to growth (Du Pisani 2006; Meadows 1972)	Eco-centrism (Hopwood et al. 2005) Minimise human impact (Quental et al. 2011)	Political surveillance needed (Rozema et al. 2012) Scientific inputs to identify limits (Rockström et al. 2009; van Zeijl-Rozema et al. 2008)	Planet Earth (Princen 2010) Ecological footprint (Wackernagel and Rees 1996) Critical environmental capital (Brand 2009) Resilience (Folke 2006) Nested models (Giddings et al. 2002)
Change	Change in values is needed (Robinson 2004) Change in—social—system is needed (Gibson et al. 2005; Hardi 2007; Rozema et al. 2012). The need for change, as such, is the core of the discourse	Participation of all societal stakeholders is key (Sneddon et al. 2006) Sustainable development is a process, not an end-state (WCED 1987)	Multi-actor networks	Transformation (Hopwood et al. 2005) Sustainability transitions (Rotmans et al. 2001) Reformist–radical change continuum (Grist 2008)

which human society is part of the natural environment (Giddings et al. 2002). Linked to the concept of carrying capacity, the ecological footprint allows to visualise the idea of ecological limitations. The ecological footprint focusses 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 and Rees 1996).

In its extreme manifestation, this school of thought encompasses eco-catastrophists, nowadays focussed 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.

Discourse 3: sustainable development as change

The roots of the third sustainable development discourse are found in development critique and emphasise processes of—directed, oriented—change (Lélé 1991). Sustainable development is a process of change, not a fixed state of harmony nor a defined end-state. Change is inherent in the semantics of development, which, by its future-orientation, is subject to uncertainty. The WCED (1987) states that sustainable development 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. This discourse stresses the need to change human lifestyles—and, hence, in socio-economic structure—to avoid the irreversible depletion of natural resources (Hardi 2007). Gibson (2006) 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. Sustainable development requires social transformation processes or 'transitions' (Rotmans et al. 2001) that can be realised through new types of learning and management practices (networking, interactive governance). Within the 'change' discourse, a distinction is made between reformist and radical interpretations (Grist 2008; Hopwood et al. 2005). The ability of sustainable development to change *as a concept* is one of its key strengths explaining its lasting influence (Newman 2006). Another input to this sustainability discourse is the ecosystem stewardship approach (Chapin et al. 2010), which stresses the need for adaptable socio-ecological systems and, hence, the importance of resilience (Brand 2009) to deal with global change.

Reflections on the sustainable development discourse typology

Each of the three proposed discourses encompasses many (sub-)schools of thought and each discourse is not homogenous. Many organisations [multilateral organisations, governments, businesses, non-governmental organisations (NGOs)] adhere to their 'own' interpretation of sustainable development that is often a blend of the discourses outlined in the previous sections (as illustrated in Hopwood et al. 2005). Although the discourse typology is partly built on the WSD (akin to 'integration') versus SSD (akin to 'limits') debate, the aim of our modified typology was:

1. To identify a range of 'constitutive elements' (Dryzek 2005) of ideal–typical sustainability discourses;
2. To move beyond the WSD–SSD dichotomy by recognising more nuanced discourses that are not defined predominantly in economic terms (Davidson 2011);
3. To move beyond the constraints introduced by an overly simplified dichotomy by characterising a third discourse.

The third discourse is actually linked to the very essence of the concept of sustainable development, being its essential contestability: there is an agreement that current development paths are unsustainable and that there is an urgent need for action (Waas et al. 2011)—this is expressed in the relative fuzziness of the change discourse. Yet, the meaning of the sustainable development concept, aimed at responding to this need, is subject to interpretation. These interpretations can diverge strongly as expressed in the 'integration' and 'limits' discourse.

As one moves away from the conceptualisation of sustainable development discourses to sustainable development as a political reality, we agree with Lafferty and Meadowcroft (2000) that the observed discursive and practical behaviour of political decision-makers should contribute to interpret sustainable development in accordance with a particular context. When decision-makers have agreed to undertake something called 'sustainable development', the interest is in seeing what this actually implies (Lafferty and Meadowcroft 2000). But in order to ensure that sustainable development retains meaning and significance, the concept's interpretational limits need to be taken into account.

Embedding the meaning of sustainable development in a single definition would ignore the discursive diversity discussed above and would not challenge value foundations, implicit ontologies nor assumptions (Nilsen 2010). Nonetheless, sustainable development does refer to a more or less stable set of principles or to a 'mainstream' (Lélé 1991). These principles, proposed among others by Gibson et al. 2005, UNCED 1992, Waas et al. 2011 and the WCED 1987, are rules of action towards sustainable development (Hugé et al. 2011). Situated at a higher level of abstraction than the concrete discourses outlined above, any interpretation of sustainable development should be in agreement with these broad principles, such as equity, precaution, normativity, dynamism and global responsibility (Hugé et al. 2011; Waas et al. 2011).

Applying discourse analysis on sustainability assessment

Introduction

Any sustainability assessment exercise is performed within a particular discursive context. This context will influence the terms according to which particular issues are discussed and will define the perceived possibilities to act (Hajer and Versteeg 2005). Some options might, hence, be ruled out (un-sustainable) or ruled in (sustainable), depending on the prevailing discourse(s) influencing the sustainability assessment. The interpretation and the proposed solutions of policy problems should, hence, not be taken for granted, as a variety of external factors, such as discourses, political

culture, existing institutional landscape etc., influence the assessment process (from the onset until the eventual—lack of—translation of the sustainability assessment in policy decisions or modifications).

Methodology

We applied Dryzek's approach to discourse analysis—centred on the identification of constitutive elements of discourse—on data describing two practical sustainability assessment cases. The data consist of documents and interview transcripts that were analysed qualitatively using the discourse analytic framework composed of: (1) basic entities; (2) assumptions about natural relationships; (3) agents and their motives; and (4) metaphors and rhetorical devices used. The primary data collection was performed in two sustainability assessment research projects. We refer the interested reader to the full case study accounts published, respectively, as Hugé et al. (2011) and Hugé and Hens (2009). In the next sections, we present original research by applying a discourse-analytic lens on the cases.

Case 1: sustainability assessment in support of the Belgian radioactive waste management policy

In a first case study, we analyse a sustainability assessment exercise that provided input in the drafting process of a management plan for radioactive waste in Belgium. During the so-called 'Public Forum', 32 Belgian citizens debated (together with experts) the policy options for the long-term management of long-living and highly radioactive waste. The citizens' input was collected in a report (King Baudouin Foundation, KBF 2010), which subsequently informed the drafting of a waste management plan submitted to the government by the Belgian Institute for Radioactive Waste and Fissile Materials. The Public Forum approach is inspired by the 'consensus conference' developed by the Danish Board of Technology (Hugé et al. 2011). The exercise explicitly aimed at a "sustainable management of radioactive waste." Table 2 gives an overview of Public Forum report excerpts that allow to identify constitutive discourse elements pervading this particular sustainability assessment.

The excerpts, drawn from a qualitative analysis of the Public Forum report, position this sustainability assessment exercise within the 'integration' discourse. The integration of various dimensions of sustainability and controlling risks for human and environmental health are central issues. Although the report takes on a pragmatic stance towards radioactive waste management, precaution pervades the recommendations [e.g. by way of repeated references to the reversibility potential of choices made today, if the situation (especially technology) permits 'better' solutions in the future]. Given the time scale of radioactive waste-induced risks, the report emphasises society's responsibility towards future generations. The keywords 'participation', 'transparency', 'reversibility' and 'responsibility for future generations' are central in this sustainability assessment. There are no calls for—radical—change and no sustainability-triggered critiques on nuclear energy itself, despite the controversies surrounding this technology—ranging from its alleged long-term necessity in order to generate greenhouse gas emissions-free energy (Duffey 2005) to fundamental questions regarding safety, proliferation and waste (Adamantiades and Kessides 2009). The 'change' discourse is, hence, not reflected in this sustainability assessment nor are there many indications for the presence of elements of the 'limits' discourse, despite a reference to minimising human impact on the environment. Generally, the main strength of the assessment lies in its plea for transparency and citizen participation (and in its very organisation). An important criticism concerns the frame within which the assessment was conducted—the sustainability assessment did not consider the sustainability implications of nuclear energy itself, despite it being the source technology of radioactive waste. The scope of the sustainability assessment could have been widened and could have included references to 'stronger' sustainable development discourses, as illustrated in a similar exercise reported by Zurita (2006) in the United Kingdom stating that "nuclear power should not be expanded until a way is found to deal adequately with the waste problem." The public debate on nuclear power has sparked controversy for decades in Belgium (Laes et al. 2007), which may have influenced the consensual approach followed in the sustainability assessment.

Case 2: sustainability assessment in support of the Benin Poverty Reduction Strategy

The second case study is an analysis of the sustainability assessment of the Benin Poverty Reduction Strategy Paper (PRSP). The PRSP describes macro-economic, structural and social policies and programmes that Benin is pursuing over several years (*in casu* 2007–2009) to promote growth and reduce poverty, as well as external financing needs and the associated sources of financing (International Monetary Fund, IMF 2007). Despite the alleged comprehensiveness and the strategic importance of PRSPs, sustainable development has not been a guiding principle from the onset in the iterative PRSP approach (Hugé and Hens 2007). Benin decided to 'green' its PRSP by means of a sustainability assessment approach in 2007 (Hugé and Hens 2009). Two types of data were used to perform the discourse analysis on this sustainability assessment: (1) documents relating the Benin PRSP drafting and greening process (see Hugé

Table 2 Indications for constitutive elements of sustainable development discourses in the Public Forum report [excerpts from King Baudouin Foundation (KBF 2010)]

Discourse elements in the sustainability assessment	Basic entities	Assumptions about natural relationships	Agents and their motives	Metaphors and rhetorical devices
Case: radioactive waste management	"Integration of environmental, health, technical, scientific, economic and societal dimensions." "Key question: How can we guarantee that our environment and health will not be damaged?" "Transparency in communication and decision-making is key"	"It has many aspects, a broad impact and lots of stakeholders—if not the whole of society—now and in the distant future" "We want to show future generations how we thought about this issue and explain our choice" "No one can take unidirectional advantage from a good whose disadvantages are carried by others" "Two scenarios must be able to be realized: the reference scenario (geological storage) and the backup scenario (retrieval)" "Recycling is not realistic now. In the future it maybe is"	"There is no single group that can offer a solution. It concerns everyone" "Integration of stakeholders is key" "Mobilization and information of citizens (e.g. w.r.t. financial resources)" "Avoid leaving the decision-power to lobby groups alone" "European legislation on future waste management needed"	Future generations ("we have to think 10,000 generations from now") Reversibility and participatory checkpoints (every 10 years) "Public interest"

and Hens 2009 for an overview); (2) a series of 21 systematising expert interviews (Bogner et al. 2011) focussing on gathering information that was otherwise not accessible (see Hugé and Hens 2009 for a full account).

Table 3 gives an overview of statements drawn from the PRSP 'grey' literature and from the interviews that allow to identify constitutive discourse elements pervading this particular sustainability assessment.

The 'official' discourse embodied in the PRSP and in the related documents (such as an assessment guidance document and an impact assessment of the first version of the PRSP) was complemented by the information gathered through the interviews. In the interviews, critical thoughts could also be issued by the respondents in the section probing their personal opinions, which allowed for a broader perspective on the influencing discourses.

Although the terminology ('greening') and the origins (strategic *environmental* assessment) of the Benin PRSP sustainability assessment were rooted in an environmental—though not eco-centric—perspective on sustainable development and although some interviewees criticised an overly narrow environmental narrative, the PRSP greening process did not reflect the 'sustainable development as limits' discourse. Economic growth was not seen as being constrained by ecological limits, and even increasingly topical (Intergovernmental Panel on Climate Change, IPCC 2007) climate change issues were mostly ignored. The PRSP greening process is, in itself, an example of change, be it not necessarily a change in socio-economic systems as embodied in the 'sustainable development as change' discourse, but a change in governance (style) and, in particular, a change in the way national policy documents are prepared in Benin. This 'changing governance' discourse is emphasised in the documents and in the interviews and materialises through the participatory exercises, such as forums, workshops, working groups (all including non-state actors) and cross-sector collaboration within the state apparatus (e.g. the mixed composition of the PRSP drafting team; the set-up of environmental cells within line ministries) and through keywords such as policy coherence, tiering and the 'signal function' of the PRSP greening process for lower decision-making levels and even for the private sector (as mentioned by some interviewees). Regarding agents and their motives, the data suggest that the participatory turn embodied by the PRSP sustainability assessment is driven both by a concern about a stronger societal support base and about finding creative solutions to sustainability challenges, but also by a symbolic commitment, as overly critical remarks issued by civil society representatives were not taken up. Donors exerted a discursive influence through agenda-setting [e.g. through the non-compulsory but influential Organisation for Economic Co-operation and Development (OECD) Guidance documents (OECD 2006)], through the facilitation of workshops, through the set-up of an international advisory committee and through ongoing policy dialogue.

Overall, the forum function of the PRSP sustainability assessment was a key factor of success—it allowed for fruitful discussion on the interpretation of sustainable development by a wide range of stakeholders. Although the sustainability assessment did not lead to major changes in policy, again pointing towards the dominance of the

Table 3 Indications for constitutive elements of sustainable development discourses in the Benin sustainability assessment process (sources: own research, Hugé and Hens 2009)

Discourse elements in the sustainability assessment	Basic entities	Assumptions about natural relationships	Agents and their motives	Metaphors and rhetorical devices
Case: Benin PRSP sustainability assessment	"The PRSP is an integrative and holistic document" "Participation is key" (regional workshops, national forum, media) "PRSP drafting is an iterative process" "PRSP greening builds on existing environmental legislation" (e.g. Framework Law 2003)	"Narrow focus on ecology (discussion)" "Few linkages with Millennium Development Goals" "Discrepancy between intentions and situation on the ground" "Drafting team decided on eventual inclusion of citizens' remarks" Trickling down of environmental concerns Strategic environmental assessment—concept was influential	"Mixed PRSP drafting team (Finance Ministry and Environmental Agency)" "Donors need to put pressure on Benin politicians to keep sustainable development on the agenda" "Facilitating role for donors" "Influence on the private sector apparent" "Broader picture: policy coherence" "Environmental cells within sector ministries" "Tiering" "NGO participation is key" yet hampered by capacity problems	"Greening" the PRSP "'Signal function' of the 'greened' PRSP to lower decision-making levels" "PRSP greening is a forum for discussion"

'sustainable development as integration' debate, it encouraged learning among the participating actors. 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 sustainable development in the decision-making process on the one hand and social learning on the other hand (Hugé and Hens 2009), reflecting a 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. The PRSP sustainability assessment, hence, functioned as a 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, hinting towards a prudent reflection of the 'sustainable development as change' discourse.

Discussion

The application of discourse analysis on real-life sustainability assessment shed light on a key factor influencing these exercises: context-specific discourses can constrain the contents, the process and the influence of assessment exercises. The proposed discourse typology allowed to identify constitutive elements of three ideal–typical sustainable development discourses. It appears from the two case studies that the sustainability assessments predominantly reflected the consensual, prudently reformist 'sustainable development as integration' discourse. Sustainable development is, hence, not perceived as a radical concept that will bring major changes rapidly (or, at least, this discourse is not taken up yet in institutionalised sustainability assessment practices). However, the two analysed sustainability assessments emphasise one particular form of 'change', entailed in the participatory turn of decision-making and facilitated and realised through the forum function of sustainability assessment. A discourse analytic lens allows a more conceptual, distant perspective on how sustainability assessment (through its forum function) contributes to the interpretation of sustainable development (through discussion between adherents of various discourses). Discourse analysis also clarifies how sustainability assessment sometimes reinforces one particular, rigid, framing of sustainability, without allowing for real discourse reflection, in which initial discourses are reconsidered in light of the interaction with other actors (Runhaar et al. 2010).

The boundaries between the three discourses are not absolute and the analysed sustainability assessments reflect a mix of considerations, yet, the integration discourse

seems dominant, as are some elements of the change discourse (especially in the Benin case). The less anthropocentric and more complex 'limits' discourse is mostly ignored in the sustainability assessments, as are hugely controversial ethical discussions. But even within the 'integration' discourse, there is discussion.

In the radioactive waste management case (case 1), there is an interpretive struggle centred on integration within sustainable development: the provision of energy as a development objective clashes with environmental objectives (radiation risks, accidents), as well as social objectives (safety, risk of proliferation). Sustainability assessment may contribute to a transparent context-dependent interpretation of sustainable development, yet, the interpretational limits of the concept cannot be stretched indefinitely. Initiators and users of sustainability assessments should be aware of the risk of discursive capture by powerful groups or by actors who benefit from current simplified conceptualisations of sustainable development.

The interpretive struggle surrounding sustainable development in the second case (Benin) was centred on the emphasis put on 'sustainable development as integration' versus 'sustainable development as change'. The Poverty Reduction Strategy greening process created a forum for discussion between actors, with divergent interpretations of sustainable development in the context of a least developed country. While civil society participants demanded a clear acknowledgement of the deep linkages between poverty and environment, the Beninese authorities seemed more inclined to advocate a—donor-influenced?—narrowly ecological interpretation of sustainability and were not prone to plan important changes to the country's development path. An *ex-post* analysis of the Poverty Reduction Strategy following the sustainability assessment process shows that a consensual 'integration' discourse on sustainability has prevailed, yet, the very fact that discussions on the sustainability narrative of the strategy were held at the national level is already a step forward and an indication for the influence of the change discourse—especially when related to the broad participation.

Conclusion

Sustainable development is an essentially contested concept. There is no 'absolute' interpretation (Söderbaum 2007) and the acknowledgement of various discourses within the interpretational limits of sustainable development allows to analyse sustainability assessment exercises from a pragmatic perspective. Sustainability assessments make sustainable development tangible as "a stage where interpretive battles are to be fought" (Hajer 1995). In day-to-day policy-making, discourses tend to be highly dynamic and, together with the institutional landscape in which sustainable development is to be achieved, they shape sustainability assessments.

Particular ways of giving sense to sustainable development influence sustainability assessment practice by ruling in and ruling out specific policy options. Sustainability assessment reflects the influencing discourses—the focus of this paper—yet, discourses do not exist in isolation: they are linked to their institutional, political, socio-economic and cultural context. The sense of urgency with regard to sustainable development is greater in Benin's least-developed country context than in Belgium, which might explain why elements of the 'change' discourse are somewhat more salient in the Benin case. In both analysed cases, sustainability assessment provided a forum for a transparent discussion on the interpretation of sustainable development. Controversy was not settled once and for all obviously (e.g. on the sustainability of nuclear energy), nor did sustainability assessments, as such, lead to major sustainability transitions. Sustainability assessments will only generate significant changes if their messages are considered legitimate and necessary by policy-makers, as well as by other societal actors), and if other influencing factors are taken into account. The relationship between sustainability assessment and discursive shifts is characterised 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 conceptualised through argumentation between sustainable development discourses.

The emergence of sustainability assessment might actually restrict the interpretational width of sustainable development, as indicated in the two cases. Overly conservative as well as overly radical interpretations will be implicitly discarded because sustainability assessment is conceptualised as a problem-solving process. 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 conceptualising what is sustainable and what is not. 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 depolarise heated societal debates. The application of sustainability assessment emphasised that a dialogue among 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 can contribute to a transition to a sustainable society. An enhanced awareness of the role of discourse in shaping sustainability assessment will contribute to their future success as policy-supporting processes.

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References

Adamantiades A, Kessides I (2009) Nuclear power for sustainable development: current status and future prospects. Energy Policy 37:5149–5166

Arts B, Buizer M (2009) Forests, discourses, institutions: a discursive-institutional analysis of global forest governance. For Policy Econ 11:340–347

Arts B, van Tatenhove J (2004) Policy and power: a conceptual framework between the 'old' and 'new' policy idioms. Policy Sci 37:339–356

Bogner A, Littig B, Menz W (2011) Interviewing experts. Palgrave MacMillan, New York

Bond AJ, Morrison-Saunders A (2009) Sustainability appraisal: jack of all trades, master of none? Impact Assess Project Apprais 27:321–329

Bosshard A (2000) A methodology and terminology of sustainability assessment and its perspectives for rural planning. Agric Ecosyst Environ 77:29–41

Brand F (2009) Critical natural capital revisited: ecological resilience and sustainable development. Ecol Econ 68(3):605–612

Buizer M, Van Herzele A (2012) Combining deliberative governance and discourse analysis to understand the deliberative incompleteness of centrally formulated plans. For Policy Econ 16: 93–101

Chapin FS III, Carpenter SR, Kofinas GP, Folke C, Abel N, Clark WC, Olsson P, Stafford Smith DM, Walker B, Young OR, Berkes F, Biggs R, Grove JM, Naylor RL, Pinkerton E, Steffen W, Swanson FJ (2010) Ecosystem stewardship: sustainability strategies for a rapidly changing planet. Trends Ecol Evol 25:241–249

Connor R, Dovers S (2004) Institutional change for sustainable development. Edward Elgar Publishing, Cheltenham

Dasgupta S, Deichmann U, Meisner C, Wheeler D (2005) Where is the poverty–environment nexus? Evidence from Cambodia, Lao PDR, and Vietnam. World Dev 33:617–638

Davidson K (2011) A typology to categorize the ideologies of actors in the sustainable development debate. Sustain Dev. doi:10.1002/sd.520

Doulton H, Brown K (2009) Ten years to prevent catastrophe? Discourses of climate change and international development in the UK press. Global Environ Change 19:191–202

Dryzek JS (2005) The politics of the earth: environmental discourses. Oxford University Press, Oxford

Du Pisani J (2006) Sustainable development—historical roots of the concept. Environ Sci 3(2):83–96

Duffey RB (2005) Sustainable futures using nuclear energy. Prog Nucl Energy 47:535–543

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. Ecol Econ 44:165–185

Folke C (2006) Resilience: the emergence of a perspective for social-ecological systems analyses. Global Environ Change 16:253–267

Gibson RB (2006) Sustainability assessment: basic components of a practical approach. Impact Assess Project Apprais 24:170–182

Gibson RB, Holtz S, Tansey J, Whitelaw G, Hassan S (2005) Sustainability assessment: criteria and processes. Earthscan, London

Giddings B, Hopwood B, O'Brien G (2002) Environment, economy and society: fitting them together into sustainable development. Sustain Dev 10:187–196

Grist N (2008) Positioning climate change in sustainable development discourse. J Int Dev 20:783–803

Hajer MA (1995) The politics of environmental discourse: ecological modernization and the policy process. Oxford University Press, Oxford

Hajer MA, Fischer F (1999) Living with nature: environmental politics as cultural discourse. Oxford University Press, New York

Hajer MA, Laws D (2006) Ordering through discourse. In: Moran M, Rein M, Goodin RE (eds) The Oxford handbook of public policy. Oxford University Press, New York

Hajer MA, Versteeg W (2005) A decade of discourse analysis of environmental politics: achievements, challenges, perspectives. J Environ Policy Plan 7:175–184

Hardi P (2007) The long and winding road of sustainable development evaluation. In: George C, Kirkpatrick C (eds) Impact assessment and sustainable development: European practice and experience. Edward Elgar Publishing, Cheltenham

Hopwood B, Mellor M, O'Brien G (2005) Sustainable development: mapping different approaches. Sustain Dev 13:38–52

Hugé J, Hens L (2007) Sustainability assessment of poverty reduction strategy papers. Impact Assess Project Apprais 25:247–258

Hugé J, Hens L (2009) The greening of poverty reduction strategy papers: a process approach to sustainability assessment. Impact Assess Project Apprais 27:7–18

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

Intergovernmental Panel on Climate Change (IPCC) (2007) Climate change 2007: synthesis report. Contribution of working groups I, II and III to the fourth assessment report of the Intergovernmental Panel on Climate Change. Pachauri RK, Reisinger A (eds). IPCC, Geneva, Switzerland, pp 104

International Monetary Fund (IMF) (2007) Poverty Reduction Strategy Papers (PRSP). Available online at: http://www.imf.org/external/np/prsp/prsp.aspx

Jorgensen MW, Phillips LJ (2002) Discourse analysis as theory and method. Sage Publications, London

Kajikawa Y, Ohno J, Takeda Y, Matsushima K, Komiyama H (2007) Creating an academic landscape of sustainability science: an analysis of the citation network. Sustain Sci 2:221–231

Kidd CV (1992) The evolution of sustainability. J Agric Environ Ethics 5(1):1–26

King Baudouin Foundation (KBF) (2010) Public Forum 'How to decide on the long-term management of highly radioactive and long-lived waste?'. Report (in Dutch and in French). February 2010, Brussels, Belgium

Laes E, Chayapathi L, Eggermont G, Meskens G (2007) Kernenergie (on)besproken (in Dutch). viWTA & Acco, Leuven, Belgium

Lafferty WM, Meadowcroft J (2000) Implementing sustainable development: strategies and initiatives in high consumption societies. Oxford University Press, Oxford

Lélé SM (1991) Sustainable development: a critical review. World Dev 19:607–621

Meadows DH (ed) (1972) The limits to growth: a report for the Club of Rome's project on the predicament of mankind. Universe Books, New York

Mestrum F (2005) Poverty reduction and sustainable development. In: Hens L, Nath B (eds) The World Summit on Sustainable Development—the Johannesburg conference. Springer, The Netherlands

Millennium Ecosystem Assessment (MEA) (2005) Ecosystems and human well-being: synthesis. Island Press, Washington DC

Mog JM (2004) Struggling with sustainability—a comparative framework for evaluating sustainable development programs. World Dev 32:2139–2160

Neumayer E (2003) Weak versus strong sustainability: exploring the limits of two opposing paradigms, 2nd edn. Edward Elgar Publishing, Cheltenham

Newman L (2006) Change, uncertainty, and futures of sustainable development. Futures 38:633–637

Nilsen HR (2010) The joint discourse 'reflexive sustainable development'—from weak towards strong sustainable development. Ecol Econ 69:495–501

Organisation for Economic Co-operation and Development (OECD) (2006) Applying strategic environmental assessment—good practice guidance for development co-operation. DAC guidelines and references series. OECD Publishing, Paris

Phillips N, Lawrence TB, Hardy C (2004) Discourse and institutions. Acad Manag Rev 29:635–652

Pope J, Annandale D, Morrison-Saunders A (2004) Conceptualising sustainability assessment. Environ Impact Assess Rev 24:595–616

Princen T (2010) Speaking of sustainability: the potential of metaphor. Sustain Sci Pract Policy 6(2):60–65

Quental N, Lourenço JM, da Silva FN (2011) Sustainable development policy: goals, targets and political cycles. Sustain Dev 19:15–29

Räthzel N, Uzzell D (2009) Transformative environmental education: a collective rehearsal for reality. Environ Educ Res 15:263–277

Robinson J (2004) Squaring the circle? Some thoughts on the idea of sustainable development. Ecol Econ 48:369–384

Rockström J, Steffen W, Noone K, Persson A, Chapin FS III, Lambin EF, Lenton TM, Scheffer M, Folke C, Schellnhuber HJ, Nykvist B, de Wit CA, Hughes T, van der Leeuw S, Rodhe H, Sörlin S, Snyder PK, Costanza R, Svedin U, Falkenmark M, Karlberg L, Corell RW, Fabry VJ, Hansen J, Walker B, Liverman D, Richardson K, Crutzen P, Foley JA (2009) A safe operating space for humanity. Nature 461:472–475

Rotmans J, Kemp R, van Asselt M (2001) More evolution than revolution: transition management in public policy. Foresight 3:15–32

Rozema JG, Bond AJ, Cashmore M, Chilvers J (2012) An investigation of environmental and sustainability discourses associated with the substantive purposes of environmental assessment. Environ Impact Assess Rev 33:80–90

Runhaar H (2009) Putting SEA in context: a discourse perspective on how SEA contributes to decision-making. Environ Impact Assess Rev 29:200–209

Runhaar H, Runhaar PR, Oegema T (2010) Food for thought: conditions for discourse reflection in the light of environmental assessment. Environ Impact Assess Rev 30:339–346

Sneddon C, Howarth RB, Norgaard RB (2006) Sustainable development in a post-Brundtland world. Ecol Econ 57:253–268

Söderbaum P (2007) Issues of paradigm, ideology and democracy in sustainability assessment. Ecol Econ 60:613–626

Spangenberg JH (2010) World civilisations at crossroads: towards an expansionist or a sustainable future—lessons from history. Futures 42:565–573

UNCED (1992) Report of the United Nations Conference on Environment and Development. http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm

van Zeijl-Rozema A, Cörvers R, Kemp R, Martens P (2008) Governance for sustainable development: a framework. Sustain Dev 16:410–421

Waas T, Hugé J, Verbruggen A, Wright T (2011) Sustainable development: a bird's eye view. Sustainability 3:1637–1661

Wackernagel M, Rees WE (1996) Our ecological footprint: reducing human impact on the earth. New Society Publishers, Gabriola Island

World Commission on Environment and Development (WCED) (1987) Our common future. Report of the World Commission on Environment and Development. Published as an Annex to the General Assembly Document A/42/427. United Nations

Zurita L (2006) Consensus conference method in environmental issues: relevance and strengths. Land Use Policy 23:18–25