BIODIVERSITY PROTECTION IN SYNERGY WITH NATURA 2000
A CASE STUDY ANALYSIS

AUTHORS

Shailendra Mudgal, Kate Reilly, Patricia Benito, Johanna Hedlund, Leonardo Mazza, Pierre Sonigo, and Eric Labouze[1]

ABSTRACT

The network of Natura 2000 sites designated under the Birds Directive and the Habitats Directive form the basis of the policy framework for biodiversity protection in the European Union (EU). However, the application of the ecosystem approach to biodiversity protection encourages the biodiversity protection actions in the rest of the landscape to be developed in synergy with Natura 2000. Many initiatives exist across the EU that achieve this through the establishment of linkages with Natura 2000 sites. Ten examples of good practice in employing novel methods of biodiversity protection that employ such linkages were explored to identify the key factors for their success, and the barriers and challenges that they encountered. These case studies were located across the EU and involved a variety of methods taken on several different land-use types. The common factors for success included the use of locally adapted protection methods, participation of stakeholders and the public, integration with other initiatives, and ensuring funding was sustained. Barriers and challenges that were frequently encountered included a lack of knowledge of the linkages that can be implemented, difficulty in locating other initiatives in the vicinity, and a lack of support from stakeholders. Many aspects of these projects can be implemented elsewhere as a contribution to the application of the ecosystem approach in the EU.

INTRODUCTION

Efforts to apply the ecosystem approach to practical biodiversity conservation are increasing. This approach is a priority of the Convention on Biological Diversity (CBD), and its main objective is to achieve integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way (IUCN, 2004). In the European Union (EU), Natura 2000 is a key mechanism to protect biodiversity. It is a network of sites for biodiversity protection designated under the Birds Directive and the Habitats Directive, to form a coherent network across the EU.

[1] All authors affiliated to Bio Intelligence Service, 20-22 villa deshayes, 75014 Paris (FR)
Phone + 33 1 53 90 11 80
Email shailendra.mudgal@biois.com

A manner of applying the ecosystem approach is by ensuring that the biodiversity in designated areas, such as Natura 2000 sites, is embedded within that of the rest of the landscape. This can contribute to increasing the resilience of ecosystems and thus their potential to adapt to environmental change.

Therefore, there is a need to develop approaches for expanding biodiversity protection beyond Natura 2000 whilst retaining linkages with the network, in order to enhance the benefits for biodiversity and make a more efficient use of resources, in terms of finances and management structures. The extension of biodiversity protection beyond the realm of designated areas and conservation professionals is likely to require the development of new tools and instruments. In particular, incentive-based approaches may be used to encourage the incorporation of biodiversity protection in sectors such as agriculture, forestry, fisheries and tourism. Some such approaches are included in the policy framework, such as agri-environmental measures under the EU Common Agricultural Policy. However, there are other smaller-scale schemes in operation that use incentives to overcome locally-specific barriers to biodiversity protection.

This paper identifies innovative approaches, including those that are incentive-based, of protecting biodiversity in synergy with Natura 2000. It further analyses the benefits, as well as the barriers and challenges, of the implementation of such approaches. Finally, it draws lessons from the analysed cases which could be applied elsewhere to contribute to the protection of biodiversity at an ecosystem scale.

APPROACH

This paper analyses case studies of good practices in protecting biodiversity in synergy with Natura 2000, even when the principle objective of such initiatives was not biodiversity protection.

The case studies were selected from an inventory of projects which resulted in biodiversity conservation on sites that are not part of the Natura 2000 network. The main criteria for selecting the case studies were:

- Linkages with Natura 2000 or the potential to do so
- Use of novel or innovative methods of biodiversity protection
- Large-scale benefits for biodiversity i.e. which extend beyond the boundaries of the project
- Concrete results that benefit biodiversity and specific results that allow the benefits of the project to be effectively evaluated
- Not too specific to a particular species or location

Of the projects that met these criteria, preference was given to those which involved non-typical actors in biodiversity protection, such as the public and owners of commercial forests; employed innovative methods; and which were relevant to a wide range of other projects across the EU.

CASE STUDIES

The ten case studies that were selected to illustrate innovative methods of conserving biodiversity in synergy with Natura 2000 were located in different EU Member States (MS). For the majority, biodiversity protection was the main objective of the project, although for others it was one of several objectives, or a part of achieving other objectives, such as working towards sustainable urban development. The case studies were also chosen to reflect different land-use types such as urban, forested, natural and agricultural land, and freshwater ecosystems.

The ten case studies are summarised in Table 1.

Table 1: Description of the ten case studies

Short code	Case study name	Country	Description
BBQ	Barbecue for butterflies	UK	Coppice management of woodlands to produce sustainable barbecue charcoal which is sold directly from the producer to the local outlet of a major retailer. Coppicing benefits ground vegetation, several butterfly species, the dormouse and the nightingale. The producer network is distributed across the UK, thus providing favourable areas of habitat between Natura 2000 sites.
BO01	The Western Harbour- BO01	Sweden	BO01 is a sustainable housing district within the city of Malmö. The protection of biodiversity and habitats was ensured through the use of an evaluation tool called the Green Area Factor, which ensures that sufficient green space is provided in the housing lots. Furthermore, at least 10 specific habitat features had to be included in each lot. The project enhanced the landscape quality for biodiversity, allowing movement across the wider landscape between habitat patches, including Natura 2000 sites on the edge of the city.
CATTLE	Identification and restoration of the old cattle tracks of Osuna	Spain	The ancient network of cattle tracks for the seasonal movement of livestock were restored and reforested, thus contributing to the management of soil erosion. The tracks provide corridors for wildlife movement between habitat patches, and the livestock have been known to transport seeds between plant populations, thus contributing to the protection of genetic diversity. The tracks were delineated using old maps, GPS, aerial photography etc., to reduce conflicts between farmers over the use of the tracks. The tracks form part of an ecological network across Andalucia, and thus contribute to linking Natura 2000 sites within the network.
CB2R	Operation Roadsides – late mowing of road verges	Belgium	An ecological management plan for roadsides has been developed, which involves mowing verges only once per year and late in the season. This encourages the establishment of flowering plants and provides food and shelter for several animal species. In addition, when managed in this way the road sides extend the area of habitat available to species which are normally found on agricultural land and provide temporary shelters for animals during periods of agricultural work (e.g. harvesting and haymaking). Roadsides managed this way connect Natura 2000 and other designated sites, and form part of an ecological network across agricultural and forested land.
DOJRAN	Implementation of	Greece,	A management plan developed during the project serves as a focus for transboundary cooperation

Short code	Case study name	Country	Description
	measures for the protection and sustainable development of Lake Doirani	FYROM	between Greece and the Former Yugoslav Republic of Macedonia (FYROM), to ensure that the water in Lake Doirani meets the requirements of the Water Framework Directive despite FYROM not being an EU MS. The plan includes use of agri-environmental measures to reduce water extraction, development of artificial wetlands for wastewater treatment, and monitoring of the lake's condition. The project ensures that ecohydrological processes are connected across the lake catchment, including Natura 2000 sites.
EMSCHER	Emscher Park: The ecological recovery of the Emscher Valley	Germany	This project involves the regeneration of previously industrial brownfield land to create green infrastructure and sustainable housing, while preserving cultural heritage, seeing to social problems and creating employment. Actions include the development of a green corridor the region, including several parks, regeneration of former industrial land, and restoration of heavily polluted waterways and soil. The project was initiated before the establishment of Natura 2000 but provides a framework for biodiversity protection actions throughout the region.
LDGREEN	Lower Danube Green Corridor	Romania, Bulgaria, Moldova, Ukraine	An ecological corridor is created along the Lower Danube, which aims to coordinate biodiversity conservation and water management between across national borders. This is achieved through a system of protected areas which are ecologically and economically connected to existing Natura 2000 sites. Management plans for the protected areas are drawn up with local people through a participatory approach. It is hoped that Natura 2000 management guidelines can be drawn up on the basis of these management plans.
LPO	LPO Refuges for Birds	France	This project is initiated across France and is coordinated by the League for the Protection of Birds (LPO). By encouraging local people, businesses, schools and other institutions to create 'refuges' for wildlife on their land, the provision of habitat, particularly for birds, is improved. This provides habitat for particular species throughout the landscape between Natura 2000 sites, and makes use of novel sources of funds for biodiversity protection (private individuals and organisations).
METSO	Forest biodiversity programme for southern	Finland	The project seeks to protect and restore biodiversity both in state-owned protected areas and private forests that are managed for timber production. This is achieved through a system of voluntary

Short code	Case study name	Country	Description
	Finland		conservation agreements, which can be temporary or permanent, between the owners of private forests and the state. There are two ways by which the voluntary conservation agreements can be set up: natural values trading contracts or competitive tendering. To assist this process, a set of criteria were developed by experts to define ecologically valuable sites which should be protected under the programme. This expands biodiversity protection into privately owned forests, thus linking Natura 2000 sites already established within the forests.
TVALSACE	Creation and restoration of a green network in Alsace	France	A pilot of the green network was established in 2003 on the plain of Alsace, following a feasibility study in 2001, which was expanded after a positive assessment of the pilot. Detailed mapping studies defined the central nuclei of the network, which consist of areas of high nature value, many of which are designated as Natura 2000 sites. To connect these nuclei, areas which could form ecological corridors were identified. In the plain of Alsace, the study identified an existing 152 000 ha of nuclei and corridors which already formed a green network. It was concluded that a further 7700 ha of ecological corridors were needed to ensure sufficient connectivity between these existing areas. Individual projects which aim to protect or restore biodiversity or the ecological quality of a habitat can be funded by regional aid.

LINKAGES WITH NATURA 2000

Biodiversity protection in synergy with Natura 2000 can be achieved through the establishment of a number of linkages, both physical and non-physical. These linkages either seek to improve connectivity between areas inside Natura 2000 and those outside, or intend to make a more efficient use of resources for biodiversity protection, in terms of financial resources or management structures. The specific linkages that were identified are ecological connectivity, evolutionary connectivity, functional connectivity, habitat connectivity, landscape connectivity, funding linkages, and management linkages. In many cases, the definitions of these linkages overlap to some extent, and hence all of the case studies illustrated the establishment of more than one linkage.

The specific definitions that were developed for each of the observed linkages are as follows:

Evolutionary connectivity is focused on ensuring that populations of a species in a landscape do not become disconnected, thus resulting in populations that are more resilient to environmental change, including climate change. Genetic diversity confers greater resilience, and is maintained in large populations where there is a reduced likelihood of inbreeding, and is enhanced by the migration of individuals between populations (Fox and Wolf, 2006; Connor et al., 2000). To some degree, all types of linkage (except management and financial linkages) incorporate evolutionary connectivity. This is because all linkages that expand habitat area are more likely to allow migration of individuals between populations, expansion of species' ranges and the supporting of larger populations.

Several of the case studies resulted in evolutionary connectivity. Examples such as TVALSACE and CB2R in which habitat fragments are connected allow the migration of species in response to climate change. In addition, the use of the cattle tracks by livestock in the CATTLE case study transfers seeds between plant populations, thus increasing the genetic diversity of such populations. Hence, the extent to which they can adapt to climate change is enhanced.

Creating **habitat connectivity** involves linking otherwise isolated patches by providing areas of the same habitat type, without reference to the specific requirements of any particular species. This fulfils two functions for organisms. The first is that it ensures that there is a sufficient area of habitat available for the vital functions of species, such as breeding and feeding, for example (Kettunen et al., 2007). The second is that it allows organisms to disperse and move between habitat patches in a landscape that may not otherwise include suitable habitat (Hilty et al., 2006). To ensure that particular species are able to move between patches, it is essential that functional connectivity is also considered.

Habitat connectivity is illustrated by the CB2R case study, where the roadsides that are managed to promote biodiversity function as corridors between larger areas of semi-natural habitat.

Functional connectivity is a species-specific and landscape-specific property (Noss, 1991; Taylor et al., 2006), as it refers to the actual use of the landscape by species. For functional connectivity to exist, landscape elements which allow species to use the landscape, including movement of individuals within the landscape, need to be in place. Thus, functional connectivity is not necessarily implied by habitat connectivity and one may exist without the other.

Measures taken within the METSO project resulted in enhanced functional connectivity of the forest landscape. For example, bark stripping and felling of trees increased the provision of deadwood, which is an important habitat for many species, such as invertebrates, thus allowing them to move and persist within the forest.

Landscape connectivity refers to physical connectivity of the wider landscape outside specific habitat patches. Individuals may be able to move between unconnected habitat patches, depending on the distance between them, and the ecological quality of the landscape between them (Kettunen et al., 2007). In addition, landscape connectivity can also affect specific behaviour, such as foraging, especially for those organisms that require a large area of land.

Many of the case studies exhibited landscape connectivity. For example, TVALSACE implemented actions throughout the region, including on agricultural and urban land. Hence the ecological quality of the landscape as a whole was enhanced, allowing species to move between habitat fragments.

Ecological connectivity refers to the connectedness of ecological processes as opposed to physical connectivity of habitat. It can occur at all scales, from connectedness across a landscape to micro-level ecosystem processes. Such processes are generally related to interactions and relationships between species (predator-prey relationships, symbiosis (e.g. mutualism, parasitism, commensalism), etc.), disturbance processes (which may disrupt or enhance ecological connectivity) and hydroecological processes (the effect of vegetation on hydrology) (Lindenmayer and Fischer, 2005).

The CATTLE case study illustrates an example of ecological connectivity; seeds are transferred between plant populations by the livestock that are traditionally moved along the cattle tracks. This form of connectivity is also demonstrated by the DOJRAN case study, which ensures that ecological and ecohydrological processes are connected throughout the lake catchment.

A **management linkage** is established when traditional institutions or tools that were originally not intended to serve biodiversity conservation purposes are relied

upon to deliver benefits in terms of biodiversity and habitat conservation. This can happen, for example, through the intentional 'greening' of a regional forestry management plan. This could involve making all stakeholders aware of the integration of biodiversity conservation objectives into the objectives of forest management, and the designation of the local forestry authority as responsible for biodiversity protection, alongside their more traditional occupations.

An example of how this linkage can be applied in practice is illustrated by the LDGREEN case study. This project aimed to encourage the sustainable management of activities that contributed to economic development, such as fisheries, agriculture and tourism. This is to be achieved through capacity building and practical support for stakeholders to benefit from EU funds.

A **funding (or financial) linkage** is exploited when a non-traditional source of funding (which broadly speaking excludes public money and projects entirely funded by NGOs) is exploited, delivering biodiversity benefits which might not have been funded from traditional sources. This might, however, include the use of public money when the action the money is spent on is not biodiversity conservation but biodiversity benefits are still delivered as a result.

The LPO case study is a particularly good example of the establishment of a financial linkage, as actions which are beneficial for biodiversity are financed using private funds, through two different pathways. Individuals and organisations can bear the costs which arise from establishing wildlife 'refuges' on their land, and secondly the funds collected through the sale of items from the LPO shop are sued to finance nature protection actions.

FACTORS FOR SUCCESS IN ESTABLISHING LINKAGES WITH NATURA 2000

The case studies illustrated diverse methods by which biodiversity protection outside Natura 2000 can be achieved successfully, and similarly implemented linkages with Natura 2000 in a number of ways. From investigating these methods, several key factors for success can be extracted.

- **Effective implementation of linkages with Natura 2000**

Due to the diverse objectives of the case studies, a variety of tools and methods were employed to achieve biodiversity protection in synergy with Natura 2000.

A common method of implementing linkages with Natura 2000 was through creating or expanding ecological networks, based around existing protected sites, including but not limited to those designated as Natura 2000. In these cases, land which was close to such existing protected sites or which created corridors between them was given priority for incorporation into the network. For example, an initial and important stage of the TVALSACE project was to map the areas of habitat that currently exist and define areas of land that can be used as ecological corridors to link them. The maps were used as a tool to prioritise efforts on those

areas that were either most ecologically valuable or formed an important link between habitats.

Mapping was also used to prioritise land for inclusion in the ecological network. For example, METSO also aimed to prioritise conservation in the most valuable areas. However, rather than defining these spatially, a set of ecological criteria were developed which were applied on a case by case basis.

- **Stakeholder involvement**

The involvement of stakeholders and other actors, including the public, in the project was frequently identified as a key factor for expanding biodiversity protection onto land uses less traditionally associated with biodiversity protection, including agricultural and urban land. Furthermore, the inclusion of the public provides a valuable opportunity for awareness-raising and education, which can encourage support for biodiversity protection.

Several successful methods of achieving stakeholder involvement were identified, although those that were most effective achieved active engagement rather than simple information provision or dialogue. The use of incentive-based approaches at a local or regional scale can be particularly effective in addressing opposition to biodiversity protection and other such barriers. For example, the METSO case study in Finland overcame historical conflict between management of privately owned forests and conservation objectives. This was achieved through the use of voluntary conservation agreements, with participating forest owners being paid compensation for implementing conservation measures on their land. The inclusion of the forest owners' union and other key stakeholders on the project's working group allowed methods to be developed to which forest owners were most amenable.

Another method of direct involvement of private land owners in conservation is illustrated by the BBQ case study. In this example, forest owners were provided with information on the management of woodlands by coppicing. In many native woodlands of Europe, this form of management has been found to be beneficial for butterflies, birds and other rare species due to the sparse canopy and mosaic of microhabitats that coppicing creates (Spitzer et al., 2008).

If such long-term direct involvement is not possible, many of other case studies provided examples of effective short-term engagement of neighbouring land owners and the public. For example, the CATTLE example used volunteers in the restoration of the cattle tracks, and conducted educational sessions with local school children. As well as providing a cost-effective method of achieving conservation objectives, this helped to foster a sense of ownership of the restored cattle tracks amongst the local people, and a greater recognition of their cultural and ecological importance.

Furthermore, many of the projects resulted in benefits for people, alongside the main outcome of protecting biodiversity. This was frequently promoted and used

as a method of gaining public acceptance and support for the project. Such benefits included the provision of opportunities and space for leisure and recreation, the creation of employment and opportunities for ecotourism, improvements to the visual quality of the landscape, management of flooding, and the provision of housing.

In some cases, the benefits for people were vital to allow the project to actually be implemented. For example, providing employment was imperative for BBQ, as the project required people to be working to manage woodlands in order to produce charcoal. In other cases, the objectives were broader than just biodiversity conservation, and therefore the benefits for people derived from the socio-economic objectives, such as the provision of employment and housing in EMSCHER. For other projects, such as TVALSACE, the benefits for people were more an added bonus than a specific objective or a necessity for the implementation of the project.

The only project that specifically considered the benefits to people through the restoration of ecosystem services was LDGREEN, although it is likely that many of the other larger scale projects will also have this benefit. The sustainable flood management plan, if effective, is another important benefit for people in LDGREEN.

- **Integration with other initiatives**

The application of the ecosystem approach does not solely imply interaction between projects conducted outside Natura 2000 and the management of biodiversity inside Natura 2000. To work towards a truly coordinated system of biodiversity protection across the EU, initiatives which are involved in biodiversity protection outside Natura 2000 must also integrate with each other. Such integration can be achieved in a number of ways:

- Integration with projects or policies at a larger scale
- Integration with projects or policies at a smaller scale
- Use of the project as a model for the implementation of other similar projects at a different scale or in a different location
- Contribution to meeting the requirements of international agreements

The integration of the case studies with projects at a larger scale often involved contributions to national ecological networks. Examples of such cases are the two French projects (LPO and TVALSACE) which contributed to the French project '*Trame verte et bleue*'. However, their contributions differed. TVALSACE served as the pilot project which developed methods of implementing the network that can be reproduced across France. By contrast, LPO creates actual areas of habitat that can be integrated into the network.

Integration with policies at a smaller scale was less common amongst the case studies, but did occur in the case of LDGREEN. This is not surprising as the project operates at an international scale, and therefore would have to take into

consideration national initiatives, such as those regarding rural development and flood protection. The only other example of this type of integration was BO01, which included a project that demonstrated to the public how to build bird boxes and provide other habitat elements in their gardens.

The methods of achieving biodiversity protection that have been developed by CB2R, CATTLE, EMSCHER and METSO have been replicated elsewhere. This is because they have developed novel ways of achieving biodiversity protection, which include either innovative methods (METSO), or actions on land uses which are not normally associated with biodiversity (CB2R, EMSCHER). The consideration of the extent to which the methods developed during the course of the project can be applied elsewhere assists in broadening the benefits for biodiversity beyond the project's boundaries.

Several of the projects specifically identified their contribution to meeting the requirements of international agreements such as the Convention on Biological Diversity. In fact, it is likely that all of the projects contribute to meeting such objectives, as long as they are effective in providing benefits for biodiversity. Some of the projects also involve the management of sites which are designated under an international system of protected sites (other than Natura 2000). For example, LDGREEN includes wetlands designated under the Ramsar Convention, and Lake Doirani in the DOJRAN project is designated as an Important Bird Area. The woodlands which are used to produce charcoal in the BBQ project are certified as being sustainably managed by the Forest Stewardship Council. Conforming to this international initiative is particularly important for this project as it demonstrates that the sustainable credentials of the charcoal that is produced from the woodlands are externally verified. This is likely to encourage environmentally aware consumers to buy the product, and therefore helps to fund the sustainable management of woodlands.

- **Sustaining funding**

Of critical importance to the long term success of the case studies, and hence the long-term maintenance of the linkages with Natura 2000 was found to be the continued provision of funding. The BBQ project provided a particularly efficient example of this, as the project was essentially self- funding after the initial organisational and administrative aspects. This was achieved by gaining contracts for local sustainable charcoal producers to supply major retailers with barbecue charcoal. This then ensured that as long as the contract was retained, the woodland managers were essentially paid for continuing with coppicing of woodlands to produce charcoal.

The LPO project achieves its objectives by passing on the cost of establishing areas of habitat to the individuals on whose land they are placed, as well as using proceeds from the sale of items through the LPO shop to support the overall project. Therefore, the project and benefits for biodiversity persist as long as

individuals and organisations are willing to implement bird protection measures on their land.

BARRIERS TO IMPLEMENTATION OF LINKAGES WITH NATURA 2000

- **Lack of awareness of the types of linkages that can be established**

Five of the projects established linkages intentionally, thus demonstrating that there is knowledge of the potential to do so. However, despite some of the cases exhibiting management and funding linkages, in most cases it was only the more physical linkages (habitat connectivity, landscape connectivity, etc.) that were discussed in the rationale for establishing them. This suggests that although awareness of the negative effects of habitat fragmentation on biodiversity is increasing, there is still a lack of awareness of the potential for management and funding linkages to be established. However, some of the projects have established such linkages based on strong rationales, and therefore there is potential for awareness of this to be raised. For example, TVALSACE recognised that the use of funding to manage both the ecological network and Natura 2000 was more efficient and thus allowed the objectives of the project to be more ambitious. LDGREEN highlighted that the habitat management that was implemented as part of the project can serve as a tool to promote management of Natura 2000 sites in the new MS of Bulgaria and Romania. Greater promotion of such linkages amongst the initiators of biodiversity protection projects may help to encourage their implementation.

- **Lack of awareness/knowledge of other initiatives in the vicinity**

In order to coordinate conservation activities, both with Natura 2000 and with other similar initiatives, an awareness of what exists, or a method by which to find out, is essential. Some of the case studies illustrated how this can be helped by the existence of a larger-scale framework for conservation within which individual projects can integrate and participate. An example of this is the French ecological network (the 'Trame verte et bleue') to which both TVALSACE and LPO contribute.

In other cases, an overarching body, such as Metsahallitus in the case of METSO, can help to coordinate both funding and management. However, in this case the process is facilitated by the fact that only one type of land use has to be managed. Therefore, conflicts with other land uses, such as agriculture and urban areas, do not have to be handled. However, a framework to enable smaller scale, individual projects to coordinate their actions is still lacking.

- **Legal protection of sites that link Natura 2000**

A common challenge that has already been identified by TVALSACE and which may become increasingly important for other ecological networks is a lack of legal protection for sites which are not designated as Natura 2000, but which form links between them. In the case of TVALSACE, this leaves such areas open to infrastructural developments and would mean that compensatory measures

would not be required. This challenge will not be able to be overcome by projects themselves. It will have to involve action at a national level to define the legal status of land included in ecological networks in order to ensure that the ecological functions of such networks can be retained.

- **Lack of support amongst stakeholders/landowners**

Many of the case studies illustrated the importance of ensuring that stakeholders, particularly landowners and farmers, fully support the project, especially when it relies on actions taken on their land. For example, the ecological network that is developed in TVALSACE relies on measures that are beneficial for biodiversity being implemented on agricultural land, in addition to those that occur on other land-use types. However, it was found that many farmers have not accepted the importance of the project which is limiting the extent to which these actions can be implemented.

Several projects, including LDGREEN, EMSCHER, CB2R, BO01 and METSO, demonstrate the value of establishing dialogue with stakeholders to ensure that they are fully informed about the project's objectives and methods, and to encourage their involvement (i.e. taking a participatory approach to biodiversity protection). METSO is a good example of this. Previously, the designation of Natura 2000 sites and other conservation initiatives in Finland had involved significant conflict between forest owners and authorities, which stemmed from the exclusion of landowners from the planning process (Oksanen, 2003). The METSO programme, despite involving the same actors, did not encounter the same controversies, due to the voluntary nature of the conservation agreements. This allowed landowners to choose to participate, and paid them compensation if they did. CB2R found that the simple establishment of a dialogue between farmers and the authorities resulted in a more favourable opinion of the project. However, it may be because the project only indirectly involved the farmers' land that dialogue was sufficient. Therefore, in cases where projects directly use land, a more participatory approach with landowners, such as that developed by METSO, may be needed.

- **Project funding**

Securing funds and ensuring their long-term availability is often a challenge for conservation projects. However, there are many potential sources of funds at an EU level. While none of the case studies identified funding as being a particular problem for them, the financial benefits of developing linkages with Natura 2000 are highlighted by TVALSACE, and novel ways of financing projects are demonstrated by LPO and BBQ.

- **Difficulties in cross-sector communication**

Many biodiversity protection projects, particularly those that involve construction, rely on other actors to actually implement them, with the project's ecologists playing a guiding role. Difficulties can be encountered when contractors or policy

makers reach a different understanding of the terminology and concepts used than that which was intended by the ecologist. For example, in the case of TVALSACE, the implementation of the ecological network in urban areas was restricted by a lack of understanding amongst policy makers of the difference between land that can be part of the network and that which has a recreational function but little value in terms of biodiversity. BO01 provides another example of this challenge. Following an evaluation of the housing districts it was found that the rims of several of the ponds were too high, thus restricting access for wildlife. The ponds were constructed by building contractors which had not had a complete understanding of their ecological requirements. The initiators had attempted to address the difficulties in communicating across sectors by describing the ecological requirements of the Green Area Factor and Green Dot systems as physical requirements for the actual construction process. However, the problems in the construction of the ponds suggest that there were shortcomings in these descriptions. Despite this, BO01 demonstrates an approach which can be used to overcome difficulties in communication, by giving full information in a relevant and understandable form to the other sectors that are involved.

KEY CONCLUSIONS

A large variety of projects that protect biodiversity in synergy with Natura 2000, whether intentionally or not, already exist throughout the EU. Such projects contribute to the application of the ecosystem approach by expanding the area of land on which biodiversity protection actions are taken, and increasing the extent to which ecosystem processes are considered in planning. Furthermore, the inclusion of stakeholders and the public in planning and implementing the project, and the promotion of the sustainable use of land, water and living resources is aligned with the objectives of the ecosystem approach. Methods of achieving these factors include ensuring that stakeholders and the public are actively involved in the planning phase of the project, and using incentives to encourage biodiversity protection by actors and in sectors with which it is not normally associated.

Many aspects of the case studies can be applied or adapted for use in other similar circumstances. However, there remains a need for the policy framework at all levels to contribute to overcoming some of the challenges faced. This can be achieved by actions to facilitate the identification and coordination with both Natura 2000 sites and other similar biodiversity protection projects, and promoting the establishment of linkages with Natura 2000 in funding programmes.

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