
Participation in EU biodiversity governance: how far beyond rhetoric?

Felix Rauschmayer

Helmholtz Centre for Environmental Research—UFZ, Permoserstrasse 15, 04318 Leipzig, Germany; e-mail: felix.rauschmayer@ufz.de

Sybille van den Hove

ICTA Institute of Environmental Science and Technology and Median SCP, Passeig Pintor Romero 8, Ala, 08197 Valldoreix, Spain; e-mail: s.vandenhove@terra.es

Thomas Koetz

ICTA Institute of Environmental Science and Technology, Edificio Ciències, Torre Area 9, 4a planta, C5-432(in1), Universitat Autònoma de Barcelona, 08193 Bellaterra, Spain; e-mail: thomas.koetz@uab.es

Received 11 February 2007; in revised form 31 March 2008; published online 5 September 2008

Abstract. We explore the theory and practice of participation in EU biodiversity governance, focusing on the implementation of the Birds and Habitat directives and Natura 2000 at the EU and member-state levels in the cases of France and Germany. We identify three shifts in EU biodiversity governance which potentially lead to intensifying participatory processes, but which may also be induced by more participation: (i) a shift from a top-down state-centred administrative understanding of policy making towards more flexible and bottom-up approaches; (ii) a shift towards more democratic, ‘postnormal’, types of science; and (iii) a shift from a conservation focus towards a more anthropocentric ecosystems goods-and-services approach framed in a normative context of sustainability. We look at whether these shifts happen in practice and also look at the link with participation. At all political levels a big gap remains between the rhetoric on participation and the real-life implementation of participatory processes.

1 Introduction

In this paper we look at how participation has been theorised and practised in the context of the European Union’s multilevel governance of biodiversity. We define participatory approaches as institutional settings where the public and/or stakeholders of different types are brought together to participate more or less directly, and more or less formally, in some stage of the decision-making process. Stakeholders are deemed to be of different types if, for a given issue, they hold different worldviews, and act on the basis of different rationales. Hence, participation refers to the implication in the decision-making process of persons external to the formal politicoadministrative circle (van den Hove, 2006).

Governance is, in one of its most renowned definitions, “the sum of the many ways individuals and institutions, public and private, manage their common affairs. It is a continuing process through which conflicting or diverse interests may be accommodated and co-operative action may be taken. It includes formal institutions and regimes empowered to enforce compliance, as well as informal arrangements that people and institutions either have agreed to or perceive to be in their interest” (Commission on Global Governance, 1995, page 2). In this paper we start from two normative stances: first, participatory processes have the potential to lead to more effective governance, and, second, participatory processes must allow for the articulation and integration of different types of knowledges.

Over the years participation has emerged as one of the key principles of governance. In the case of environmental governance the normative stance towards participation,

and hence towards what Marks and Hooghe (2004) call type-2 governance, finds a justification in the characteristics of environmental issues and the ensuing problem-solving requirements (Engelen et al, 2008). Environmental issues are typically characterised by physical and social complexity, uncertainty, large temporal and spatial scales, and irreversibility. This calls for dynamic decision-making processes of capacity building, aiming at innovative, flexible, and adjustable answers—allowing for progressive integration of information as it becomes available, and for the articulation and integration of different knowledges, value judgments, and logics—while involving various actors from different backgrounds and levels. Additionally, these processes should allow going beyond traditional politics and coordination across different policy areas and levels, while providing for more democratic practices. We have shown elsewhere that participatory processes have the *potential* to answer these problem-solving requirements [see van den Hove (2000) for a more detailed analysis]. As for the roles of participation in governance processes, they are multiple and may (at least in principle) correspond to a wide range of objectives such as, for example, decisions that are more efficient, time-effective or cost-effective, informed, acceptable, legitimate, fair, competent, and/or democratic (eg Dryzek, 1990; Renn et al, 1995; van de Hove, 2003; Wittmer et al, 2006). In this paper we will not analyse whether this normative stance is justified, but will look at its translation into the practice of biodiversity governance in Europe.

The institutionalisation of governance does indeed encompass a general normative stance towards participation—for example, in Principle 10 of the Rio Declaration, the EC white paper on European governance, or the Aarhus Convention. Underlying this normative stance is the assumption that more participation necessarily leads to better governance. As the German case study will illustrate, if participation has the potential to improve governance, the way that participation is taking place will ultimately dictate whether this potential is realised. Participation in some cases can indeed be inefficient, counterproductive, undemocratic, or a mere camouflage for voicing narrow self-interests.

Our second normative stance stems from the recognition that, in an uncertain and indeterminate world, scientific knowledge is not the only type of knowledge that is relevant to policy. Other types of knowledge—local, indigenous, political, moral, and institutional—also need to be included (eg Ellis and Waterton, 2005; Faber and Manstetten, 2003; Görg et al, 2007; van den Hove, 2007; Wynne, 1992), which are not evident (Grove-White et al, 2007). Participation offers an obvious means for the articulation and inclusion of such knowledge types and we posit that this is a necessary requirement for participatory processes addressing complex issues as it could improve the participatory nature of the process as well as lead to better and more legitimate choices (Rauschmayer and Wittmer, 2006).

As stressed by Jessop (2002), the expansion of governance practices in many different spheres “represents a secular response to a dramatic intensification of societal complexity” (page 2), but it can also be linked to an intensified complexity of policy issues. The field of biodiversity conservation and use is a case in hand of biophysical and societal complexity and, as such, it has also been subject to this expansion of governance.

Biodiversity is primarily described in terms of its biophysical dimension as “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems” (CBD, 1992, article 2).

This variability can be understood as the dynamic outcome of evolutionary processes involving complex interactions between biological, physical, and chemical processes over time spans going from fractions of seconds to millions of years and taking place in a web

of interrelations ranging from microscopic to planetary scales. However, the biophysical dimension is not the only relevant dimension by which biodiversity is characterised. Social and technological systems now influence many of the natural processes of the biogeochemical environment, hence creating socioecological systems (Young et al, 2006) which encompass a large cultural and biological diversity.

Biodiversity has a strong local dimension (Redford and Brosius, 2006), not only through its immediate perception by human beings but also through the changes of ecosystem services related to its decline. So far, human–nature interactions at the local level are still seen as the major direct causes of biodiversity loss (Millennium Ecosystem Assessment, 2003, pages 120–121). The focus on the local scale is not sufficient, though, as many of those local interactions are caused by trends and interactions at higher levels. Local and global processes are deeply intertwined: what happens at one scale is not only connected to other scales (eg the influence of global markets on local land-use change for agriculture), but is to some degree itself part of processes at other scales [eg national governments agree to global treaties, global agreements enforce or weaken the rights of local actors, local resource-use decisions result in global climate change, national law stimulates or resolves local conflicts (Görg and Rauschmayer, forthcoming)]. Additionally, global climate-change effects on biodiversity are quickly rising to the top position amongst anthropogenic drivers of biodiversity loss (Thomas et al, 2004).

On the response side, ever since the community of concerned scientists has framed the problem as a major threat to nature and ultimately also to society, and has managed to bring the issues on the political agendas at all levels [Takacs (1996); Ungar (2003), see Loreau et al (2006) for a recent example], a complex multilayered network of actors, institutions, and interactions has developed to address the conservation and sustainable use of biodiversity (Escobar, 1998). Hence, both drivers of biodiversity loss and response mechanisms are of an inherently global dimension and are at the same time deeply rooted in the local context. Such complexity places the issue in a multilevel governance framework, crossing local and global dimensions of both the issue at hand and the institutions addressing it. This multilevel framework appears as a necessity for at least two reasons. First, the fact that biodiversity has a strong local dimension does not imply that the local level of governance is the only important one. On the contrary, it may well be that the local level lacks the capacity (or will) to act in a strategic way to protect and sustainably use biodiversity. Second, and at the opposite end of the governance spectrum, the global level cannot devise and implement strategic orientation of biodiversity policy without the unique knowledges held at the local level.

EU biodiversity policy provides a good cause for studying participation in a context of multilevel governance for two main reasons. First, EU biodiversity policy development reaches back as far as the 1970s and has been—and remains—highly controversial. As such, it provides a broad range of positive as well as negative examples related to theory and practice of participatory approaches. Second, EU environmental policies, and in particular biodiversity policies, mirror the wider EU evolution towards a multilevel polity and the inherent contradictions accompanying this evolution:

“These contradictions include the maintenance of unity in diversity, the competition between national priorities and supranational imperatives, and the distribution of power between actors at different spatial levels of government” (Jordan, 2002, page 321).

Moreover, the European Union remains the most established example of a multilevel governance system that is institutionalised.

To explore the theory and practice of participation in this multilevel governance framework we focus mainly on the political scale⁽¹⁾ rather than on the many other scales that are also relevant to the question of participation (eg power, formality, space, time). We hope to contribute to the exploration of the linkages between sustainability governance, participatory approaches, and postnormal science.

Three main conclusions emerged from our analysis of case studies: the need to take historical developments into account; the context-specific nature of participatory approaches; and the slow translation into practice of the three major rhetorical shifts in biodiversity governance that we used as guiding threads in our exploration. These shifts are presented in the following section.

2 Three shifts in EU biodiversity governance

Participation has been present to some degree in European biodiversity policy since the 1970s. However, the ways in which ‘participation’ has been theorised and put into practice have changed considerably over the years.

Among the many intertwined trends and processes taking place in multilevel biodiversity governance we identified three major shifts of particular relevance to our analysis as they all potentially lead to intensifying participatory processes. The first shift corresponds to the progressive change of policy-making processes in general—and environmental-policy processes in particular—from a top-down state-centred strictly administrative understanding of policy making towards more flexible, and to some degree bottom-up, approaches (Buller, 2004). This first shift has the potential to increase participation by opening up the policy process to other actors, moving towards more local-level participation and/or more public participation.

The second shift relates to the changing role and perception of science. In the early phases of environmental politics, under the dominance of the technocratic expert model, science has been regarded as the unchallenged provider of knowledge both on issues and on potential solutions. There is now an increased recognition of the need to move towards a more democratic, ‘postnormal’, type of science which leads to an enlargement of the peer community for quality assurance as well as for an extension of facts, and which

“encompasses the management of irreducible uncertainties in knowledge and in ethics and the recognition of different legitimate perspectives and ways of knowing” (Funtowicz and Ravetz, 1993, page 754).

Postnormal science brings to the forefront the recognition that facts are debatable in an uncertain world. This shift implies a move towards more participation in both the provision of knowledge and the assessment of knowledge quality (including its relevance, legitimacy, and credibility—that is, participation in the very debate about facts. It also implies a move towards taking different types of knowledges, ‘ways of knowing’, and knowledge holders into account.

The third shift is more specific to biodiversity and perhaps less obvious than the previous shifts. It corresponds to a shift from a conservation focus in biodiversity discourses and policies towards a more anthropocentric and utilitarian ecosystems goods-and-services approach framed in a general normative context of sustainability. It reflects a change in perception of the issue itself. While at first, policy measures were driven by a merely protectionist rationality, there has been a gradual change towards a combination of biodiversity conservation and its sustainable use. This shift is documented in the Convention on Biological Diversity (CBD), and is even more

⁽¹⁾ A scale is a spatial, temporal, quantitative, or analytical dimension used to describe a phenomenon (Gibson et al, 2000).

accentuated in the Malawi principles, guiding the implementation of the ecosystem approach (CBD, 1998). An important and more recent example of this shift is the Millennium Ecosystem Assessment, an exercise to assess the status and trends of ecosystems, but more particularly of ecosystem services. More than 1300 actors on global and subglobal scales agreed on this utilitarian approach, focusing on the changes in ecosystem services used for human well-being (Millennium Ecosystem Assessment, 2005). This is in effect a shift from a monodimensional (conservation-based) to a multidimensional (conservation and sustainable use) framing of the issue. Hence, it may be regarded as a shift towards taking into account different value systems (relating for example to environmental, economic, social, and cultural dimensions of ecosystems). Participatory processes have the potential to allow for articulation of different value systems (van den Hove, 2000); hence, this shift may induce more participatory approaches. For instance, the ecosystem approach as defined by the CBD includes provisions for broad participation of all stakeholders (CBD Conference of the Parties Decisions V/6). While this third shift is becoming obvious at least in the discourses on, and general argumentation in favour of, biodiversity conservation (see, for example, Costanza, 2006; Reid et al, 2000), it is still unclear to what extent such shift actually takes place in policy practices.

We stressed that each of these shifts could potentially lead to more participation. But it is important to note that the influence can go both ways, as more participation may actually act as a driver for such shifts, hence creating positive feedback loops. More participation may imply a shift towards more bottom-up decision processes—it can lead to more postnormal types of scientific activity as it may bring about the inclusion of a broader range of perspectives in the scientific production and quality assurance process (van den Hove, 2007), and it can constitute an incentive for framing issues in more than one dimension.

In our study we use these three shifts as guiding threads to explore changes in the theory and practice of participatory approaches in biodiversity politics. We analyse EU biodiversity governance and its evolution to identify whether and how these shifts have taken or are taking place and what that implies for participatory decision processes. While doing this, we pay particular attention to the political levels (ie local, national, European) and the phases of the policy processes under consideration. The argument focuses on the Birds and Habitats directives and the corresponding Natura 2000 process and on the implementation of these directives at national or subnational levels in France and Germany, although other elements of EU biodiversity policy are also briefly addressed to put the Natura 2000 process into context. We look at subnational levels to gain evidence on the existence of the shifts, and not with the intention to address the question of the Europeanisation of national biodiversity policies (Jordan and Liefferink, 2004). The main questions explored are: (i) Did these shifts happen in practice in EU biodiversity governance? (ii) Did participation emerge as a ‘necessary’ process as a result of these shifts? (iii) To what extent did participation itself lead to these shifts? (iv) If participatory approaches were indeed implemented, what were the successes and failures and what were the reasons for them?

3 Participation in European biodiversity policy

3.1 Early 1970s to 1979—framing of the Birds Directive

The policy development that led to what is now the Natura 2000 network took up momentum as the result of organised public concerns regarding the killing of migratory birds about thirty years ago. A campaign, directed in particular by Dutch and German citizens [more on that campaign in Gammell (1987)], influenced policy makers at the European level, eventually leading to the adoption of the first Environmental

Action Programme in 1973, which contained broad reference to biodiversity issues (Fairbrass and Jordan, 2001a). In the following years the European Parliament received petitions from various interest groups, and tabled questions, the Commission conducted studies, consulted national wildlife experts, and reminded the member states of their commitments under international conventions, while several member states quarrelled over an expansion of the EU's competencies into habitat and bird protection, questioning the political and legal basis of the Community action in this area (Baker, 2003; Fairbrass and Jordan, 2001b). The outcome of that period has been the adoption of the Birds Directive in April 1979 (European Community, 1979).

This legislation addresses the conservation of all species of naturally occurring birds in the wild state in the European territory of the member states: "It covers the protection, management and control of these species and lays down rules for their exploitation" [European Community, 1979, page 4, Article 1, SPA (1)], and applies "to birds, their eggs, nests and habitats" [page 4, Article 1(2)]. Primarily, however, conservation measures focus on the establishment of special protection areas and their management in accordance with the ecological needs of birds.

During the period leading up to the establishment of the Birds Directive in 1979, participation in the decision-making process took place only in the form of consultation of national scientific experts. Although the emergence of the issue on the agenda was to a certain extent bottom up, as it was the result of nongovernmental organisation (NGO) and public pressure, the subsequent policy process was very much a top-down, expertise-driven, species-based, conservation-oriented process.

3.2 Early 1980s to 1992—framing of the Habitats Directive

As in the case of the Birds Directive, the processes leading up to the adoption of the Habitats Directive can be seen as mix of a variety of interactions of a broad range of policy actors. In this case, around ten years after the Birds Directive had been adopted, it was particularly the

"active campaigning of conservation groups (for example, the RSPB [Royal Society for the Protection of Birds], the WWF [World Wildlife Fund] and the Mammal Society) and support from certain leading Members of the European Parliament" (Fairbrass and Jordan, 2001a, page 512; more details in Dixon, 1998; Sharp, 1998) that initiated and sustained policy action.

The formulation and negotiation of this legislation were partly dominated by issues of national autonomy versus the European competencies of the EC, which had been expanded considerably under the Birds Directive and had proven to interfere with national development plans (Fairbrass and Jordan, 2001b).

After several years of negotiation, the Habitats Directive (European Community, 1992) was adopted in June 1992. With the aim "to contribute towards ensuring bio-diversity through the conservation of natural habitats and of wild fauna and flora in the European territory of the Member States" [European Community, 1992, Article 2(1)], the Habitats Directive calls for

"a coherent European ecological network of special areas of conservation [to] be set up under the title Natura 2000. This network [shall be] composed of sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II ... [and] the special protection areas classified by the Member States pursuant to Directive 79/409/EEC [Birds Directive]" [European Community, 1992, Article 3(1)].

In contrast to the Birds Directive, the Habitats Directive makes explicit reference to sustainable development and socioeconomic aspects. In particular the preamble states that:

“the main aim of the Directive being to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements, this Directive makes a contribution to the general objective of sustainable development” (European Community, 1992).

and that

“the maintenance of such biodiversity may in certain cases require the maintenance, or indeed the encouragement of human activities” (European Community, 1992).

Back in 1992 (the year of the Rio Conference), referring to sustainable development in regulatory texts was still an exception. The CBD for instance makes only limited reference to sustainable development per se, but rather focuses intensively on sustainable uses, a powerful illustration of the shift from purely conservationist to sustainable-uses rhetoric. In contrast, and notwithstanding the explicit reference to sustainable development, sustainable use is not so straightforwardly at the centre of the Habitats Directive. Nevertheless, socioeconomic aspects are given a significant place, in particular in Article 2, which states that:

“measures taken pursuant to this Directive shall take account of economic, social and cultural requirements and regional and local characteristics” [European Community, 1992, Article 2(3)].

Article 6 states that “for imperative reasons of overriding public interest, including those of a social or economic nature” [Article 6(4)], development plans may be carried out, but “the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected” [Article 6(4)]. Hence, the Directive opens the door to a precedence of the economic ‘imperatives’ over ecological ones. One may identify preliminary signs of a change of concept, away from pure conservation but not so obviously towards sustainable uses.⁽²⁾

As in the case of the Birds Directive, participation while drafting the Habitats Directive was limited to the phase of putting the issue on the agenda, in the form of NGO and public pressure. The public and stakeholders had a limited influence on the definition of fundamental principles of the legislation and on its design.

Overall, both the Habitats Directive and the Birds Directive are based on ecological criteria and reflect a general ‘top-down’ administrative, expert-based, and protectionist approach. The directives represent a considerable broadening of the competencies of the European Union in the field of environmental policy, extending its influence onto regional and local conservation policy. As such, there is little evidence of a shift towards bottom-up postnormal, science, or an ecosystems approach at the time of the design of the Birds and the Habitats directives which still very much build on a rather monocriterial, conservation-oriented, framing of biodiversity governance.

3.3 National-level designation of Natura 2000 sites

EU directives are by definition binding as to the results to be achieved by member states, but leave to the national authorities the choice of form and methods [see Article 249 of the treaty establishing the European Community (European Community, 2002)]. Apart from the clear conservation criteria that determine the selection of sites, neither the Birds Directive nor the Habitats Directive provides guidance for the procedure of site designation and their management. In principle, in accordance with the subsidiarity principle of the European Union, it is up to member states to decide whether public and/or stakeholder participation is appropriate in the designation and

⁽²⁾ Interestingly, although the Habitats Directive is in principle more powerfully legally binding than the Birds Directive, from a purely environmental perspective it is also weaker than the Birds Directive because of the commitment of the Habitats Directive to ‘economic, social, cultural, and regional requirements’.

site-management processes. In practice, the aim of defining at least 10% of each national territory as sites within the Natura 2000 network, combined with the focus on ecologically motivated site-selection criteria and an initially tight time schedule, left little room for participation of stakeholders other than scientific experts during the designation phase. From that phase on, recurrent conflicts have emerged between landowners, users and their representatives, conservation administration, and environmental NGOs. These conflicts run through all levels of the politicoadministrative system and have considerably delayed the designation of sites (Sauer et al, 2005), hence delaying the initial schedule.

For the purposes of this paper we addressed the sub-European levels by looking at two case studies, France and Germany, to explore if and how the three governance shifts materialise at the national and subnational implementation level and look at the implications for participation.

3.4 France: more bottom up, more dimensions

In their study on the designation process, Pinton et al (2005) (see also Alphandéry and Fortier, 2001) differentiate between three phases in the creation of the Natura 2000 network in France: (a) the scientific construction and its social contestation; (b) the consensual validation of the inventory; and (c) the elaboration of a site-specific objectives document.

(a) In January 1993 the French environmental ministry started the inventory of habitats suitable for the Natura 2000 network and—in accordance with the spirit of the directive—gave this task to scientists. The transscale activity—deciding about local sites, grouped in biogeographical zones (France is home to four of these zones) according to a nationally decided procedure following a European directive—proved to create a high level of conflicts. These conflicts were aggravated by the fact that site selection was to be done according to biological criteria, whereas the economic, social, and legal consequences of the designation were unclear since their consideration was not supposed to enter the selection process. For Pinton (2008), this first phase

“was based on the belief in a radical separation between science and action. Scientific knowledge was seen as stable and considered independently of action, in order to then be translated into public action” (page 224).

In 1996 the final biological inventory listed 1316 sites corresponding to 13% of the French territory. In 1994 the national-level hunting and agriculture stakeholders had started from a rather positive attitude towards the launching of the inventory through accompanying statements in the first two Natura 2000 information letters edited by the French environmental ministry. Subsequently, the unclear consequences, the disputable scientific basis of the selection and site delimitation, and the nonparticipation of local and regional-level stakeholders in the selection process, led to a high level of protest, which started from actors at the local and subnational levels. The government reacted with an invalidation of the inventory and froze the site-selection process.

(b) In 1997 the ministry of environment sent a list of 534 sites (1.6% of the territory) to the European Commission—sites which were believed to pose no problems. Nevertheless, the Conseil d'État, the highest French court, invalidated this list because of the lack of consultations with property owners, which were a necessary part of the original selection procedure. In 1999 the ministry asked the regional authorities (prefects of the ninety-six French departments on European territory) to classify the sites according to their social acceptability, and sent another list of 534 sites to the EC.⁽³⁾ The prefects

⁽³⁾ Nevertheless, France was convicted in the same year by the European High Court of Justice for not implementing Article 6 of the directive—that is, the article dealing with the establishment of conservation measures and management plans.

were asked to organise consultation processes including the mayors and deputies at the department level (*conseil regional*). As in the implementation of the Water Framework Directive, the regional tier to the management of natural resources was herewith strengthened (Buller, 1996).

Pinton et al (2005) show that the scientific legitimacy, which was the basis for the first extensive list, was far from being recognised by those stakeholders who are users of nature, especially at the subnational level. The subsequent deliberation process led to the selection of a relatively low number of sites with a high regional disparity within France, but these sites have been agreed on by the stakeholders. Contrary to the selection process in most other EU member states, the concertation process in France prepared the management plans to be elaborated in the next phase.

(c) In 1998 a new methodological guide for creating site-specific ‘objectives documents’ (*documents d’objectifs*) was presented. The objectives document is in between a statutory document for the creation of the site and the management plan asked for by the directive in a later stage of the Natura 2000 process. The document describes the status of the site and defines the appropriate means for preserving or orienting it. The approach is based on concertation and pragmatic consideration of local situations, aiming at a contractual management of the site (Valentin-Smith, 1998). This guide has been elaborated based on thirty-seven pilot sites, and constitutes a decentralised concept for applying the directive. The elaboration is under the responsibility of the department prefects, hence is at a subnational level. National, departmental, and local authorities, mayors, hunting, agriculture, forestry, sport or tourism associations, environmental NGOs, etc, cooperate in steering committees of variable size (from eight to more than one hundred members) (Pinton et al, 2005, page 104–105). Environmental NGOs are weakly represented and participation of scientists at this stage of the process turned out to be very limited (Pinton, 2008, page 221; Pinton et al, 2005, pages 110 and 192). Slowly, the list of sites evolved and stabilised at around 1200 sites by the end of 2003, representing 7.6% of the territory, and as such far below the 10% asked for by the European legislation. Today, though, the percentage of French territory occupied by Natura 2000 sites is at 11.83%, and is very close to the EU mean.

Pinton et al (2005, page 192) stress the shift in French nature policy achieved through consensual,⁽⁴⁾ on-site, debates: stakeholder-specific knowledges have been asked for and used by other stakeholders, and the steering committees genuinely tried to strike a balance between the objectives of production or leisure and the objectives of nature conservation. According to Pinton (2008, page 216), the phase involving the creation of objectives documents

“mobilized different knowledge registers in order to associate them within the definition of management measures. This approach closely links cognitive and deliberative activities, which implies identifying how and on what basis exchanges are established and agreements reached, and beyond that, to question the nature and the scope of such agreements” (page 216).

A remaining open question is that of the continuation of the participatory process over time, or, in Pinton’s terms, “does it generate new configurations that are seen as essential to a biodiversity conservation policy?” (page 225).

Analysing this case study in terms of the three shifts we can see that the conflicts during the first phase emerged from the fact that the process was very much top down and expert centred. The preparation of the inventory was left in the hands of scientists alone under a top-down process led by the ministry of the environment, but this approach and the scientific basis of the selection were promptly contested by local

⁽⁴⁾ Note that the use of the consensus model has serious flaws (van den Hove, 2006), but seems to be an enduring theme with scholars discussing participation.

actors and conflicts emerged. While this demand for territorialisation of a policy based on undifferentiated environmental criteria can be considered typical for French environmental policy (Buller, 2004), the shift towards a more bottom-up participatory approach for both site selection and design of management plans is at odds with the strong political verticality of French administration. We interpret this as a case where participation itself is a driver behind a shift towards approaches that are less top down.

An interesting point here is that it seems that the increased participation of stakeholders at different levels resulted in a strong decline of scientific participation. Although the intention seems to have been different, scientists' participation in the process leading to the objectives documents was very limited. Hence, one cannot conclude that this led to a more postnormal-science approach but rather to an exclusion of science. There seems to have been a clash between two sources of legitimacy, science and public participation, and the resulting process did not manage to reconcile them. One possible explanation for this is that, whereas it was probably more the process legitimacy that was contestable [ie leaving everything in the hands of scientists in a nontransparent way, separating science and action, using data sources which were limited and disconnected from the field (Pinton, 2008)], it crystallised as a contestation of the legitimacy of science itself, which made it more difficult to include scientists as one legitimate category of actors in the following developments. Another factor at play was that scientific expertise was brought into the process in a way that de facto excluded or weakened other types of knowledges to be considered and weakened the legitimacy of the whole process. A lesson can be learned here about the difficulty of designing participatory processes which genuinely allow for all different types of knowledges to be brought in, including scientific knowledge. As for the shift from a monodimensional conservation approach towards more pluridimensional framings in terms of conservation and sustainable uses, this case again indicates that it is the conflicts at the local level which forced more participatory methods and, through them, a better recognition of multiple dimensions of the biodiversity issue (cultural, social, economic, environmental).

The challenge posed by multilevel governance of biodiversity is well illustrated by the questions asked by Pinton (2008):

“How can a European system of reference for nature conservation tie in with local cultures? And how can a spatial policy that defines objectives at the European level, be translated into a regional policy based on the local use of nature?” (page 210).

We see a tension between larger level spatial policies and lower level (local-level) culture and uses. In the French case this tension is addressed by increasing local-level participation. However, Pinton notes that the rules governing this participation remain in the hands of central authorities. In the light of our three shifts this means that the shift from bottom up to top down did not apply to rules of procedure.

Finally, the French case illustrates the importance of participation of stakeholders at different stages of the policy process. If the emergence of the issue on the agenda was to a certain extent participatory, the drafting and adoption of the directive was not. Then, during the implementation phases at national level, French stakeholders insisted on having

“a say at every stage of the procedure and not just at the final stage (the implementation of management measures)” (Pinton, 2008, pages 211 – 212).

3.5 Germany: little formal, but effective informal, participation?

In Germany, nature conservation is primarily a field of competence of the federal states (the *länder*)—the national level has the right to set a frame, and is responsible

for the implementation of European legal norms in Germany. The consultation and participation processes at the designation phase were organised very differently by the different *länder* and are therefore very difficult to summarise. The *länder* approaches ranged from uncoordinated participation of some groups, to standardised procedures to which all interested citizens had the possibility to contribute [for example, in Bavaria (Weber and Christophersen (2002)]. However, they all shared the tension between the relatively strict rules of the directives, leaving little room and time flexibility for implementing participation, and the intention to involve a range of actors, which is a typical feature of nature-conservation agencies in Germany.

The nature agencies at *länder* level were responsible for putting together their lists of designated sites, and did so without much consultation of lower level agencies (typically the district level). This top-down approach is inconsistent with the traditional proceeding within this administration. Traditionally, nature-conservation agencies at lower levels are in charge of the designation of nature-protection sites and are the main partner for dialogue with local actors. In the Natura 2000 designation process, though, lower level nature-conservation agencies were rarely involved and had to say. Similarly, land-use agencies (agriculture, forestry, etc) had little or no influence on the designation of sites. This procedure is in contradiction with the trend within the German planning-system tradition to use informational instruments such as communication, participation, and cooperation (Sauer et al, 2005, page 13). The German scientific council for environmental issues (Sachverständigenrat für Umweltfragen) also suggested the establishment of continuous participatory processes in procedures of spatial planning (SRU, 1998), and reinforced this in its advice on nature protection (SRU, 2002).

In contrast to what eventually happened in the French case, German *länder* governments, which are responsible for nature conservation, mostly provided neither means nor particular attention to involve local stakeholders in the selection process. Subsidies, which in general can be used for achieving the aims of the Habitats Directive, could not be used for enhancing participatory processes, and their use mostly was, and still is, restricted towards direct conservation measures on the ground (Suda et al, 2005). The implementation practice showed that, especially at the local level, no additional funding was mobilised to finance additional participatory activities (pages 29–30).

As an exception, Bavaria proposed for its last declaration of Natura 2000 sites in 2004, after a first online consultation of land owners, communes, and concerned citizens in 2003, a six-week period where citizens, organisations, and local authorities had the right to enounce objections to specific sites (Schreiber, 2005). More than 16 000 objections were raised and in another six-week period were analysed and evaluated by the nature-conservation agency. This led to a reduction of approximately 1% of the area to be declared to the European Commission (BUGV, 2006). Local actors had neither official position nor task in the designation phase: their role was restricted to posing comments and the provision of their nature-specific knowledge. The process put in place in Bavaria, although a bit more open than in other *länder*, was a one-way consultation process rather than a genuine participatory process where a dialogue takes place between actors. During the management phase, however, the participation of local actors is supposed to be central.

According to Sauer et al (2005), the time necessary for consultation in site-selection processes in Germany was often underestimated and was badly selected so that many actors could not participate (in times of summer vacations or during the harvest period). For these authors, representatives of nature-conservation agencies at all levels showed an ambivalent behaviour towards participatory approaches. Torn between the search for consensus and their perception to be the only competent representatives for

the 'needs' of the Natura 2000 sites, they often conceptualised participatory approaches in such a way that those had very limited potential to influence the results or the procedure (Sauer et al, 2005, page 54). As a consequence, trust in the (powerless) local administration, the habitual communication partner in nature conservation site issues, was lost.

As Sauer et al (2005) showed, participants were disappointed by the fact that they had no influence on the designation and named the process 'fake participation'. Encouraged by official announcement using rhetoric such as 'consensus', 'mutual', and 'in agreement with the affected', they had come to believe that they would be able to make a difference. But it turned out that the administration had invited them more to inform them or to use their local knowledge to update the administration's knowledge regarding the sites. Hence, participation was used rather to gain information than to account for different values. Participants also showed 'participation fatigue' as they had experienced little influence of their participation to several former participatory approaches in similar contexts (Sauer et al, 2005). Consequently, actors have asked for a more influential participation in the decision-making processes. In general, the German experience shows that participatory approaches conducted half-heartedly or in the wrong situation might cause conflict and refutation of the entire process. Sauer et al (2005) have also noticed a reluctance of stakeholder to participate, for fear of losing their influence once participating. In this sense, 'bad' participation processes, or mere one-way consultation processes presented as participation, might create even more conflicts. Whereas in the French case the lack of participation led to conflicts which induced more participation, in the German case 'bad' participation led to conflicts associated with disillusion regarding participation, hence less direct impetus for opening up the decision-making process.

Nature conservation NGOs have not been involved officially in the process of site selection (Frischmuth and Mayr, 2003, page 12). They were supposed only to be involved in the participatory process planned for the design and implementation of the management plans, but they nevertheless 'participated' in the earlier phase by creating 'shadow lists' of suitable habitats to be included in the national lists sent to the EC (Mayr and Frischmuth, 2003, page 18; Weber and Christophersen, 2002). Already in 1989 the Commission had asked nature-conservation NGOs for a list of 'important bird areas'. A list updated by these NGOs served as background material for a complaint by the EC against Germany in 2001 due to the slow implementation of the directive. German NGOs also elaborated lists for the other sites of the Natura 2000 network, and discussed these with the EC administration, which accepted these shadow lists as background material for the verification of the officially listed sites (Mayr and Frischmuth, 2003, page 19). Hereby, the environmental NGOs circumvented the practically nonparticipatory *länder* and national policies and bypassed *länder* and federal levels to reach directly the European level (Weber and Christophersen, 2002). Weber and Christophersen question as well whether this direct participation of environmental NGOs would not impact on the perceived legitimacy of the list of Natura 2000 sites by other stakeholders, such as forest owners and farmers.

This process is an indicator for the changing use of scientific knowledge. Nature-conservation NGOs in Germany very often have very close links to academic nature-conservation biologists, and often possess good scientific knowledge (at least at the *länder* or national level). They used this scientific knowledge to generate the shadow lists.

For both official and shadow lists, there exist considerable gaps in the knowledge about the sets of habitats and species of designated sites because of missing financial resources and the initially tight time schedule imposed by the EU process.⁽⁵⁾ They are either incomplete or depend on old datasets or knowledge provided by third parties (private citizens, NGOs, etc), and, consequently, local actors often doubt their quality (Sauer et al, 2005, page 31). Furthermore, inconsistencies with regard to the borders of sites (eg along administrative borders dividing fields and lakes) are perceived by affected local actors as ‘arbitrary’ and unjust. This situation is similar to the French case where it is clear that old and inappropriate data without acknowledgement of local on-site knowledge also created doubts about the credibility and the scientific legitimacy of the designation procedure. The shift observed in France to more bottom-up participation and the linking of site selection to the elaboration of management plans has only been met in a few, very well-funded, cases in Germany (Suda et al, 2005). The coming years will show whether the German *länder* can compensate for this lack of participation when building up the management plans (also Wendler and Jessel, 2004).

The German case, where nature policy is under state authority as opposed to federal authority, gives an unclear picture. The general trend during the designation phase seems to have been very top down, based on a technocratic understanding of scientific expertise and a monodimensional framing of the issue in terms of conservation, hence no obvious practical occurrence of the three shifts mentioned above can be highlighted. Some limited and more-or-less-informal forms of participation have at times been observed, but none seemed to emerge as a consequence of one of the shifts. At the local level, for instance, stakeholders could in certain cases have a say on site boundaries (eg exclusion of potential industrial sites). At the national level the informal creation of shadow lists by environmental NGOs, which have since been accepted by the Commission, is an interesting example of actors participating in the decision process through bypassing political levels. This model of shadow lists has been practised as well in many new EU member states (Mayr and Frischmuth, 2003). We have no concluding indication either for Germany that participation itself led to less top-down policy, to a different role of science or to an extension of the monodimensional frame of nature conservation. Successes and failures of participation differed a lot and the interested reader can refer to Sauer et al (2005) for deeper insight.

3.6 Recent developments in EU biodiversity policy

At the EU level, and looking at more recent developments in biodiversity policy, one can observe a significant shift in rhetoric, whereby participation is more and more present. This is likely to have an impact in practice in terms of our three shifts in the future. In 1998 the EU Biodiversity Strategy was adopted, under the fifth Environmental Action Programme. The text contains no mention of participation. For its review under the sixth Environmental Action Programme in 2004 a wide stakeholder process was organised—the ‘Malahide Process’—and the resulting 2006 EC communication entitled ‘Halting the loss of biodiversity for 2010 and beyond’ fully integrates a participation discourse (Commission of the European Communities, 2006). Two of the four so-called ‘supporting measures’ for the action plan in this communication relate to building partnerships on the one hand and building public education, awareness, and participation on the other hand. As far as management of Natura 2000 sites is

⁽⁵⁾ This time pressure must also be understood in the framework of a precautionary approach whereby if the EU had given member states unlimited time for implementing the directives it is likely that some member states would have delayed any action on the grounds that knowledge is incomplete. The often irreversible nature of biodiversity and habitat losses justifies a precautionary stance.

concerned, the EC promotes intensive public participation for the establishment of management plans.

Participation in EU biodiversity policy stems from a double movement. On the one hand one witnesses the emergence of governance principles calling for more participation. These calls are based on normative, substantive, or instrumental reasons, as well as on the recognition of the physical and societal complexity of the issues at hand. As a result, participation appears in discourses but not necessarily in practice. On the other hand, movement leading to more participation in EU biodiversity policy was the discontent amongst actors who distrust and refuse the top-down, expertise-driven, monodimensional way of policy making. This led to significant conflicts at various policy levels, which constituted a powerful driver towards implementation of more participatory approaches, as illustrated by the French case. This double movement brings to light the existing gap between top-down rhetoric on participation and the bottom-up perceptions of that rhetoric.

4 Conclusions

This exploration of participatory approaches in multilevel governance of biodiversity in the European Union highlights the importance of accounting for historical developments when analysing participation, as both the normative discourse on participation and the real-life implementation of participatory approaches are evolving. Furthermore, the specificities of the political and cultural contexts make comparisons between different member states difficult. Nevertheless, looking at different national and sub-national levels in different countries does bring to light some of the intrinsic difficulties relating to how the directives themselves treat (or do not treat) participation.

Looking at the three rhetorical shifts in multilevel biodiversity governance in the European case indicates that those shifts are only beginning to take place in the practice of EU biodiversity governance. At all political levels, from EU to local, there seems to remain a big gap between the rhetoric on participation that is present in political discourses, and even in legal texts, and the real-life implementation of participatory processes.

As far as the first shift is concerned, no clear or significant shift from top-down to bottom-up approaches can be observed. When there is a shift towards more participation at the local level, conflict—and not normative choices embedded in governance rhetoric—appears to be the dominant driver. In those cases, the rules defining and governing participation are dictated by a higher level. It can be argued that this is to a certain extent unavoidable if the objective of the participatory approach is to contribute to decisions taken at that higher level. Regarding the shift towards postnormal practices of science we noted the difficulty of designing participatory processes, which genuinely allow for all types of knowledges to be brought in, including scientific knowledge. As for the third shift—towards ecosystem—related approaches and a pluridimensional framing of the issue—it is important to recall that the monodimensional conservation framing is a result of history; it is in this very way that biodiversity loss was constructed as a societal issue and was brought on the political agenda. Actors in biodiversity polity progressively recognised that the conservation discourse was not sufficient to maintain the issue on the agenda, let alone to ensure that governments and people would act upon it. The shift towards a multidimensional-approach discourse took place in parallel to—and sometimes in confusion with—a utilitarian ecosystems goods-and-service approach. This could have serious repercussions since it may lead to a framing of biodiversity in purely utilitarian terms. Such a reductionist approach ultimately comes down to another monodimensional framing of the issue,

hence replacing one monodimensional framing (purely ecological) with another (purely economic) (on this, see, for example, McCauley, 2006).

As was stressed above, the shifts in multilevel biodiversity governance that we focused on have the potential to induce more participatory governance but the induction can also work the other way—that is, if for any reason more participatory processes are implemented, then these processes have the potential to induce the shifts. The impression left by the journey through EU biodiversity governance is that it is probably this latter mechanism that is dominant. Conflict is still often a major driver for the implementation of participatory processes, which then induce shifts towards more bottom-up governance, building on a more ‘postnormal’ type of science and allowing for multiple framing of issues.

Acknowledgements. The European coordination project Participatory Approaches in Science and Technology (PATH) aimed at taking a critical look at advances in participation in policy deliberation with an emphasis on issues of scale and representation. This is a product of the work done on one of the three study areas of the PATH project: biodiversity loss. The authors presented a preliminary version during the PATH Conference in Edinburgh in June 2006. They are grateful to Juliette Young for her comments.

References

- Alphandéry P, Fortier A, 2001, “Can a territorial policy be based on science alone? The system for creating the Natura 2000 network in France” *Sociologia Ruralis* **41** 311–328
- Baker S, 2003, “The dynamics of European Union biodiversity policy: interactive, functional and institutional logics” *Environmental Politics* **12** 23–41
- BUGV, 2006, “Europäischer Biotopverbund Natura 2000: Nachmeldekulisse beschlossen” [European network of biotopes Natura 2000: decision about late registration], Bayerisches Staatsministerium für Umwelt, Gesundheit und Verkehr, <http://www.stmugv.bayern.de/de/natur/nat2000/dialog.htm>
- Buller H, 1996, “Towards sustainable water management” *Land Use Policy* **13** 289–302
- Buller H, 2004, “France—getting between the vertical”, in *Environmental Policy in Europe* Eds A Jordan, D Liefferink (Routledge, London) pp 81–98
- CBD, 1992, “Convention on biological diversity” (United Nations, Rio de Janeiro), <http://www.cbd.int/doc/legal/cbd-un-en.pdf>
- CBD, 1998, “Report of the workshop on the ecosystem approach”, Convention on Biological Diversity, UNEP, fourth Conference of the Parties, Nairobi, <http://www.cbd.int/doc/meetings/cop/cop-04/information/cop-04-inf-og-en.pdf>
- Commission of the European Communities, 2006, “Halting the loss of biodiversity by 2010—and beyond”, Communication from the Commission no. 216, Brussels
- Commission on Global Governance, 1995 *Our Global Neighborhood: The Report of the Commission on Global Governance* (Oxford University Press, Oxford)
- Costanza R, 2006, “Nature: ecosystems without commodifying them” *Nature* **443** 749
- Dixon J, 1998, “Nature conservation”, in *British Environmental Policy and Europe* Eds P Lowe, S Ward (Routledge, London) pp 214–231
- Dryzek J, 1990 *Discursive Democracy: Politics, Policy and Political Science* (Cambridge University Press, Cambridge)
- Ellis R, Waterton C, 2005, “Caught between the cartographic and the ethnographic imagination: the whereabouts of amateurs, professionals, and nature in knowing biodiversity” *Environment and Planning D: Society and Space* **23** 673–693
- Engelen E, Keulartz J, Leistra G, 2008, “European nature conservation policy making: from substantive to procedural sources of legitimacy”, in *Legitimacy in European Nature Conservation Policy—Case Studies in Multilevel Governance* Eds J Keulartz, G Leistra (Springer, Heidelberg) pp 3–21
- Escobar A, 1998, “Whose knowledge, whose nature? Biodiversity, conservation and the political ecology of social movements” *Journal of Political Ecology* **5** 53–82
- European Community, 1979, “Council Directive 79/409/EEC on the conservation of wild birds”, <http://eur-lex.europa.eu/LexUriServ/Site/en/consleg/1979/L/01979L0409-20070101-en.pdf>
- European Community, 1992, “Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora”, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31992L0043:EN:HTML>

- European Community, 2002, "Consolidated vision of the treaty establishing the European Community", <http://eur.lex.europa.eu/en/treaties/dat/12002E/htm/12002E.html>
- Faber M, Manstetten R, 2003 *Mensch – Natur – Wissen, Grundlagen der Umweltbildung* (Vandenhoeck and Ruprecht, Göttingen)
- Fairbrass J, Jordan A, 2001a, "Protecting biodiversity in the European Union: national barriers and European opportunities" *Journal of European Public Policy* **8** 499–518
- Fairbrass J, Jordan A, 2001b, "European Union environmental policy and the UK government: a passive observer or a strategic manager?" *Environmental Politics* **10**(2) 1–21
- Frischmuth T, Mayr C, 2003, "Große Ziele, kleine Schritte: ein klagenreicher Weg" [Great aims, small steps: a path full of claims] *EU-Rundschreiben* **12** 10–13
- Funtowicz S, Ravetz J, 1993, "Science for the post-normal age" *Futures* **25** 735–755
- Gammell A, 1987 *Manual on European Council Directives on the Conservation of Wild Birds* (European Environmental Bureau, Brussels)
- Gibson C C, Ostrom E, Ahn T K, 2000, "The concept of scale and the human dimensions of global change: a survey" *Ecological Economics* **32** 217–239
- Görg C, Rauschmayer F, forthcoming, "Multi-level-governance and the politics of scale—the challenge of the Millennium Ecosystem Assessment", in *Environmental Governance, Power and Knowledge in a Local – Global World* Eds G Kütting, R Lipschutz (Routledge, London) in press
- Görg C, Beck S, Berghöfer A, van den Hove S, Koetz T, Korn H, Leiner S, Neßhöver C, Rauschmayer F, Sharman M, Wittmer H, Zaunberger K, 2007 *International Science—Policy Interfaces for Biodiversity Governance—Needs, Challenges, Experiences: A Contribution to the IMoSEB Consultative Process* (Helmholtz-Centre for Environmental Research UFZ, Leipzig)
- Grove-White R, Waterton C, Ellis R, Vogel J, Stevens G, Peacock B, 2007, "Amateurs as experts: harnessing new networks for biodiversity", research report, Lancaster University, Lancaster, <http://csec.lans.ac.uk/docs/Amateurs%20as%20Experts%20final%20Report.pdf>
- Jessop B, 2002, "Governance and metagovernance: on reflexivity, requisite variety, and requisite irony", Department of Sociology, Lancaster University, <http://www.comp.lancs.ac.uk/sociology/papers/Jessop-Governance-and-Metagovernance.pdf>
- Jordan A, 2002 *Environmental Policy in the European Union: Actors, Institutions, and Processes* (Earthscan, Sterling, VA)
- Jordan A, Liefferink D, 2004 *Environmental Policy in Europe* (Routledge, London)
- Loreau M, Oteng-Yeboah A, Arroyo M T K, Babin D, Barbault R, Donoghue M, Gadgil M, Häuser C, Heip C, Larigauderie A, Ma K, Mace G, Mooney H A, Perrings C, Raven P, Sarukhan J, Schei P, Scholes R J, Watson R T, 2006, "Diversity without representation" *Nature* **442** 245–246
- McCauley D J, 2006, "Selling out nature" *Nature* **443** 27–28
- Marks G, Hooghe L, 2004, "Contrasting visions of multi-level governance", in *Multi-level Governance* Eds I Bache, M Flinders (Oxford University Press, Oxford) pp 15–30
- Mayr C, Frischmuth T, 2003, "Die Rolle der Naturschutzverbände" [The role of nature protection NGOs] *EU-Rundschreiben* **12** 18–19
- Millennium Ecosystem Assessment, 2003 *Ecosystems and Human Well-being: A Framework for Assessment* World Resources Institute (Island Press, Washington, DC)
- Millennium Ecosystem Assessment, 2005 *Ecosystems and Human Well-beings: Synthesis* World Resources Institute (Island Press, Washington, DC)
- Pinton F, 2008, "Between European injunction and local consultation: analysing the territorialization process for a public nature conservation initiative in France", in *Legitimacy in European Nature Conservation Policy: Case Studies in Multilevel Governance* Eds J Keulartz, G Leistra (Springer, Heidelberg) pp 209–226
- Pinton F, Alphandéry P, Billaud J-P, Deverre C, Fortier A, Geniaux G, Perrot N, 2005, "La construction du réseau Natura 2000 en France: une politique publique à l'épreuve des scènes locales" [The construction of the Natura 2000 network in France: a public policy challenged by local scenes], Report by the Ministère de l'Écologie et du Développement Durable within the framework of the Espaces Protégés research, MEDD, 20 Avenue de Ségur, FR-75302 Paris 07SP
- Rauschmayer F, Wittmer H, 2006, "Evaluating deliberative and analytical methods for the resolution of environmental conflicts" *Land Use Policy* **23**(1) 108–122
- Redford K H, Brosius J P, 2006, "Diversity and homogenization in the endgame" *Global Environmental Change* **16** 317–319

- Reid W V, Mooney H A, Capistrano D, Carpenter S, Chopra K, Cropper A, Dasgupta P, Hassan R, Leemans R, May R M, Pingali P, Samper C, Scholes R, Watson R T, Zakri A H, Shidong Z, 2006, "Nature: the many benefits of ecosystem services" *Nature* **443** 749
- Renn O, Webler T, Wiedemann P (Eds), 1995 *Fairness and Competence in Citizen Participation* (Kluwer, Dordrecht)
- Sauer A, Luz F, Suda M, Weiland U, 2005, "Steigerung der Akzeptanz von FFH-Gebieten" [Increased acceptance of Flora – Fauna – Habitat Directive areas], BfN-Skripten 144, Bundesamt für Naturschutz, Bonn, <http://www.bfn.de/fileadmin/MDb/documents/skript144.pdf>
- Schreiber R, 2005 *Umsetzung von Natura 2000 in Bayern—Abschließende Gesamtmeldung* [Implementation of Natura 2000 in Bavaria—final complete registration] (Bayerisches Landesamt für Umweltschutz, München)
- Sharp R, 1998, "Responding to Europeanisation: a governmental perspective", in *British Environmental Policy and Europe: Politics and Policy in Transition* Eds P Lowe, S Ward (Routledge, London) pp 33–56
- SRU, 1998 *Umweltgutachten 1998* (Sachverständigenrat für Umweltfragen, Berlin)
- SRU, 2002 *Umweltgutachten 2002* (Sachverständigenrat für Umweltfragen, Berlin)
- Suda M, Sauer A, Luz F, Dettweiler G, Beck R, 2005, "FFH—Schlüssel zur Kooperation oder Motor von Konflikten?", BfN-Skripten 159, Bundesamt für Naturschutz, Bonn, <http://www.bfn.de/fileadmin/MDb/documents/skript159.pdf>
- Takacs D, 1996 *The Idea of Biodiversity—Philosophies of Paradise* (Johns Hopkins University Press, Baltimore, MD)
- Thomas C D, Cameron A, Green R, Bakkenes M, Beaumont L, Collingham Y, Erasmus B, Ferreira de Siqueira M, Grainger A, Hannah L, Hughes L, Huntley B, van Jaarsveld A, Midgley G, Miles L, Ortega-Huerta M, Townsend Peterson A, Phillips O, Williams S, 2004, "Extinction risk from climate change" *Nature* **427** 145–148
- Ungar P M, 2003, "The scientific perspective in the conservation of wild biodiversity: a reflection from the Colombian Amazon—ecological economics and environmental management", master's thesis, Ecological Economics and Environmental Management, Institute for Environmental Science and Technology, Universitat Autònoma de Barcelona, Barcelona
- Valentin-Smith G, 1998, "Guide méthodologique des documents d'objectifs" [Methodological guide for documents of objectives], Réserves Naturelles de France, Atelier Technique des Espaces Naturels, http://www.europarc-es.org/intranet/EUROPARC/publicado/biblioteca_virtual/rn2000/doc_obj_rn2000.pdf
- van den Hove S, 2000, "Participatory approaches to environmental policy-making: the European Commission climate policy process as a case study" *Ecological Economics* **33** 457–472
- van den Hove S, 2003, "Participatory approaches for environmental governance: theoretical justifications and practical effects", in *Stakeholder Involvement Tools: Criteria for Choice and Evaluation* Ed. NEA, Report NEA/RWM/FSC(2003)10 (OECD, Paris), <http://www.nea.fr/html/rwm/docs/2003/rwm-fsc2003-10.pdf>
- van den Hove S, 2006, "Between consensus and compromise: acknowledging the negotiation dimension in participatory approaches" *Land Use Policy* **23** 10–17
- van den Hove S, 2007, "A rationale for science–policy interfaces" *Futures* **39** 807–826
- Weber N, Christophersen T, 2002, "The influence of non-governmental organisations on the creation of Natura 2000 during the European Policy process" *Forest Policy and Economics* **4** 1–12
- Wendler W, Jessel B, 2004, "Anwendung und Akzeptanz der FFH-Richtlinie in Deutschland und Frankreich" [Application and acceptance of the Habitats Directive in Germany and France] *Naturschutz und Landschaftsplanung* **36** 347–352
- Wittmer H, Rauschmayer F, Klauer B, 2006, "How to select instruments for the resolution of environment conflicts?" *Land Use Policy* **23** 1–9
- Wynne B, 1992, "Uncertainty and environmental learning: reconceiving science and policy in the preventive paradigm" *Global Environmental Change* **6**(1) 111–127
- Young O R, Berkhout F, Gallopin G C, Janssen M A, Ostrom E, van der Leeuw S, 2006, "The globalization of socio-ecological systems: an agenda for scientific research" *Global Environmental Change* **16** 304–316

Conditions of use. This article may be downloaded from the E&P website for personal research by members of subscribing organisations. This PDF may not be placed on any website (or other online distribution system) without permission of the publisher.