The implementation of Natura 2000 in forests: A trans- and interdisciplinary assessment of challenges and choices

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ABSTRACT

Natura 2000 is the core of the EU’s biodiversity conservation policy. 50% of the overall protected area under Natura 2000 is forest. Yet, comparatively little is known about the implementation of the policy in forests. Building on a rich set of social and natural science data, and an inter- and transdisciplinary discussion process involving scientists from different disciplines as well as EU, national and local stakeholders, this paper identifies five important challenges related to the implementation of Natura 2000 in forests: (1) the balancing of biodiversity conservation and timber production, (2) the integration of conservation (science) and local stakeholders’ demands, (3) climate change, (4) lacking and less effective funding, and (5) conflicts related to other sectoral policies. Subsequently, five possible pathways to tackle these challenges are proposed: (1) a learning approach through better communication and transparency, (2) a pathway emphasizing the role of conservation science in developing management strategies and responding to climate change, (3) an...
1. Introduction

Natura 2000 is the centre-piece of the EU’s nature conservation policy. Covering ca. 18% of the EU’s territory, it is described as the “largest network of protected areas in the world, and a testament to the importance that EU citizens attach to biodiversity” (European Commission, 2012a). Together with the system of species protection, Natura 2000 aims “to contribute towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora” across the EU. To this end, member states must design and implement measures “to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest” (Art.2 (2) HD). These measures “shall take account of economic, social and cultural requirements and regional and local characteristics” (Art. 2(3) HD).

The implementation of Natura 2000 at the national or local level was characterized by conflicts (Table 1) and delays (Borrass et al., 2015; Sotirov et al., 2015). Landowners, natural resource based industries but also local municipalities have frequently objected to the policy (cf. Welsh-Devine, 2011), while environmental organizations have complained about what they see as desultory implementation (e.g. France Nature Environnement, 2012).

Delays and conflicts can also be observed in the implementation of Natura 2000 in Europe’s forests. Forests are of crucial importance for Natura 2000; they make up ca. 50% of the surface area of Natura 2000 sites, and ca. 23% of the total forest land within Europe is in Natura 2000 (European Commission, 2012b). Yet, little is known about the implementation of a management and protection regime in these forests (Sotirov et al., 2011). According to the first composite assessment report on the conservation status of habitat types and species, the conservation status of 63% of the forest habitats (EU-25) was unfavourable or bad, while it is unknown for 16%, and only 21% of the forest habitats were evaluated as having a good conservation status (European Commission, 2009). This illustrates the necessity to analyze the currently evolving management regime for these habitats, and to reconsider policy and management options for the future.

The implementation of Natura 2000 in forests has been the research focus within the European collaborative research project “BeFoFu” (www.befofu.org). This paper shares policy relevant findings that were generated within this project. More specifically, next to an introduction of the methodology, it

<table>
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<th>Type of conflict</th>
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<tr>
<td>Procedural</td>
<td>Feelings of exclusion due to (perceived) top down implementation</td>
<td>Mostly site designation phase</td>
<td>All types of actors, land users most affected</td>
<td>Changing the implementation mode (participation), compromising on the conservation science-based rationale</td>
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<td>Interest-based/material</td>
<td>Conflicts related to changing property/use rights, costs and compensation</td>
<td>Whole implementation process</td>
<td>Land owners and users</td>
<td>Compensation payments, delayed implementation, only soft and symbolic regulations</td>
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<tr>
<td>Political-institutional</td>
<td>Competition about competencies; institutional misfit, e.g. between existing domestic and new European rules</td>
<td>Mostly first phase of implementation</td>
<td>Mostly different administrations, land use versus conservation</td>
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<td>Idea and knowledge-based</td>
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<td>Softening of the conservation science-based rationale of Natura 2000, integration of other types of knowledge, compromises</td>
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Source: Own work.

identifies, first, major challenges related to the implementation of Natura 2000 management in forests (Section 3), and, second, possible pathways for the future of this implementation process (Section 4).

2. Approach

This paper draws on different sources of evidence that were collected in the context of 14 interdisciplinary case studies (forested Natura 2000 areas, most of them beech forest habitats) that were conducted in six European countries (Austria, France, Germany, Spain, The Netherlands, UK). With regard to the case studies, we analyzed:

- the multi-level implementation of Natura 2000, and
- different management and conservation strategies and the impact of climate change on the protected forest ecosystems.

In the analysis, BeFoFu combined social science and ecological research. More precisely, social scientists conducted altogether 291 interviews between 2011 and 2012 at 14 local case study sites and with national and EU policy makers and stakeholders. Interview partners were selected with regard to their relevance in the Natura 2000 implementation process. They include managers, forest owners, farmers, policymakers at different administrative levels, scientists, environmentalists, etc. The interviews covered a broad range of questions related to the development and implementation of Natura 2000 with a specific focus on forest policy and management (for more details on cases studies and social science methods cf. De Koning et al., 2014b).

The ecological research within BeFoFu concentrated on the analysis of tree growth, genetic, plant, insect and bat diversity and management activity. Additionally, many parameters of forest stand structure were recorded. Impacts of different management regimes on the amount and distribution of genetic diversity within beech populations were compared and tree growth assessed according to climatic variation across the sites.

The research findings acquired in BeFoFu have been published in different disciplinary journals, e.g. related to the dynamic social meanings of Natura 2000 (Ferranti et al., 2014; Turnhout et al., 2015), multi-level implementation of Natura 2000 (Sotirov et al., 2011, 2015; Borras, 2014; Borras et al., 2015), policy integration (Winkel and Sotirov, 2014), the importance of climate change (Cavin et al., 2013; De Koning et al., 2014a-b), the importance of management plans in the implementation process (Winter et al., 2014) and the effects of Natura 2000 on beetle assemblages (Zehetmair et al., 2014a) and bats (Zehetmair et al., 2014b).

In this paper, we take stock of these findings and develop a future perspective on Natura 2000 implementation in forests based on a transdisciplinary discussion process involving scientists and stakeholders. In the fall of 2012, the research team of BeFoFu met in a workshop in order to identify important challenges related to the implementation of Natura 2000 in forests based in the data, and potential policy pathways that would address these challenges. Both were compiled in a policy report that was then discussed with 15 EU policy stakeholders in a workshop in Brussels in 2013. In addition, 12 national policy stakeholders were consulted and gave extensive feedback on different aspects of the identified challenges and policy options. The feedback of both the EU and national policy stakeholders has been integrated in this paper. Moreover, we analyzed 18 of altogether 31 contributions of European policy stakeholders to a scoping document on Natura 2000 and forests launched by the European Commission in 2012. These were provided to us by the stakeholders upon request. Finally, this paper is informed by our participation in various EU, national and regional policy stakeholder meetings on Natura 2000 and forests, including the European Commission’s Ad Hoc Working Group on Natura 2000 and Forests.

Hence, this papers builds on rich research findings from different disciplines, but has “transformed” them into policy relevant arguments via the described inter- and transdisciplinary discussion process.

3. Natura 2000 and forests – challenges

3.1. Balancing biodiversity conservation and timber production

As outlined above, a major goal of Natura 2000 is to maintain or achieve a favourable conservation status of habitats and species. EU member states have chosen different strategies in order to achieve this goal, ranging from strict protection (“non-intervention-management”, Cavin et al., 2013) to slightly modified, basically wood production orientated management practices (Winter et al., 2014). This coexistence of wood production and conservation on the same sites is, on the one hand, an illustrative example for the European approach of protecting biodiversity in a cultural landscape shaped by human land-use practices. On the other hand, this integrated conservation approach is the source of most conflicts related to the implementation of Natura 2000 in forests (Winkel and Jump, 2014).

To begin, conservation and wood production at the same site do not necessarily exclude each other (Kraus and Krumm, 2013; Sjölund and Jump, 2013). For instance, close to nature management may result in rich structured forests (Michel and Winter, 2009) with comparatively high species diversity (Winter et al., 2005; Kraus and Krumm, 2013; Sverdrup-Thygeson et al., 2014), while at the same time allowing for substantial timber harvest and bearing economic advantages though diversification and risk mitigation (Knoke et al., 2005). Yet, there is typically a trade-off between the removal of biomass for wood production and its accumulation for conservation purposes. Many species depend on particular structures occurring in late stages of natural forest succession (Seibold et al., 2014; Begehold et al., 2015). These stages, however, rarely exist in commercially used forests because trees are cut earlier. Even if old habitat trees are protected, there is a gap in succession between mature trees, prior to logging, and these old habitat trees. Hence, the habitat tradition is interrupted (Zehetmair et al., 2014a; Müller et al., 2014). These structures can also not be ‘produced’ in a"
short time by management practices. They have to develop over many decades.

Second, a favourable conservation status depends largely on a diversity of forest structures (related to tree species and age, microhabitats, and deadwood), whereas optimum conditions for economic timber production are often rather uniform stands, particularly if high demands for biomass production are to be met.

Third, the design of an effective conservation policy in forests (previously) predominantly managed for wood production is challenging because Natura 2000 areas have often been designated in comparatively old forests stands. These forests are not only ecologically valuable, but also economically because the trees are ready to be harvested. Harvesting ‘mature’ stands is, however, likely to hamper the conservation status of the habitats. This conflict is further complicated through questions of distributinal justice. Restrictions on timber harvest may discriminate forest enterprises in Natura 2000 areas when compared to those outside the protected areas. Also multiple ownership of Natura 2000 forest areas complicates the implementation of management requirements. In these situations, the harvest of parts of the mature stands might not compromise the conservation status, but if most of the owners engage in harvesting, the conservation status will decline. This leads to the question of how restrictions caused by a reduced harvesting level can be fairly distributed amongst forest owners.

According to our data, local administrations are struggling to find the right governance structure to deal with these issues. Conflicts are especially pronounced at local level, where management requirements have to be put into practice. These conflicts entail classic trade-offs between nature conservation and timber production. Yet, they are often emotionally charged (cf. Section 1, see also Borrass, 2014). In many cases, established management planning procedures (if already in place, which is not the case for many Natura 2000 forest sites in the countries where we have researched) are rather circumventing these conflicts than regulating them. Plans tend to not make problems explicit, problem solutions are often only vaguely described, and further ‘translations’ into practical measures are needed to implement the plans. Furthermore, there is a tendency to avoid awkward decisions by formulating unspecific requirements that are, in addition, not legally binding on private land (Winter et al., 2014). In countries where contracts between forest owners and the state are envisaged to implement management plans (e.g., in France), our data show that these contracts are often not taken up by economically oriented forest owners. Hence, forest owners and managers are, on the one hand, seldom restricted regarding the forest management operations they intend to carry out. On the other hand, they often operate in a climate of legal uncertainty and potential conflict given unspecific and unclear requirements.

3.2. Integrating stakeholders without compromising conservation

Our data show a change in Natura 2000 implementation in several of the local case studies. This change occurs from a science-based policy approach to a more participatory style aiming to involve local actors, including land users. The degree of participation, however, varies from one country to the other and sometimes from one Natura 2000 site to another (Ferranti et al., 2014). The shift is partly related to the progression of the implementation of Natura 2000: during site designation, the conservation science based approach caused conflicts with land users who felt excluded (Alphandery and Fortier, 2001; Rauschmayer et al., 2009; Turnhout et al., 2015; Table 1). Later on (sometimes in response to these conflicts), implementation strategies turned towards more cooperation with land users, often coinciding with the progression from site designation to management planning (Table 1).

The changing mode of implementation may explain what appears to be an increasing acceptance of Natura 2000 among local actors and land users (Blondet et al., 2015). In some cases, they are even proud of the European protection status of their forests. However, increasing acceptance of Natura 2000 does not necessarily mean that the EU nature protection policy is effective (cf. Young et al., 2013). Our research demonstrates that in most of our research sites, little or no changes have occurred in the ways people are managing forests (Winter et al., 2014). This is not problematic per se given that the sites were selected for their already existing potential for biodiversity conservation that is at least partially a result of former management practices. Yet, given the unfavourable conservation status of many forest sites related to ecological structures that are rare in managed forests (deadwood, veteran trees, microhabitats), a conservation perspective would require additional efforts.

Moreover, the participation of stakeholders has made policy implementation more complex. In some cases, negotiations between various stakeholders have slowed down the implementation process. Furthermore, these processes are not always supported by all stakeholders (Blondet et al., 2015).

To summarize, although the integration of local stakeholders’ and land users’ demands into the management planning of Natura 2000 forest areas is often a political and legal imperative, it is not without complications, specifically in situations where the primary concerns of local stakeholders are not necessarily related to the achievement of conservation objectives (Geitzenauer et al., 2015).

3.3. Achieving a favourable conservation status under climate change

Climate change poses a particular challenge for Natura 2000 because it is likely to alter habitat properties, but cannot be controlled on the habitat scale. Climate change may drive changes in the presence and abundance of species within priority habitats and changes in the structure of those habitats irrespective of management interventions. Such changes will impact individual species in different ways; some will likely be heavily affected, while others will not be affected at all. This suggests that in order to achieve a favourable conservation status of species and habitats that are vulnerable to climate change, it may be necessary to increase the flexibility of Natura 2000 in terms of site designation and status assessment, particularly at the climatic boundaries of habitat types or key component indicator species (Chapin III et al., 2000; Alagador et al., 2014).
Brought into the political arena, however, the need for flexibility meets with diverging interests and perceptions. The social empirical research within BeFoFu has shown that the link between climate change and Natura 2000 is made in different ways by different actors’ groups. Conservation groups tend to underline that the given institutional setting of Natura 2000 is well equipped towards climate change, but that protection must be enforced in order to increase the resilience of habitats. In addition, they emphasize the idea of an ecological network (“green infrastructure”) to allow species to migrate. These groups fear that a request for more flexibility regarding Natura 2000 will be strategically misused to weaken biodiversity conservation. In contrast, forest users emphasize the need to make ‘static’ conservation targets more flexible, which would allow active management measures including harvesting old stands (Winkel et al., 2011). These contrasting interpretations were particularly explicit at the EU and national policy levels. At the local level, however, our research suggests that local administrations, forest managers, land owners or conservation groups take a more pragmatic approach towards climate change as only one of the factors, and generally not the most important one, to consider in their daily practices (De Koning et al., 2014a,b).

3.4. Conserving forest biodiversity without reliable funding

Financing is a crucial issue for Natura 2000 because of the costs associated with its implementation (Gantiofer et al., 2010). The funds and financing instruments available for Natura 2000 are frequently assessed as being insufficient (Alphandéry and Fortier, 2001; Ferranti et al., 2010; Louette et al., 2011; Wätzold et al., 2010; Young et al., 2007). This is particularly true for forestry, as only a small amount of the potentially available funds are allocated there. Yet, beyond the challenge of lacking resources, funding of Natura 2000 is complicated through different priorities of involved administrations and stakeholders across policy levels and sectors.

One major challenge in the current funding arrangement for Natura 2000 in forests is that funding is mostly available from agricultural, not environmental budgets. Currently, Natura 2000 is mainly funded via the European Agricultural Fund for Rural Development (EAFRD). Here, the aim of biodiversity conservation is competing with other objectives of agricultural policy. The project based funding under LIFE has a focus on the implementation of Natura 2000 but is mostly used for preparatory work rather than land management measures. The decision to fund Natura 2000 is furthermore up to the member states (via the prioritization of rural development spending). Evaluations of the budget allocations of member states have revealed that states prioritize measures to improve the commercial use of forests (e.g., road building) over biodiversity conservation (Kettunen et al., 2011). Together with the requirement to implement Natura 2000, this has led to a significantly underfunded policy, and ‘a lack of funding’ is often given as a reason to not implement specific management measures for Natura 2000. But even if funding opportunities are available, forest owners often prefer to not participate because they consider the conditions unfavourable for them, for instance as funding schemes are not suitable for the long-time horizons of conservation measures in forests (Geitzenauer et al., 2015).

3.5. Conserving forests under Natura 2000 while other policies encourage harvesting them

Natura 2000 is in principle an integrative policy approach. It seeks to achieve biodiversity conservation in combination with (other) land uses. Formally, nature conservation objectives have been integrated into EU land-use policies such as agriculture and rural development. Yet, regardless of this situation, these policies conceive distinct problem perceptions and solutions reinforced by competing actor networks. Such rival political perspectives result in contradictions between nature protection and forestry in terms of both policy objectives (biodiversity conservation versus timber use) and policy instruments. Moreover, coherence problems tend to increase during the implementation (Winkel and Sotiroy, 2014; Sotiroy et al., 2015).

Regarding the implementation of Natura 2000 in forests, substantive and procedural conflicts between nature protection authorities, conservationists and scientists on one hand, and forest land-users, landowners and forestry authorities on the other hand have hampered the effectiveness of the policy in several EU member states (Table 1). Funding of Natura 2000 management is one limiting factor, diverging specifications of the concept of “favourable conservation status” another prominent example (cf. Hernando et al., 2010). In conclusion, despite a seemingly integrative regulatory framework at the EU level, the fragmented policy processes related to forests and conservation may be at the core of many policy implementation challenges in forests.

4. Natura 2000 and forests – pathways for the future

In this section, we present five strategic pathways to tackle the challenges. These pathways resulted from discussions about the challenges that we had within the interdisciplinary research projects and with policy makers and stakeholders. They should not be seen as readily implementable blue prints but as future oriented strategic perspectives intended to stimulate discussion and reflection about what Natura 2000 wants to achieve in Europe’s forests, and how this could be achieved.

4.1. Pathway 1: take time to learn

The implementation of Natura 2000 can be considered as a huge experimentation and learning process that proceeds slowly. Accordingly, the diversity of implementation approaches in different European countries can be seen as a laboratory for developing and testing implementation strategies. This pathway considers the diversity of approaches not as a weakness, but as strength. It seeks to capitalize on this by facilitating learning processes across countries, sites and actors. Achieving this requires the exchange of information and experiences as well as sufficient time to realize mutual learning and adaptation of implementation strategies.
Consequently, policy makers must develop and improve platforms and mechanisms for learning. These mechanisms must involve physical meetings and face to face exchange at different policy levels but also virtual learning rooms enabled through new media. Learning may be enhanced by the discussion of weaknesses and challenges, but also positive examples and best practices. It may be facilitated by a guideline report that is updated in a regular time span. The Ad-Hoc Working Group on Natura 2000 and Forests that has been established by the European Commission may be an example for such an approach at EU level that needs, however, a long-term perspective.

Yet, a strategy highlighting learning and often gradual adaptation is not an excuse for passivity. On the contrary, it takes a lot of effort to achieve the open and reflective atmosphere and attitude to accomplish this as well as the organization of an effective mechanism for information exchange. And moreover, the potential to learn across jurisdictions depends, to a crucial degree, on the possibility of open communication on challenges and failures. Such open communication can be enabled through the establishment of communication rules that protect the frank speaker (e.g. Chatham House Rule). Moreover, better information on the success and failure of implementation and management concepts, on the ecological state of the protected forests, on socio-economic and ecological changes related to them, is a key factor for this policy approach. Science plays a crucial role here, as monitoring and research can greatly contribute to better knowledge about the effects of different Natura 2000 implementation strategies in forests. Beyond science, the inclusion of all groups that are affected by the implementation of Natura 2000 in forests is crucial. Information needs to be assessed jointly by different actor groups and scientists for its importance regarding the implementation process. In this sense, a learning strategy improves and assesses constantly available information related to Natura 2000 in forests, and adapts implementation policies in line with new information.

4.2. **Pathway 2: reinforce the ecologic rationale – strengthen the role of conservation science**

This pathway starts with the recognition that biodiversity conservation in Natura 2000 forests is currently on a problematic track. European wide reporting shows that forest habitats are often not in a good condition and it is doubtful whether this situation will improve given our findings on the effectiveness of local implementation. Hence, this pathway aims to reinforce the ecologic rationale of Natura 2000 building on scientific evidence and political commitment. Such an approach requires much more detailed, ecologically relevant and scientifically derived criteria for defining the conservation status and suitable management measures for different forest habitats.

First, core concepts such as the favourable conservation status and ecologically suitable forest management must be defined for specific habitats and species. This can be done at the level of bio-geographical regions and for forest habitats. Thresholds for the assessment of a favourable conservation status must be specified based on the available scientific knowledge and taking into account the current state and development potential of the habitats and species. These may encompass criteria related to the amount of deadwood, patchiness of the stands, the number of habitat trees, the forest continuity or to the presence of non-native tree species in forest habitats. The criteria for assessing the conservation status need to be binding, as, otherwise, a fair assessment of the conservation status of European forest habitats cannot be achieved.

In addition, changing climate conditions need to be considered. There is a likely future need to de-designate some Natura 2000 sites for particular species or assemblages as climate continues to warm and species distributions change. Associated with such de-designation, compensatory designation of alternative sites will be required if overall designated area is not to decrease. Given that response times are long in forest systems, a forward planning mechanism needs to be developed to identify both at-risk areas and new areas of a given habitat that will become valuable in the future. Alongside such compensation at the habitat level, it should be recognized that even though a Natura 2000 site might cease to be important for a particular species or habitat, it is likely to remain of high conservation value for other species. Thus, species- and habitat-based assessments of the favourable conservation status must be flexible enough to account for pressures imposed by climate change. However, the additional flexibility required can be localized to areas of greatest risk of change first (Jump et al., 2006, 2010; Alagador et al., 2014).

Finally, in order to achieve and maintain a clearly defined favourable conservation status, this pathway suggests that member states must develop and implement an effective policy mix including regulation, information, and subsidies, together with the prohibition of forest management practices that clearly run counter to objectives of Natura 2000 by law.

It is obvious that this pathway requires political commitment from the European institutions and member states, including the provision of sufficient resources. The conservation goals of Natura 2000 cannot be achieved in a short time. Yet, current policies must ensure that the conservation status of the European forests protected under Natura 2000 is on the right track.

4.3. **Pathway 3: (re-)inforce the social rationale – make Natura 2000 a citizens’ project**

This pathway aims to enhance the societal support for Natura 2000. This is based on the consideration that the policy is still perceived as too technocratic by many local stakeholders, which accounts significantly for the troublesome implementation of Natura 2000 in numerous member states (cf. Section 3.2).

Hence, Natura 2000 needs to be reframed as an inclusive policy that does not privilege science and expert-based nature conservation but aims at comprehensive sustainable rural development.

Participation has to go beyond mere information dissemination and consultation which considers citizens and stakeholders as passive receivers of policies and as suffering from an information deficit, towards more inclusive forms of participation where citizens and stakeholders contribute not only to implementation but also to the knowledge base and
design of policies. A main focus of this approach is the local level. At this level, Natura 2000 management has to be developed and (re)formulated jointly with all concerned and interested groups. The national frameworks for implementation must provide enough room for this local form of decision making. Transparency of all decision making processes serves as a guarantee that the policy becomes a public project. Science remains important as an information provider, but does not hold an exclusive position for determining the policy.

According to this pathway, such an inclusive approach to conservation does not result in a weakening or dilution of conservation under Natura 2000. Rather it will revitalize a currently weak policy by making it a project of European citizens.

4.4. Pathway 4: (re-)inforce the economic rationale – investing in Natura 2000

This pathway emphasizes the development of a coherent funding strategy for Natura 2000 in forests that encompasses the different levels of decision making for financing and the different stakeholders’ views.

In a first step, this will require a comprehensive assessment of the actual financial needs. This assessment is important to assess the specific costs due to Natura 2000 as not all costs for biodiversity conservation on Natura 2000 sites are necessarily the result of the policy. It must take into account direct costs caused by management, administration and monitoring, but also indirect costs caused by forgone land use options, taking into account the respective national legal frameworks and resulting distribution of property rights. In addition, the assessment needs to analyze costs for future necessary measures to achieve the Natura 2000 conservation objectives beyond what member states are currently doing. Finally, benefits that the network generates must be assessed as well, including the question of who bears costs and who receives benefits. As this assessment will be necessarily complex, it needs to be done based on a commonly agreed, transparent methodology clearly indicating uncertainties and knowledge gaps.

In a second step, the current spending on Natura 2000 across the EU needs to be analyzed, including an analysis of perverse incentives caused by counterproductive subsidies spent on Natura 2000 sites. At the same time, an analysis of the reasons for the limited uptake of the possible subsidies is needed. Again, the assessment should be based upon a consistent method for all countries in order to achieve comparable results.

In a third step, a suitable funding policy for Natura 2000 could be developed. This would include the abolition of counterproductive spending on Natura 2000 sites as well as the development of a subsidy design which appropriately considers both conservation objectives and land owners’ needs and motivations. For forest areas, specific funding measures should take forest-specific issues such as the long production cycles and the often slow changes of biodiversity in forest ecosystems into account.

In this pathway, the entrepreneurial attitudes of land owners need to be addressed by active marketing measures. In view of public budget constraints, new approaches need to be developed that may involve innovative financing tools from private sources such as donations, eco-sponsoring of light-house projects, ecotourism or others. Private funding sources will not replace public funding, but may add to it in a sensible manner. Yet, such tools will only gain ground if Natura 2000 can be transformed into an effective and highly regarded conservation policy.

4.5. Pathway 5: work towards an integrated European land use and conservation policy

This pathway seeks to resolve challenges related to contradictory policies and instruments in Natura 2000’s forest areas by developing an integrated policy approach. Policy integration is a fundamental principle for achieving comprehensive sustainable development through cross-sectoral coordination. It first requires an assessment of the current state of integration of policies (biodiversity conservation and forestry). Second the factors that have triggered lacking integration and its implications in practice need to be evaluated. Third, the incoherent old policy framework has to be supplemented or replaced by a more coordinated policy approach (Howlett and Rayner, 2007). For Natura 2000, this involves the following steps (Sotirov et al., 2013):

- Involve all relevant policy actors in the development of a common vision to design an integrated policy scheme.
- Apply conflict management procedures. If existing rifts between environmentalists and forestry actors cannot be bridged through mutual learning, they need to be addressed specifically by an appropriate policy mix.
- Design an integrated policy scheme for Natura 2000 in forests based on (i) coherent policy goals and (ii) consistent policy instruments.
- Implement the integrated policy scheme through policy and management decisions regarding forest sites under the Natura 2000 network of protected areas.
- Systematically monitor the implementation and record problems such as overlaps, conflicts, inconsistencies, but also potential synergies between nature protection and forestry.
- Revise the policy integration scheme based on feedback from monitoring, and implement a revised policy design; repeat the monitoring and the following stages.

Policy integration may be a painful process for policy makers that involves the recognition of trade-offs and the necessity to prioritize, including the identification of the most adequate policy level to make priority decisions. Hence, such a process requires time and clear commitment of the involved groups.

5. Conclusions

Natura 2000 is an environmental policy project of impressive scope and ambition. Never before have so many nation states committed to jointly protect their ‘natural heritage’ in a common legal and institutional framework, involving a significant share of their territory. Both the ambition and
dimension of the policy are an achievement itself that must not be forgotten given the critical analysis we have provided in this paper. Natura 2000 brought about a series of political innovations, at least for many of the member states. It introduced, first of all, a European scale into conservation. Second, the conservation concept that drives Natura 2000 is to a large degree science-based. Third, Natura 2000 legal obligations to protect endangered species and habitats are often stronger than previous mechanisms of member states. At the same time, Natura 2000 aimed at an integrative approach towards conservation that takes into account social and economic considerations. Hence, altogether, Natura 2000 appears to be a political chimaera that is hard to grasp.

For instance, the scientific approach of Natura 2000 is, on one hand, a strength because in practice it seems more difficult to dissuad scientific evidence than motivations for conservation that rely on the appreciation of natural beauty. On the other hand, it is also a weakness precisely because of this implicit dismissal of emotions or values as legitimate arguments for conservation. In many cases, Natura 2000 has alienated local actors by imposing a terminology and a way of conceptualizing forests that was not only new to them but also did not resonate with their own knowledge and views and effectively excluded and disenfranchised them.

Natura 2000 is, however, more than science. The idea of sustainable development is woven into the concept, and approaches that highlight the inclusion of socio-economic aspects via participation gained increasing prominence during its implementation. The relationship between ‘decontextualized’ conservation science based planning at a European scale and localized inclusions of an participatory decision making is, however, a difficult one. The different pathways we have highlighted in this paper lean towards the one or another of these aspects. It goes without saying that different pathways are likely to be attractive to different decision-makers and involved interest groups. Moreover, there are not only synergies, but also substantial trade-offs between the pathways (Table 2).

Yet, probably all of these paths must be followed, at least in parts. It does not seem a promising concept to either diminish the science core of Natura 2000 or return to a strongly science-based policy approach alone. A combination of different pathways in a strategic roadmap to implementation, including prioritizations, may be most fruitful. Additionally, the necessity to make more truthful investment in this policy in terms of political will, resources and cogency remains.

Concluding, while Natura is a conservation project of outstanding dimensions, it would be naïve to expect such a European project to be implemented without difficulties. Conflicts, delays and strategies of avoidance by overwhelmed or sceptical local administrations with weak political backing during implementation are phenomena that are well known from other ambitious European environmental policy projects. Some of the challenges outlined in this paper would likely have occurred with any other design of Natura 2000. Yet, such insight must not serve as an excuse for stagnation, but should rather be understood as a call for on-going reflections, and to underline the need for increased and creative investments into the policy. This paper has aimed to provide ideas for such investments in Europe’s forest conservation policy.

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