Discursive biases of the environmental research framework DPSIR

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Received 7 July 2006; received in revised form 5 October 2006; accepted 26 March 2007

Abstract

The Drivers–Pressures–State–Impacts–Responses (DPSIR) framework has evolved as an interdisciplinary tool to provide and communicate knowledge on the state and causal factors regarding environmental issues. Based on a social constructivist and discourse analytic perspective, this paper provides a critical examination of theoretical foundations of the DPSIR approach. We focus on the example of biodiversity, but our conclusions are relevant to other fields of environmental research. The DPSIR framework is viewed through the ‘lenses’ of four major types of discourses on biodiversity: Preservationist, Win–win, Traditionalist and Promethean. Based upon this examination, we argue that the DPSIR framework is not a tool generating neutral knowledge. Instead, application of this framework reproduces the discursive positions the applicant brings into it. We find that when applied in its traditional form to studies in the field of biodiversity, the framework is most compatible with the Preservationist discourse type and tends to favour conservationist and to neglect other positions. Thus, contrary to what is often claimed, we find that the DPSIR framework has shortcomings as a tool for establishing good communication between researchers, on the one hand, and stakeholders and policy makers on the other. The problem with the framework is the lack, so far, of efforts to find a satisfactory way of dealing with the multiple attitudes and definitions of issues by stakeholders and the general public.

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Keywords: DPSIR; Drivers–Pressures–State–Impacts–Responses framework; Social constructivism; Discourse analysis; Environment; Biodiversity

Introduction

DPSIR (pronounced dipsir) is short for Driving forces, Pressures, State, Impacts and Responses. Within a short time, the DPSIR framework has become popular among researchers and policy makers alike as a conceptual framework for structuring and communicating policy-relevant research about the environment.

A presumed strength of the DPSIR framework is that it captures, in a simple manner, the key relationships between factors in society and the environment, and, therefore, can be used as a communication tool between researchers from different disciplines as well as between researchers, on the one hand, and policy makers and stakeholders on the other. Partly due to its simplicity the DPSIR framework has also been criticised. It has been argued that the framework cannot take into account the dynamics of the system it models, cannot handle cause–consequence relationships, suggests linear unidirectional causal chains, and ignores key non-human drivers of environmental change (Berger and Hodge, 1998; Rapport et al., 1998; Rekolainen et al., 2003).

No one, however, has drawn attention to the \textit{strong realist view on knowledge} behind DPSIR, which we find as a central, albeit tacit, fundament of the approach. This implies that the ‘facts’ and understandings of environmental issues provided in applications of the DPSIR framework are presented as scientific truths, while discursive interpretations are not revealed. In this paper, we apply findings from discourse analysis to provide a
perspective through which the image of DPSIR as a tool of neutral knowledge can be deconstructed. We have chosen to focus on the particular topic of biodiversity management. This is a controversial topic and with relatively large differences between types of interpretations of problems and solutions. There are, in other words, large differences between various discourse types, and these differences make the topic suitable for our examination in this paper.

At the present time, there is a high consensus of the imperative for planners and politicians of listening to and involving all affected parties in participation related to environmental decision making (e.g. Stoll-Kleemann and O’Riordan, 2002; Stirling, 2006; Renn, 2006). In this paper, we show that DPSIR, as traditionally applied, provides a framework for analysis and derives interventions that lead in the opposite direction, by delimiting perspectives and scientific knowledge production to a narrow and discourse-selective understanding of controversial issues.

The next section provides a description and brief history of the DPSIR framework and its application. Thereafter, we present social constructivism and discourse analysis as the epistemological fundaments for our analysis. This is followed by an examination of the DPSIR framework through the lenses of four types of biodiversity discourses identified in earlier research. We conclude with some general thoughts on the implications of our analysis for the future use of the DPSIR framework.

The DPSIR framework

The roots of the DPSIR framework can be traced back to the Stress–Response framework developed by Statistics Canada in the late 1970s (Rapport and Friend, 1979). In the 1990s, this approach saw further development by, among others, the OECD (1991, 1993) and United Nations (1996, 1999, 2001). The DPSIR framework was first elaborated in its present form in two studies by the European Environmental Agency (EEA, 1995; Holten-Andersen et al., 1995).1

Fig. 1 illustrates the DPSIR framework at its most basic. Driving forces, in the form of social, economic or environmental developments, exert Pressures on the environment and, as a consequence, the State of the environment changes. This leads to Impacts that may elicit societal Responses that feeds back to the Driving forces, Pressures, State, or Impacts (EEA, 2001). As an example, an increased demand for food (Driving force) can lead to the intensification of agriculture via increased fertilizer use, resulting in the increase of nitrate runoff into nearby streams (Pressure), leading to the eutrophication of downstream water bodies (State) and subsequent changes in the aquatic life and biodiversity (Impact). One means to address this situation (Response) would be to increase taxes on fertilizer, another would be to require changes in land management practices to reduce nitrate leaching.

The DPSIR framework, along with its earlier incarnations, is a widely accepted and commonly used framework for interdisciplinary indicator development, system and model conceptualization, and the structuring of integrated research programmes and assessments (see, for example, EEA, 2005, OECD, 2003; UNEP, 2002; Walmsley, 2002). With respect to the particular topic of this paper, the EEA used the DPSIR framework in its inventory of biodiversity indicators in Europe (Delbaere, 2002). This report specified more than 600 indicators, subdivided into the following categories: nature protection, forestry, energy, recreation/tourism, climate change, urban development, rural development, water, infrastructure/transport, trade, fisheries, and agriculture. Today, DPSIR is increasingly used as a framework for structuring case studies in relation to issues of human interferences with and efforts to manage landscapes and seascapes (e.g. Elliott, 2002; La Jeunesse et al., 2003; Odermatt, 2004; Scheren et al., 2004; Holman et al., 2005).

The DPSIR framework embodies a systems perspective, implying the demarcation of a particular system of interest, with explicit or implicit boundaries. The system is bounded in two ways. Firstly, it is bounded in terms of the scale at which the Impacts are defined, e.g. a single river up to the entire world. Secondly, it is bounded in terms of the scale of the Responses and Driving forces affecting this system, e.g. local economic changes up to global environmental agreements. The boundaries will not necessarily coincide; Impacts at one scale will often be determined by Responses and Driving forces that act at a different scale. The drawing of these boundaries depends on the particular issue of interest and its conceptualization, which are

1See Gabrielson and Bosch (2003), Kok et al. (2001), and Jesinghaus (1999) for more extensive accounts of the evolution of the DPSIR framework and alternative interpretations.

Please cite this article as: Svarstad, H., et al., Discursive biases of the environmental research framework DPSIR, Land Use Policy (2007), doi:10.1016/j.landusepol.2007.03.005
strongly influenced by the perspective of those using the framework.

We find that the approach of the DPSIR framework provides a limited understanding of Driving forces for environmental changes. With respect to biodiversity, for instance, Driving forces are purely perceived as external forces damaging the area or species that need protection rather than as socio-economic and cultural processes that are integrated with developments in biodiversity. Nor is there any deeper understanding of societies and cultures in which responses have to be effected and the conflicts they may arise.2

In our presentation above of the DPSIR framework, we specified the State as that of the natural environment. As we have not found any cases in which the element ‘State’ implies something other or more than the state of the natural environment, we refer to this as the standard or traditional form of the DPSIR framework. This raises the question, however, of whether this specification should necessarily be treated as immutable, and the consequences thereof. In this paper, we show how this specification reflects the discursive positions of the researchers using DPSIR, and that this restricted application of the framework lends itself to a limited range of discursive views among stakeholders.

A social constructivism and discourse perspective

Social constructivism has for many decades provided critical inputs as well as created strong controversies within social sciences.3 In its moderate versions, however, it is today established as a central part of the fundamental basis of qualitatively oriented social science, with seminal work constituted by, for example, Berger and Luckman (1967), Kuhn (1970) and Giddens (1979, 1984). Furthermore, social constructivism has also contributed with insights on natural and environmental aspects of reality (see Demeritt, 2002 for a typology of various strands).

In defining social constructivism, we can distinguish between epistemological relativism and ontological relativism. Epistemological relativism implies that we can never know reality exactly as it is. Ontological relativism goes further to argue that reality itself is determined by the observer (Jones, 2002). The former implies that nature is seen as material reality, which exists independently of human thought. As such, many human perceptions of aspects of nature and the environment can, through research, be shown to be correct or incorrect. For instance, it can be shown whether or not there has been an increase in nutrients emissions to a given marine area over a period of time; whether or not the presence of various species in this area has or has not diminished over this same period; and perhaps even the causal relationship between these phenomena.4 The moderate form of constructivism, upon which this paper is based, accepts epistemological while rejecting ontological relativism.

It is important to recognise social constructions as real items in that they are intersubjective understandings of specific circumstances. As such, they are also modes and structures for social actions, which exist outside an individual’s own mind. At the same time, social constructions are not necessarily uncontested. Within communities and cultures, and across national and cultural divides, there are differing social constructions at work. In many cases, political and social conflicts are to a large extent conflicts over the definition of reality, the definition of identity and the definition of risks. The perception or non-perception of risks is a central component in the cohesion of social groups as well as larger societies and underlying ideologies. Collective and individual identities are formed according to what dangers we are concerned with and seek (collective) protection from (Douglas, 1966; Douglas and Wildavsky, 1982).

Constructivist research focuses on the communicative processes through which social reality is created, reproduced and transformed. It starts from the premise that intersubjective understandings of specific phenomena are articulated in a number of media. The political reality of these phenomena is constructed by claims-makers and issue entrepreneurs in claims-making processes (Best, 1989; Hannigan, 1995). Key actors, such as governmental and administrative bodies, work through documents and other forms of communication. Hierarchies are established not only in physical positions but also in texts; social action is to a large extent a communicative practice, of which traces can be found in a broad variety of texts and documents.

It follows then that social constructions of reality can be identified through analysis of communicative practices, i.e. through discourse analysis. The term discourse is applied in very different ways. In coherence with most social science oriented discourse analysts, we apply a discourse concept that draws attention to shared ways of apprehending social phenomena. That is, discourses constitute systems of knowledge and belief. The phenomena of focus may be considered small or large matters, and the understanding of them may be shared by a small or large group of people on

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2We could have elaborated much more on our criticism of this aspect, but we refrain from this here, in order to concentrate on the main focus of the paper of exploring discursive biases of the DPSIR framework.

3The application of the term social constructivism and social constructionism varies among different writers. We chose to apply the term social constructivism.

4Of course, conclusive evidence supporting one position or another can sometimes be difficult to obtain. One reason can be that contrasting perceptions about environmental issues may be grounded in differences of social values, and scientific research on natural conditions cannot provide a judgement of the legitimacy of these aspects. Furthermore, viewpoints on environmental issues are always based on perceptions not only on aspects of nature, but also of ways of perceiving society. These are also aspects impossible to judge from natural science only.

5In everyday language it may be used synonymously with ‘speech’ or ‘conversation’. Furthermore, a linguistic position is to see a discourse as a ‘stretch of language that may be longer than one sentence. Thus, text and discourse analysis is about how sentences combine to form texts’ (Salkie 1995, p. IX).
the local, national, international or global level. Actors involved in a discourse participate—in varying degrees—in its production, reproduction and transformation through written or oral statements. Certain regularities can be identified amongst these statements in terms of content as well as form.⁶

We are inspired by seminal works of Foucault, in which he revealed constitutive discourses in various historical contexts on, for instance, practices of punishment and imprisonment (Foucault, 1979) and the establishment of medical treatments of madness (Foucault, 1988). Furthermore, since our substantial focus is on natural resources and the environment, we find it most useful to draw from analyses by other researchers within the same topic. In this field, there are a growing number of contributions of various kinds of discourse analysis. To mention but a few early and distinctive contributions, it has been applied to characterise pervading and received wisdom about the evolution of environmental crises and their social construction in the study of ozone layer depletion (Liflin, 1994), acid rain (Hajer, 1995), presentations on the environment on television (Petersen, 1997), as well as to classify main environmental discourses (Dryzek, 1997). In this paper, we draw on work in which four types of discourses (see the next section), have been identified from studies on topics within the field of environment and development (Adger et al., 2001; Svarstad, 2002, 2004).

Discursive orderings of the world, e.g. of nature, are not produced from scratch in every statement by every single-communicative actor. Rather, statements, e.g. about nature, are articulations and reproductions of established discursive orders. However, discourses must also be seen as continuously being targets for larger or smaller transformations. A discourse may be reproduced in a relatively stable manner over a period of time, or it may be subject to considerable change. Political and social conflicts are to large extents discursive conflicts, i.e. conflicts over perceptions of reality. Thus, discourse analysis can be applied to identify conflicts at work in communicative actions and the texts that carry them.

Dryzek argues that a discourse is useful for society:

“Embedded in language, it enables those who subscribe to it to interpret bits of information and put them together into coherent stories or accounts. Each discourse rests on assumptions, judgements, and contentions that provide the basic terms for analysis, debates, arguments, and disagreements, in the environmental area no less than elsewhere. Indeed, if such shared terms did not exist, it would be hard to imagine problem-solving in this area at all …” (Dryzek, 1997, p. 8).

Thus, discourses delimit ways of interpreting information, thereby facilitating action. At the same time, they can blind their proponents from seeing alternative interpretations and actions. Concomitantly, we consider discourse analysis and discourse awareness to constitute tools with critical as well as practical potentials, because they enable identification of limitations and biases of leading and hegemonic discourses. For this reason, we apply a discourse perspective to critically examine the DPSIR framework.

The DPSIR framework viewed through the lenses of different biodiversity discourse types

In the following, we present four types of discourses on biodiversity, based on Adger et al. (2001) and Svarstad (2002, 2004), and we explore how the application of the DPSIR framework appears through the ‘lenses’ of each of these discourse types. We label these discourse types Preservationist, Win–win, Traditionalist and Promethean.

The Preservationist discourse type concentrates entirely on the aim of conserving species, biotopes and landscapes. There is little concern for the restrictions that these interventions place on local resource users. This discourse type reflects views held by many of the early preservationists in the late 19th and early 20th centuries who raised concerns for nature protection. Whereas preservation here is perceived as an advantage for humanity due to the value of nature in itself, negative impacts on human beings including those that can be measured as economic costs, are largely ignored (cf. Wätzold and Schwerdtner, 2005). The books by Oates (1999) and Terborgh (1999) provide recent examples of Preservationist contributions. In relation to protected areas in Africa, Hutton et al. (2005) argue that there is an increasing movement back to defending preservation without taking into account the needs and interests of local resource users.

Evolving from the Preservationist discourse type, the primary concern for the Win–win discourse type is also to conserve biodiversity. However, this discourse type promotes an integration of interests of local people as a means to achieve conservation. Thus, arrangements by conservationists involve aspects of benefit sharing, compensation and/or local participation, and the partnerships are argued to constitute Win–win situations. Besides conservationists, external actors also often include donors and companies. Everybody is supposed to receive a share of the benefits from the use of biodiversity, and the conservation is the result of a common effort.

The Win–win discourse type is, for instance, reflected profoundly in Reid et al. (1993) and by Baker et al. (1995) with respect to the practice of bioprospecting. Bioprospecting implies that researchers and company agents travel to various parts of the world to collect samples of biological material and related indigenous knowledge in order to develop commercial products such as modern medicines.
It is said to provide benefits for conservation as well as for local providers of biodiversity samples and related knowledge. Furthermore, bioprospecting is believed to contribute to economic development in the source countries, elaboration of new medicines for patients and profit for the industry (see Svarstad, 2004).

The establishment of protected areas in Africa constitute another example of a topic in which a Win–win discourse is produced. Conservationists and local communities are here seen as actors with mutual interests. A Win–win is argued to evolve between conservation achievements and local benefits such as shares of benefits from park-related tourism. All the major conservation organisations, such as IUCN, WWF, the Nature Conservancy and Conservation International today describe their activities as based on such a people-friendly strategy (see Hulme and Murphree, 2001; Sullivan, 2006).

The Traditionalist discourse type focuses more directly on the actors involved, categorically rejecting interventions by external actors in environmental and resource management issues. This is a position that partly builds on the assumption that local actors are capable of managing biodiversity and other natural resources in appropriate ways, if they are given the opportunities. Biodiversity is perceived in terms of resources and landscapes belonging to those who inhabit the area and depend upon it, whereas the larger environmental co-dependencies on regional and global levels and issues of world heritage are less stressed.

With respect to the topic of bioprospecting, the Traditionalist discourse sees activities of Western bioprospectors as exploitation and ‘biopiracy’. Concomitantly, source countries and local providers of biodiversity and related knowledge are portrayed as victims (e.g. Shiva, 1997; Mooney, 2000; see Svarstad, 2002). In relation to protected areas in Africa, a Traditionalist discourse is produced, first of all by social scientists, political ecologists and advocates of human rights. Within this discourse, specific cases of protected areas are perceived as increasing poverty rather than providing justice and acceptable benefits for local people, and cases are pointed to where local resource use without area preservation is sustainable (Neumann, 1997; Dzingirai, 2003; Benjaminsen et al., 2006).

Finally, the Promethean discourse type challenges the very existence or gravity of environmental issues, and therefore also the necessity or degree of conservation. In Greek mythology, Prometheus stole fire from Zeus and thereby vastly increased the human capacity to manipulate the world for human benefit. Nature and biodiversity are, in the Promethean view, perceived as raw materials that can be transformed into goods. Any problems that might occur in the transformation, i.e. environmental problems, can and will be solved through technological innovation. From the industrial revolution and until the last few decades, the modern society has been dominated by Promethean thinking. Today, Promethean claims and discourses play smaller roles in policy making on many environmental issues; still, there are profound examples in which they are important. Julian Simon was a leading American Promethean in the 1980s with works such as The Ultimate Resource (1981), and more recently Björn Lomborg has fronted a similar position with his book The Skeptical Environmentalist, in which he questions fundamentals of established claims regarding environmental issues such as biodiversity losses. Lomborg has been met by strong opposition from leading environmentalists (Scientific American vol. 286, 2002; Science vol. 294, 2001).

Fig. 2 provides an overview of main aspects of the four discourse types.

It is important to stress that this paper deals with discourse types and not claims of generalisations to any biodiversity issue without thorough empirical investigation of a particular context, for instance the main discourses produced on the national level or in a local conflict in a particular country. Thus, one cannot assume that all four discourse types, either in their more or less pure versions or as related but more distant discourses, will be present in all discussions regarding biodiversity. Other types of discourses may also play important roles. In other words, the discursive picture in each case cannot be assumed, but should be made subject to empirical investigation. Nevertheless, for our purposes here, we find the aforementioned discourse types useful to apply as Weberian ideal types (Weber, 1949) in order to examine the DPSIR framework. They can also be useful as templates against which to compare empirical knowledge of the discursive picture in particular cases.

Furthermore, it is beyond the scope of this paper to carry out a normative comparison about the four discourse types. The aim is instead to examine whether or not DPSIR provides a structural framework that is suitable for taking into account various discursive perceptions and, thereby, constitutes a useful and unbiased tool for communication among various actors.

In the following, we explore the application of the DPSIR framework to biodiversity issues through the ‘lenses’ of each of the four discourse types. In particular, we examine which aspects of the framework would be emphasised and how they would be described. The purpose is to consider whether or not the traditional application of DPSIR, i.e. with an emphasis on the natural environment as the ‘State’ of interest, makes sense from the positions of the various discourse types, or whether this might imply structural blindness of the framework to specific concerns regarding biodiversity.8

8In the following, we provide an examination of structural features of the DPSIR framework as such. Thus, we have a theoretical focus. In the extension of this paper, we encourage in-depth evaluations of cases in which DPSIR has been applied and where our theoretical concerns can be compared to empirical data.
The Preservationist discourse type and DPSIR

In the Preservationist discourse type, the central concern is the State of biodiversity. Impacts are understood as effects on nature, and the key concerns are the reduction and loss of habitats and species. Economic costs and other negative impacts on human beings arising from preservation are largely ignored. Responses focus on strictly enforced protection of habitats and species. These are seen as necessary to change the perceived Pressures from human activities, such as urban expansion, infrastructure developments, and economic activities such as logging and other extraction of natural materials. In terms of Driving forces behind this development, the emphasis tends to be put on population growth and economic growth. Overall, the DPSIR framework, as traditionally applied, is well suited to examine all aspects of a Preservationist concern.

The Win–win discourse type and DPSIR

Turning to the Win–win discourse type, the State of biodiversity remains in focus as is the case of the Preservationist discourse type. Both these discourse types also have in common a prior concern for direct Impacts on nature. However, the Win–win type provides additional concern for social impacts of biodiversity losses. These include the potential losses of future medicines, recreational opportunities, stable and clean water supplies, and economic development from tourism. In relation to developing countries in particular, there are claims that conservation and development cannot only create win–win links, but also that the neglect of social needs leads to situations where poor people cause serious degradation of the environment. This is possible to deal with through the DPSIR framework, but in its traditional application, impacts regarding the environment are those emphasised.

Moving on to Responses, we find that the Win–win discourse type often includes protective efforts more or less identical to those suggested in protectionist discourses. However, due to the weight in this discourse type on social impacts along with direct environmental impacts, the Response category also has to involve relevant responses to the emphasised social impacts. These responses may consist of, for instance, compensation payments for conservation measures, or they may involve limited and regulated utilisation of local resources. The DPSIR framework provides the main focus upon responses to environmental impacts, but it is not impossible to apply it also about responses to social impacts.

The understanding of human Pressures and Driving forces is similar to that within the Preservationist discourse type, but other social elements are added, such as negative feedbacks between poverty and diminishing biodiversity. These additions—and the discourse type as such—must be seen as responses to situations in which conservation has met severe criticism and opposition due to neglect of negative social consequences.

The exploration here of the possibility to apply the DPSIR framework from the perspectives of the Win–win discourse type shows that the concerns of this discourse type can be registered through the DPSIR framework. However, the traditional use of the DPSIR framework does not by itself lead to an emphasis on all the social concerns of this discourse type. Thus, these aspects may be left aside.

The Traditionalist discourse type and DPSIR

A central aspect of the Traditionalist discourse type is that its focus is not on the State of biodiversity, but instead on the state of social matters. Likewise, instead of focusing on Impacts on biodiversity, the Traditionalist discourse type concentrates on Impacts on local people.

Furthermore, there is not a perception of Pressure in this discourse type regarding biodiversity. There is, however, an emphasis on threats from actors external to the local area causing problems and disturbance of the state of social matters. The external actors in question tend to encompass conservationists, business interests and sometimes governments. Likewise, in this discourse there is not a concern for Driving forces related to biodiversity losses. Instead, local problems and threats are often explained with reference to global and national forces, e.g. initiatives based on Preservationist and Win–win approaches and the connected practices of conservation and economic activities. A Response from a Traditionalist perspective is to work for win–win solutions in which social and economic targets are met, but in which the conservation is carried out and controlled by actors at the local level. Thus, while Win–win discourses may be seen as aiming at a strategy of involving local people in ‘participation’, Traditionalist strategies aim to place the real control at the local level. The argument
used here is that local management of the environment and natural resources ought to imply the application of local and traditional knowledge.

It follows from the above analysis that the Traditionalist discourse type cannot be represented adequately through the traditional way of applying the DPSIR framework. As presented above with examples on bioprospecting and on protected areas in Africa, versions of the Traditionalist discourse type have played important roles in cases of biodiversity issues. Nevertheless, a conventional and uncritical application of the DPSIR framework is likely to lead to the ignorance of the concerns of the many people with perceptions of a Traditionalist type.

**The Promethean discourse type and DPSIR**

Finally, in the Promethean discourse type, changes in the State of biodiversity and, in particular, its potential Impacts are not interpreted as significant. The concern from environmentalists is seen as a mistaken perception. At the same time, and similarly to the Traditionalist discourse type, Prometheans point to negative impacts of conservation

<table>
<thead>
<tr>
<th></th>
<th>Preservationist</th>
<th>Win-win</th>
<th>Traditionalist</th>
<th>Promethean</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>State (S)</strong></td>
<td>State of biodiversity as the concern.</td>
<td>State of biodiversity as primary concern.</td>
<td>State of social matters as central concern (beyond DPSIR’s S).</td>
<td>State of biodiversity not significant (beyond DPSIR’s S).</td>
</tr>
<tr>
<td><strong>Impacts (I)</strong></td>
<td>Effects on nature alone.</td>
<td>Primary concern for impacts on nature. Also a focus on social impacts of biodiversity losses (unusual but possible focus with DPSIR).</td>
<td>Impacts on local people (beyond DPSIR’s I).</td>
<td>Impacts on biodiversity not significant (beyond DPSIR’s I).</td>
</tr>
<tr>
<td><strong>Driving Forces (DF)</strong></td>
<td>Emphasis on population growth and economic growth.</td>
<td>Emphasis on population growth and economic growth. Also concern for uneven social distribution.</td>
<td>No focus on DF regarding biodiversity losses, but DFs from Preservationist and Win-win approaches (beyond DPSIR’s DF).</td>
<td>No focus on DF regarding biodiversity losses, but DFs from Preservationists and Win-win approaches, and with conservation as sole problem maker (beyond DPSIR’s DF).</td>
</tr>
<tr>
<td><strong>Pressures (P)</strong></td>
<td>Human activities such as urban expansion, economic activities, etc.</td>
<td>Poverty, diminishing biodiversity and thus well-being.</td>
<td>No focus on P regarding biodiversity losses, but on threats from external actors, e.g. economic interests and conservationists (beyond DPSIR’s P).</td>
<td>No focus on P regarding biodiversity losses, but on threats from conservationists (beyond DPSIR’s P).</td>
</tr>
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</table>

Fig. 3. Exploration of the traditional application of the DPSIR framework to biodiversity issues through the ‘lenses’ of four discourse types.
for people. Concomitantly, the categories of Driving forces and Pressures regarding biodiversity do not make any sense in the Promethean discourse type. The difference to the Traditionalist discourse type is that the focus by Prometheans is entirely on conservation efforts as the cause of problems, while other factors such as externally initiated economic activities are not targeted as elements to criticise. Thus, the Response is a rejection of conservation. Similar to the Traditionalist discourse type, the Promethean discourse type cannot be represented adequately through the DPSIR framework as it has traditionally been used.

Fig. 3 provides a summary of the examination above.

Conclusions

Our examination of the DPSIR framework through the lenses of the four discourse types leads to the conclusion that results from analyses based on the DPSIR framework cannot be seen merely as a realist reflection of ‘how things are’. Instead, DPSIR tends to reproduce particular discursive positions.

Our analysis has showed that the Preservationist discourse type is totally compatible with the DPSIR framework as traditionally applied. Furthermore, we found that the DPSIR framework makes it possible to take into consideration main concerns of the Win–win discourse type. Nevertheless, social aspects do not constitute well-elaborated dimensions of the framework, and social concerns of this discourse type may therefore be ignored. Moreover, we found that adequate representation of the Traditionalist or the Promethean discourse type would require a fundamental shift in the application of the DPSIR framework. Although both of these discourse types focus on biodiversity and are often present among actors in conflicts over biodiversity, the structural design of the DPSIR framework as traditionally used is not able to incorporate views of these types.

Communication deficits have been identified as a major obstacle for successful participation and stakeholder dialogues (Stoll-Kleemann and Welp, 2006). It has been argued that a major purpose of the DPSIR framework is to provide a tool for improved communication between researchers, on the one hand, and stakeholders and policy makers on the other. We doubt, however, that communication deficits will be overcome with a conventional and uncritical application of DPSIR. Actors believing in contrasting discourses will easily grasp that ‘the scientific truth’ about the issue in question is a truth in which their perspectives and concerns have been ignored. When such perspectives and concerns by some actors are ignored by researchers, the production of research on biodiversity is likely to be considered by these actors as biased and irrelevant. Thus, we find that DPSIR has, to date, provided a discourse-selective framework for knowledge production, a feature of which not only researchers, but also policy makers and research sponsors should be aware.

We do not argue that the DPSIR framework necessarily should be rejected, however. Rather, we call for further research to explore the potentials for expanding the DPSIR framework, and its application, so as to incorporate the mentioned social and economic concerns. This implies bringing adequate attention not only to the state of the environment, but also to the state of social matters. The understanding of socio-economic and cultural conflicts that surround the issue in focus. Thus, there is a particular need for elaboration of methodology to address attitudes and definitions of the problem held by stakeholders and the general public.

How the above can be accomplished, and the extent to which it can be done while retaining the basic aspects of the DPSIR framework, will only be learned by trying to do so. In any case, we suggest explicitly combining applications of the DPSIR framework with discourse analysis. Such an approach implies that the researchers will not just apply the DPSIR framework to produce a single narrative9 about a case and with the researchers’ own discursive standing as a non-communicated organizing device. Instead, various narratives will be made on the basis of an examination of the discourses found among the stakeholders. Sometimes two opposite discourses may be found, sometimes more. Sometimes one may find relatively clear boundaries between various discourses. Other times, the boundaries will be vague, but the researchers can construct ideal types to ensure that main positions in the total discursive picture are presented in the analysis. The presentations of the DPSIR framework through the lenses of each of the four biodiversity discourses provide ideas, on a general level, of how analyses in specific cases may look.

Acknowledgements

The work of this paper has been made possible through the EU-FP 6 Network of Excellence ALTER-Net (EU grant GOCE-CT-2003-505298-Alternet). Authors 2–5 are listed in alphabetical order. We are grateful for discussions and comments on earlier drafts of the paper from Tor A. Benjaminsen, Niels Christensen, Eva Fallet, Anke Fisher, Ketil Skogen, Wouter Van Reeth and Rehema White.

References


9The term narrative is used to conceptualize particular accounts of an event or issue that are produced within a discourse (Svarstad, 2002).


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