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Opportunities for innovative biodiversity financing in the EU

Ecological fiscal transfers (EFT)
Tax reliefs
Marketed products
Fees and charges

CASE STUDY REPORT
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Integration approach to EU biodiversity financing
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1 Introduction

This compilation of case studies provides an assessment of a number of novel (non-EU) economic instruments – ecological fiscal transfers (EFT), tax reliefs, marketed products, and fees and charges – that could be further mainstreamed to support the future financing framework for biodiversity. The case study instruments have been selected to complement the existing EU assessments on innovative financing instruments and, consequently, PES and offsetting fall outside the scope of this review.

The case studies present an overview of those EU Member States which have already implemented the instruments and provide a detailed assessment of the most successful examples, using the following common criteria:

Ecological / conservation effectiveness – degree to which the level of funding and the funding instrument address the identified needs and reach the specified objectives for biodiversity, taking account of the range of different priorities and contexts within which it operates.

Efficiency and cost-effectiveness – the relationship between the conservation results achieved (i.e. delivered conservation objectives) and financial resources used. This builds on the relation between benefits and costs, and considers instrument's ability to provide cost-effective solutions that meet the targets for biodiversity and the needs of stakeholders.

Institutional and legal fit – the match of the instrument with the existing institutional framework, and the ability of the institutions in place to harness and successfully apply the available funding

Legitimacy and impacts on stakeholders – the acceptability of the instrument among stakeholders; perceived fairness and compatibility with societal goals as well as the legitimacy of decision-making processes in designing and allocating funds.

The above methodology and the case studies have been developed in the context of a wider assessment of the EU biodiversity funding arrangements. The results of this wider assessment can be found in:

Kettunen, M., Illes, A., Rayment, M., Primmer, E., Verstraeten, Y., Rekola, A., Ring, I., Tucker, G., Baldock, D., Droste, N., Santos, R., Rantala, S., Ebrahim, N. and ten Brink, P. (2017) Integration approach to EU biodiversity financing: evaluation of results and analysis of options for the future. Final report for the European Commission (DG ENV) (Project ENV.B.3/ETU/2015/0014), Institute for European Policy (IEEP), Brussels/ London

2 Ecological Fiscal Transfers (EFT)

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2.1 Summary

In this case study, we review existing schemes of Ecological Fiscal Transfers (EFT) in Europe, namely the Portuguese and the French EFT systems, and provide information on current proposals for an EFT implementation in Germany and Poland. In order to give an up-to-date overview of the status of EFT schemes in Europe, we start by elaborating the key features of the instrument in general and provide background on its Brazilian origins. Comparing the existing EFT schemes in Portugal and France, the proposals for Germany and Poland, and considering experience from Brazil, we discuss the potential of the instrument for application to other levels of government, EU Member States and the EU. Finally, we provide a sketch of how this innovative economic instrument might complement the earmarked conservation funding in current EU funds in order to provide a nature conservation performance-based compensation.

Ecological Fiscal Transfers (EFT) redistribute tax revenue among government levels according to ecological indicators such as protected areas (PA). Depending on the legal and institutional context, decentralised governments may be compensated for conservation expenditures, opportunity costs or spill-over benefits related to these ecological indicators. Thereby the instrument likely creates greater acceptance of conservation policies that are often implemented at higher government levels using regulatory approaches, and eases the implementation of large-scale conservation efforts such as the creation of a (well-connected) habitat network.

Ecological fiscal transfers by their very nature address public actors such as local, district, regional, state and central governments – basically all actors involved in the distribution and reception of tax revenue. To date, EFT schemes have mainly been implemented for fiscal transfers at the local level, transferring public revenues to municipalities for PA on their territory.

In Portugal, a new scheme of fiscal transfers integrating biodiversity conservation concerns was introduced in January 2007, with the approval of a revised Local Finances Law (LFL – Law 2/2007, 15th January, revised by Law 73/2013, 3rd September). LFL establishes the general principles and rules for the transfer of funds from the state (national government) to the local level (municipalities). Recognising that the financial regime of municipalities should contribute to the promotion of environmental protection, a positive ecological discrimination was introduced in the General Municipal Fund (FGM), allocating part of this Fund revenue in proportion to land designated as Natura 2000 or other PA (areas integrated in the Portuguese system of designated conservation areas) in municipalities.

In France, a small-scale EFT scheme compensates municipalities that are located in the core area of a national park or a natural marine park. Thus, the scheme is relatively limited in scope. However, the introduction of the “ecological allocation” as part of the amendment of the fiscal transfer laws in France (Government of France 2006, 2011) recognises the importance of severe land-use restrictions imposed by regulatory protection (Borie et al. 2014), and thus, opportunity costs of conservation efforts in the fiscal system. Therefore, the way is paved for improvements regarding the consideration of further PA categories.

In Germany, which is a Federal Republic, it has been proposed that EFT schemes be introduced between the federal and the state level (federal financial equalisation) as well as within the states (fiscal transfers to the local level) (Czybulka and Luttmann 2005; Ring 2008b, Schröter-Schlaack et al. 2013). As the German states (*Länder*) are central actors in the implementation of nature conservation policies including the designation of PA, both these levels are relevant for integrating ecological indicators into intergovernmental fiscal transfers.

In Poland, the Rural Boroughs Association has proposed an EFT scheme in order to compensate boroughs for hosting Natura 2000 sites (Schröter-Schlaack et al. 2014). Several stakeholders have articulated interest in such an instrument. Currently, however, the proposal has been put on hold.

Theoretically, ecological indicators could be integrated into intergovernmental fiscal transfers in all EU Member States, and, depending on the organisation of the state, at several government levels. One of the most easily accessible indicators for developing such schemes is the quantity of protected area hosted by the relevant jurisdiction. More sophisticated indicators take account of the protected area category and potentially also the quality of the protected area. As the vast majority of PAs – especially large-scale and strictly protected area categories – tend to be designated at higher levels of government, while lower levels of government bear the land-use restrictions and sometimes even (part of) the management costs imposed by these areas, PA-related EFT schemes compensate municipalities and other decentralised governments for their conservation efforts. Thereby, these schemes create a more positive mind-set towards biodiversity conservation and potentially reduce local opposition towards existing and new protected areas. In order to create an incentive, the ecological indicator would have to be one that the relevant authorities could influence autonomously – otherwise a direct reaction would arguably be difficult.

2.2 Description and basic features of ecological fiscal transfers (EFT)

2.2.1 Definition and key design features

Intergovernmental fiscal transfers in general have two main purposes: i) provide lower-tier jurisdictions with sufficient revenue such that they can fulfil their respective public functions and tasks delegated to them ii) equalise fiscal capacities among different jurisdictions based on equity and efficiency considerations (Boadway and Shah 2009). Especially for municipalities, intergovernmental fiscal transfers represent a large proportion of available revenues, ranging from 10 to 25 %in OECD countries (OECD 2016) to about 60 % in developing and transition economies (Shah 2007a). Unconditional lump-sum and general-purpose transfers provide lower government levels with general budgets that can be spent on public goods and services in any way the recipient wishes. Specific-purpose or earmarked grants are conditioned for particular programmes, measures or activities, at times combined with matching grants on the side of the recipient. Depending on the constitution of a country and the content of its specific fiscal transfer laws, there is a wide range of criteria and conditions according to which revenue sharing and fiscal transfers are distributed among different government levels.

Ecological Fiscal Transfers (EFT) consider ecological criteria in the redistribution scheme for tax revenue allocation between government levels (Ring et al. 2011). Box 2.1 provides an overview of different possible rationales for introducing EFT schemes. The most common indicator used in EFT builds on designated protected areas (PA) (Grieg-Gran 2000; May et al. 2002; Loureiro 2002; Ring 2008a; Ring et al. 2011; Santos et al. 2012; Schröter-Schlaack et al. 2014). Thereby revenue is allocated to decentralised jurisdictions (thus far municipalities) that host PA on their territory. As well as biodiversity conservation, additional ecological public functions must be provided by public actors,

such as water, air and soil quality conservation (Ring 2002). Current EFT schemes are predominantly distributed as lump-sum transfers that can be spent on any public function the municipality sees fit.

Box 2.1 Different possible rationales for ecological fiscal transfers

1. Compensation of expenses/supply costs for ecological public goods and services
2. Compensation of opportunity costs
   2.1. Loss of land-use revenue on municipal property
   2.2. Loss of tax revenues from private landowners prevented from doing business
3. Payments for external benefits
   3.1. to local governments for providing spill-over benefits beyond their boundaries
   3.2. to non-municipal stakeholders within municipal boundaries
4. Fiscal equalisation / distributive fairness
   4.1. Vertical equalisation between higher and lower levels of government
   4.2. Horizontal equalisation between jurisdictions at the same level of government

Source: (Ring et al. 2011, p.99)

Ecological fiscal transfers aim to provide sufficient revenue to ensure that lower government levels can fulfil their "ecological public functions" (Ring 2002). The first EFT schemes implemented at state level in Brazil originated from the idea to compensate municipalities for their opportunity costs related to protected areas for watershed protection and biodiversity conservation, e.g. foregone tax revenue from agricultural production due to land use-restrictions (Grieg-Gran 2000; Loureiro 2002; Ring 2008c). The internalisation of positive spill-over effects to other jurisdictions is another economic argument for the introduction of EFT (Ring et al. 2011). The public finance principle of "fiscal equivalence" states that for an efficient provision of public goods, those constituencies who receive the benefits from a certain policy should also pay for related costs (Olson 1969). In the case of protected areas, for example, positive external effects – the benefits of conservation – usually reach beyond the boundaries of a jurisdiction hosting the relevant areas. This jurisdiction is "paying" for the provision of the relevant public good that may be in the form of management expenditure or opportunity costs, requiring compensation payments either from other beneficiaries or higher levels of government. Intergovernmental fiscal transfers have been widely used to internalise spill-over effects related to other policy areas (Dahlby 1996; Bird and Smart 2002; Dur and Staal 2008; Boadway & Shah 2009), but have only recently been applied to ecological public functions. Acknowledging ecological indicators in fiscal transfer schemes changes the mind-set of the recipients of fiscal transfers, especially when public budgets significantly benefit from these new indicators, as is the case with municipalities with high PA coverage. As such, the instrument is also seen as creating an economic incentive for the designation of additional PA (Loureiro 2002; The Nature Conservancy 2014).

EFT schemes building on PA-related indicators thus demonstrate several interesting features for biodiversity conservation and potentially biodiversity financing (cf. Ring et al. 2011; Santos et al. 2012; Droste et al. 2015): i) depending on their design, they do not necessarily require additional finances but redistribute existing tax revenue differently, i.e. according to ecological indicators, ii) they create an incentive for nature conservation efforts and support among the jurisdictions addressed in the EFT scheme, iii) they take into account local preferences and may lead to the creation of PA where it is either wanted or cost-effective (e.g., in terms of opportunity costs or public expenditure), iv) there are no relevant transaction costs once an EFT system is installed, as PA-related indicators are regularly monitored by conservation authorities, v) the quality of the PA can be considered, for instance, in a first approximation through weighting for different PA categories, and last, but not least, vi) although current ecological fiscal transfers are implemented as lump-sum transfers (i.e. not earmarked to be used to support biodiversity conservation by default), increased

public budgets based on PA-related indicators may encourage recipients to allocate higher funds to biodiversity financing.

2.2.2 Relevant actors

Ecological fiscal transfers involve and address public actors at various governmental levels (Ring et al. 2011). Basic conditions and rules for intergovernmental fiscal transfers are defined by (financial) constitutions and laws that are designed, negotiated, adopted and implemented by various state actors, among them legislative bodies and implementing administrations. Relevant actors include the parliament, the finance and environmental ministries at centralised government levels who set these rules, potentially state governments at the intermediate level in federally organised states, and decentralised administrations receiving the transfers. In federal states such as Germany and Brazil, each state has its own financial constitution and can set the rules and indicators for new EFT schemes to the local level. The design and amendment of relevant constitutions and financing laws are highly politicised processes, involving concerned governments and their associations (for example, association of localities and districts). In existing EFT schemes, the ecological indicators have either been introduced at i) the national level in unitary systems of government like Portugal and France, where fiscal transfers exist between the national and local level, or at ii) the state level[1] in Brazil, a federal republic, with transfers from the state to the local level.

Additional non-state actors such as environmental NGOs or academia may also be relevant. NGOs were involved in the introduction of many Brazilian state EFT schemes, and contributed to the diffusion of this innovative instrument to other Brazilian states (The Nature Conservancy 2014). Although the introduction of ecological indicators in the relevant laws does not lead to high transaction costs (Vogel 1997; Ring 2008c), as only minor changes must be made to existing fiscal transfer rules, the necessary political impetus may be a constraining factor. Thus, civil society actors and other policy initiators may play a role in introducing EFT, as does the research community, which provides different EFT design options and models their outcomes for various addressees (Schröter-Schlaack et al. 2014).

Furthermore, in countries such as Brazil or Portugal, where private actors or associations can also designate PA, their decisions directly influence the allocation of EFT to local governments. In EU Member States, where private landlords are allowed to designate an officially recognised PA, municipalities receiving EFT might create favourable conditions for such private conservation actions.

2.2.3 Monitoring EFT effectiveness

A baseline of a policy instrument relates to what would have happened without the instrument in concern, here ecological fiscal transfers. It serves to quantify the effects of the instrument. However, intergovernmental fiscal transfers are *primarily* a distributive instrument to distribute public revenue between governmental levels. These fiscal instruments do not serve to actively achieve conservation objectives as is the case with other environmental or conservation policy instruments. Therefore, discourses around EFT do not usually refer to a baseline, as do other economic instruments such as PES, which directly incentivise land users to adopt more environmentally-friendly behaviour.

Nevertheless, changing indicators in fiscal transfer schemes may in fact act as an incentive for conservation in two ways: firstly, as Ring et al. (2011) have proposed, the ecological indicator may

[1] The intermediate state level is, depending on the county, also called region, province or *Länder*.

lend itself to defining a baseline for EFT in terms of ecological effectiveness. The status and development over time of the relevant indicator, e.g. PA, could be compared before and after the introduction of the EFT scheme. In EFT schemes that use the quantity of PA within a jurisdiction as an indicator, a quantitative increase in these areas can be used as an effectiveness measure. Such an approach has been employed by May et al. (2012) and refined by Droste et al. (2015), who assess the effect of EFT introductions on PA development over time in Brazilian states. They find a significant increase in PA designated at municipal level compared to states without EFT (the latter constitute a baseline or control group). If the quality of PA is included in the calculation of EFT (such as in the Brazilian state of Paraná), the effectiveness could also be measured by alterations in quality compared to a baseline such as a trend, a control group or a counterfactual simulation (Ring et al. 2011).

Secondly, EFT constitute a source of financial income to the recipients of such transfers. Provided that recipients are aware that these additional resources depend upon their conservation outputs, the additional budget may in turn be partly or fully used for biodiversity financing. Therefore, another possibility of tracking the effects of EFT on the addressees is to analyse EFT received over time, and to analyse the development of conservation expenditure of the recipients. Thus, the 'financial incentive' effect could be measured by the impact of EFT on the budget of the recipients, in order to evaluate the magnitude of the incentive to change behaviour. For example, Santos et al. (2012) compare the fiscal transfers received under the new regime including EFT with modelled transfers that would have occurred under the old regime without EFT and concluded that the changes due to introducing ecological criteria into Portugal's Local Finances Law are hindered by the budgetary effects of the financial crisis during the assessed period.

2.2.4 Range of application of EFT

Fiscal transfers for environmental purposes have been used for many years (Ring et al. 2011). This is especially the case for infrastructure-related public services such as drinking water provision or sewage and waste disposal, which are traditional areas of local public service provision to citizens (Ring 2002; Ring, 2008b). However, there are still major differences in the provision of these services between developed and developing or transition economies that involve environmental infrastructure capital investments. Whereas in an EU Member State such as Germany, drinking water provision or sewage and waste disposal have long been treated as basic public services at the local level, in certain other countries much remains to be done to provide citizens with high-quality drinking water and efficient sanitation systems. Accordingly, EFT schemes in the Brazilian states have included environmental indicators relating to watershed protection or waste disposal, among others (Ring et al. 2011; The Nature Conservancy, 2014).

Fiscal transfers for biodiversity conservation purposes have only been implemented on a broader scale by a number of Brazilian states and the EU Member State Portugal (Grieg-Gran 2000; May et al. 2002; Ring 2008c; Sauquet et al. 2014; Santos et al. 2012; Droste et al. 2015). France has implemented a small-scale EFT scheme covering municipalities in the core zones of national parks and natural marine parks (Borie et al. 2014; Schröter-Schlaack et al. 2014). All these EFT schemes benefit municipalities.

EFT schemes have also been suggested for federal systems such as Germany and Brazil, to include conservation-related indicators for transfers between the federal and the state level (Cassola 2011, 2014; Czybulka and Luttmann 2005; Schröter-Schlaack et al. 2013). Furthermore, EFT schemes accounting for biodiversity conservation have been proposed for Switzerland (Köllner et al. 2002) and Indonesia (Mumbunan 2011; Mumbunan et al. 2012). The scheme suggested for Indonesia combines EFT with REDD+ payments for forest conservation to be distributed to local jurisdictions (Irawan et al.

2014). There is even a proposal to extend EFT to the global level in the form of international payments for ecosystem services (IPES) (Farley et al. 2010), an instrument which could be implemented within the context of the Convention on Biological Diversity (CBD).

It is, however, essential to recognise the relevant legal and institutional context for each potential EFT design and subsequent implementation. While compensation for the opportunity costs of conservation was the main reason for introducing EFT in Brazil, constitutions and finance laws in other countries are likely to depend on different motivations and require different designs.

2.3 Case studies of use of EFT for biodiversity financing

2.3.1 EU Member States having implemented EFT

Within the EU-28, only ***Portugal*** has implemented an EFT scheme on a significant scale (Santos et al. 2012). In 2007, the reform of the Local Finances Law introduced ecological indicators into the distribution scheme of fiscal transfers from the central government to the Portuguese municipalities. Both PA recognised under the National System of Protected Areas and Natura 2000 sites designated under the Habitat and Birds Directives are eligible to receive a proportion of one of the main municipal transfer funds. Hence, Portugal has acquired almost 10 years of experience with ecological fiscal transfers, and the corresponding development of PA over time can be examined (see section 1.4.1). There have been suggestions for further development of the Portuguese EFT scheme, such as combining EFT with Agri-Environmental Measures (Santos et al. 2015). A more detailed analysis is presented in section 1.4.1.

In ***France***, municipalities in core zones of national parks and natural marine parks have received compensation via an "ecological allocation" in the fiscal transfer scheme since 2007 (Borie et al. 2014). The introduction of the relevant PA-related indicators was based on a principle of solidarity and distributive equity. By distinguishing the core area sizes of National Parks below and above 5000 km^2, the relative land-use restrictions and thus opportunity costs of conservation are recognised. A more detailed analysis is presented in section 1.4.2.

2.3.2 EU Member States considering implementation of EFT

There are proposals for the implementation of EFT schemes in Germany and Poland (cf. Schröter-Schlaack et al. 2014 for an overview).

The federal republic of ***Germany*** has 16 states ("*Länder*"), and over 10,000 municipalities. There are fiscal transfers between different levels of government, i.e., from the federal to the state level, and from each state to the local level. Apart from some specific-purpose transfers from the state to municipal levels, e.g. for waste and waste-water treatment or soil remediation, the only conservation-related transfers are monies for state-level responsibilities that are devolved to the municipal level (e.g., the management of state-level PA) (Ring 2002). The current system favours tax revenue-generating municipal activities such as attracting new residents for income tax or creating new industrial areas for business taxes. Since this does not favour conservation and counteracts the national government's sustainability goals (e.g., reducing soil sealing), several proposals have been made to introduce ecological indicators into either municipal or state level fiscal transfer schemes (Ring 2002; Schröter-Schlaack et al. 2013).

In ***Poland***, the implementation of the EU Habitat and Birds Directives led to disputes among local communities and national decision-makers (Schröter-Schlaack et al. 2014); the lack of inclusion of

local communities and NGOs in the process of creating Natura 2000 sites resulted in several conflicts (Cent et al. 2007). Furthermore, almost none of the funding allocated to the administration of Natura 2000 sites is available at the local level, although considerable costs are incurred here, including management and opportunity costs (Schröter-Schlaack et al. 2014). To correct this discrepancy, the Rural Boroughs Association has proposed an ecological fiscal transfer mechanism called the Ecological Subsidies Act, to compensate local public actors for conservation-related costs with general-purpose transfers (ibid.).

2.3.3 Experience and proposals from outside the EU

The idea of EFT originated in the pioneering state of Paraná, Brazil, in 1991. In Brazil, the EFT scheme is known under the term ICMS Ecológico (*Imposto sobre a Circulação de Mercadorias e Serviços Ecológico* or *ICMS-E*) or ecological value-added tax, because it introduced ecological indicators into the distribution of VAT revenue[2]. The development of the instrument was initiated because several municipalities had pleaded for a reform of the fiscal transfer scheme that left those municipalities with large national or state protected areas, designated both for the protection of drinking water provision and biodiversity conservation, at a disadvantage. The ICMS was distributed among only those municipalities that generated it. Areas with land-use restrictions due to protected areas have limited opportunities for tax generation. The affected municipalities brought the matter to the constitutional court and won the lawsuit. Complying with the court decision, the state of Paraná was the first to introduce ecological indicators for the distribution of state-level ICMS revenues to the local level, building on the proportion of protected areas for watershed protection and biodiversity conservation in relation to total municipal area.

The scheme was emulated by several other Brazilian states and today, 17 of 26 have implemented EFT schemes (see Figure 2.1 and Table 2.1). As defined by the federal constitution, the ICMS in Brazil is levied by the states (Art. 155 II), constituting their largest source of revenue. Twenty-five percent of its revenue is allotted to the municipalities (Art. 158 IV). Of this 25%, 75 percent is distributed according to where it has been generated and 25 percent (6.25% of total ICMS) is allocated based on state law criteria. The various EFT schemes are therefore state rather than federal law, and redistribute on average about 5% of municipal ICMS according to ecological indicators such as proportion of PA on municipal territory.

The structure of the instrument is modelled on those used in the Brazilian states that first implemented the EFT scheme (see also section 2.3). For each municipality $i\,(i = 1, \dots, n)$ an ecological index EI_i is computed (Grieg-Gran 2000; Ring 2008c), with

$$EI_i = \frac{MCF_i}{SCF} \qquad \text{Eq. 1}$$

where MCF_i is the municipal conservation factor calculated as the proportion of land under protection, based on the area of protected areas PA and the area M of municipality i

$$MCF_i = \frac{AreaPA_i}{AreaM_i} \qquad \text{Eq. 2}$$

[2] From a public finance perspective, the term ecological value-added tax is misleading. “An ecological tax would be a tax whose assessment base is related to ecological indicators. The ICMS Ecológico, by contrast, uses ecological indicators for the allocation of its revenues. Therefore, economically speaking, the term ecological fiscal transfer is more appropriate…” (Ring 2008c, p.488).

and SCF is the state conservation factor which is the sum of all MCFs

$$SCF = \sum_{i=1}^{n} MCF_i \qquad \text{Eq. 3}$$

Additionally, there are weights applied to the different PA categories in some Brazilian states, based on their contribution to conservation goals (Grieg-Gran 2000; Ring 2008c). The highest weights are applied to PAs of strict conservation status such as nature reserves or national parks and lower weights to areas with less stringent conservation plans (e.g., sustainable use areas). In general, these weights decrease in accordance with the PA categories as defined by the International Union for the Conservation of Nature (IUCN).

Figure 2.1 Brazilian states that have implemented the ICMS Ecológico (dark green)
Source: The Nature Conservancy (2014)

It is important to note that, even in this basic design, there is a performance- or output-based measure. The benchmark element consists in the formulation of the state conservation factor as the denominator of the municipality's conservation factor (Köllner et al. 2002). In other words, the higher the municipality proportion of the state conservation factor, the higher its conservation factor. If one municipality increases its PA, ceteris paribus, the state conservation factor rises and all other municipalities' conservation factors decrease. The design of the EFT scheme therefore embodies elements of interjurisdictional competition (cf. Oates & Schwab 1988). Municipalities receive EFT for each PA on their territory, which lowers the cost of provision and theoretically increases the PA supply.

Several studies have elaborated upon the rationale, general functioning and institutional background of EFT in Brazil (Grieg-Gran 2000; Loureiro 2002; May et al. 2002; Ring 2008c; Ring et al. 2011). Through the introduction of ecological indicators, e.g. PA quantity and quality, conservation efforts become a source of income for municipalities. Municipalities with sufficiently low opportunity costs

linked to PA establishment react to the option of obtaining additional revenue by the creation of a new PA (Droste et al. 2015). Although EFT normally constitutes only a small proportion of overall fiscal transfers received, the introduction of EFT leads to a measurable increase in the numbers of municipal-level PA designated (Grieg-Gran 2000; Loureiro 2002; May et al. 2002; Ring 2008c). Some of the first econometric policy evaluations on the effect of the instrument have been conducted and confirm this trend in a more robust way. Sauquet et al. (2014) analyse the strategic interaction between municipalities in the state of Paraná and find a strategic substitutability between neighbouring municipalities' decisions to designate a PA. This implies that under the regime of an existing EFT mechanism, where all municipalities hosting PA receive money from the same fund, the tendency of a municipality to designate yet another PA is reduced by a neighbour's designation of an additional PA since they receive less EFT compared to a situation where the neighbour would not have opted in. However, there is no evidence for a race to the bottom but, on the contrary, a large increase in PA was observed after the introduction of EFT in Paraná. A comparative study among several Brazilian states produced mixed results for the effect of EFT schemes on PA (May et al. 2012).

Table 2.1 Comparison of the time of introduction and design of ICMS Ecológico in Brazilian states

Brazilian states	Year of first legislation	Year of legal enactment	Proportion of ICMS dedicated to biodiversity conservation	Ecological indicators
Acre (AC)	2004	2010	1% (2010), 2%(2011), 3%(2012), 4%(2013), 5% (from 2014)	PA (areas recognised in the national PA system and/or state system
Alagoas (AL)	-	-	-	-
Amapá (AP)	1996	1998	1.40%	PA
Amazonas (AM)	-	-	-	-
Bahia (BA)	-	-	-	-
Ceará (CE)	2007	2008	0% (only solid waste management is considered)	Waste management
Espírito Santo (ES)	-	-	-	-
Federal District of Brasília (DF)	-	-	-	
Goiás (GO)	2011	2012	up 5% in the form of a composite indicator for several ecological criteria with an increase over time (1.25 in 2012, 2.5% in 2013, 3.75% in 2014, 5% in 2015	Sustainable development plans (PA, waste management, environmental education, reduced deforestation, reduced forest fires, watershed protection, etc.)
Maranhão (MA)	-	-	-	-
Mato Grosso (MT)	2000	2002	5%	PA and indigenous lands
Mato Grosso do Sul (MS)	1994	2002	2% (2002), 3.5% (2003), 5% (2004) for various environmental criteria	PA, indigenous lands, waste management plans
Minas Gerais (MG)	1995	1997	PA 1 of 3 environmental criteria 0.5% (2010), 0.45% from 2011	PA per municipal area, conservation factor (~PA category) and conservation quality factors
Pará (PA)	2012	2014	For all environmental criteria 2% (2012), 4% (2013), 6% (2014), 8% (from 2015)	PA expanse, avoided deforestation, registered rural lands, etc.
Paraíba (PB)	2011	not yet	5%	PA
Paraná (PR)	1991	1992	2.5% for PA for biodiversity conservation and 2.5% for PA for watershed	PA, PA category, and variation of conservation quality

Pernambuco (PE)	2000	2001	1%	PA share per municipal area, their category and degree of conservation
Piauí (PI)	2008	2009	Overall environmental criteria are 1.5% in 2009; 3.5% in 2010; 5% from 2011 (PA 1 out of 9 environmental criteria)	Waste management, watershed protection, reducing deforestation, pollution control, PA, etc.
Rio de Janeiro (RJ)	2007	2009	1% (2009), 1.8% (2010), 2.5% from 2011	PA, water quality, waste management, plus an extra for designation of municipal PA
Rio Grande do Norte (RN)	-	-	-	-
Rio Grande do Sul (RS)	1997	1998	7% (for a composite indicator)	municipal area, 3 times PA, indigenous lands, inundated lands
Rondônia (RO)	1996	2003	5%	Proportion of PA per municipal area, number of PA and past year total PA area
Roraima (RR)	-	-	-	-
Santa Catarina (SC)	-	-	-	-
São Paulo (SP)	1993	1994	0.5% only accounting for state PA	PA and PA category
Sergipe (SE)	-	-	-	-
Tocantins (TO)	2002	2007	3.F0,50%	PA and indigenous land (+ another 3.5 for watershed protections, waste management, etc.)

Source: Adapted from (Ring et al. 2011; Droste et al. 2015), based on information provided by The Nature Conservancy (2014).

With a more comprehensive dataset covering two decades and spanning all Brazilian states, Droste et al. (2015) found that the municipal-level PA in states with EFT schemes increased faster than in states without EFT. Hence, this analysis provides evidence for EFT acting as an incentive for further conservation. Table 2.1 provides an overview of the Brazilian states in terms of the percentage of ICMS dedicated to conservation, year of introduction and the ecological indicators used.

As well as their success in Brazil (The Nature Conservancy 2014), EFT schemes have gained increasing attention in other countries (Ring, 2008a; ten Brink et al. 2011; OECD, 2013). For example, there have been several proposals for EFT implementations in other (non EU-28) states.

For ***Switzerland***, Köllner et al. (2002) propose a cantonal benchmark design of EFT, simulating how different versions of indicators would yield different fiscal transfer schemes. The basic design of the proposed scheme involves biodiversity benchmarking across Swiss cantons, reflecting a performance-based output-measuring indicator. The authors follow the Brazilian example and propose a general-purpose, non-earmarked scheme that would raise awareness of biodiversity financing in fiscal budgets, its importance as a public policy and incentivise positive spill-over effects through internalisation.

For ***India***, Kumar and Managi (2009) propose the integration of ecological functions into the fiscal transfer scheme to complement socio-economic considerations. The authors propose a scheme similar to the Brazilian origin but envision a need for both lump-sum and earmarked grants. While they argue that earmarked grants are better-suited for environmental protection and hence

resilience to threats, they consider lump-sum transfers most appropriate for precautionary activities such as nature conservation.

For ***Indonesia***, Mumbunan (2011) and Mumbunan et al. (2012) suggest including PA-related indicators in the fiscal transfer system at the provincial level. Irawan et al. (2014) and Irawan and Tacconi (2016) suggest that EFT can be used to distribute international REDD+ payments to Indonesia, extended to local jurisdictions. As design options they analyse both a cost-reimbursement for forest conservation activities based on opportunity costs (which is a compensation scheme) and a derivation approach based on carbon credit market prices. Where the municipalities could choose the latter, it would lead to an economically efficient allocation of REDD+ activities, since local jurisdictions could opt in to REDD+ based on their likelihood of obtaining a net gain from the payments. However, such an allocation would not necessarily lead to effective conservation of forests, since municipalities with low costs associated with reforestation or avoiding deforestation would conserve their forests, but these forests would not necessarily have the highest conservation value. The reimbursement option might give rise to equity issues, as the communities eligible for the greatest benefits would be those which have degraded their forests the most.

2.4 Policy analysis of existing schemes

2.4.1 Portugal

Description, history and key features of the instrument

In Portugal, nature conservation is primarily a responsibility of the National Government. The Institute for Nature Conservation and Forest (ICNF), integrated into the Ministry for the Environment, can designate and is responsible for the management of all IUCN protected area categories such as national parks, nature parks, nature reserves, protected landscapes and nature monuments (Decreto-Lei n° 142/2008[3]).

The role of municipalities in the designation and management of conservation areas has changed over time. In 1993 (DL 19/1993) local and regional authorities were allowed to propose the designation of Regional Protected Landscape Areas, subject to the approval of ICNF. The 2008 legislative reform (DL 142/2008) widened their competencies and authorises them to designate any protected areas category except for National Parks. Further, the 2008 reform also explicitly allowed for the designation of private protected areas.

There are 45 public protected areas, including 32 national and 13 regional or local areas, and one private protected area (January 2017). Besides the National Protected Areas Network, the Portuguese System of Classified Areas (conservation areas) also includes the Natura 2000 Network, with a total of 155 sites (96 Sites of Community Importance and 59 Special Protection Areas). The National Network of Protected Areas and the Natura 2000 sites constitute the backbone of Portuguese nature conservation policies.

The Portuguese EFT scheme was introduced in 2007, one year before the referred reform, with the approval of a new Local Finances Law (LFL - Law 2/2007, 15th January, revised by Law 73/2013, 3rd September). The LFL establishes the general principles and rules for the transfer of funds from the national government to the local level (municipalities) in Portugal. These intergovernmental fiscal transfers account for an average of around 60% of the budget of Portuguese municipalities (the

[3] Decreto-Lei (DL) is a law approved by the Central Government, while a Law is approved by the Parliament.

remainder is made up of local taxes on property and vehicles, tariffs and other sources of municipal revenue). In some municipalities with a low population density and a low level of economic activity, these flows may represent up to 97% of total revenue.

The total fiscal transfers are the sum of three parcels (with changes introduced by Law 73/2013):

- The Financial Equilibrium Fund (FEF – *Fundo de Equilíbrio Financeiro*), which is made up of 19.5% of the revenue collected from personal income tax (IRS), corporate profits tax (IRC) and value-added tax (IVA) minus the amount allocated to the Social Development Synthetic Index (*Índice Sintético de Desenvolvimento Social*).
- The Municipal Social Fund (FSM – *Fundo Social Municipal*), to cover the expenditure associated with competencies devolved from central to local administration in connection with social public functions, namely education, health and social welfare.
- A variable amount corresponding to up to 5% of the IRS (personal income tax) collected from individuals living in the municipality.

The 2007 LFL amendment introduced a mechanism to the allocation of funds favouring municipalities with land classified under the Natura 2000 network or nationally designated protected areas, so that the financial regime of municipalities could contribute to the promotion of environmental protection in parallel with economic development and social welfare. The idea was proposed by the Ministry for the Environment and accepted by the Ministry of Finance, at that time, in the context of the preparation of a wide reform of the LFL promoted by the government and approved by the Parliament. Recommendations from environmental/ecological economists were taken into account in several domains of the Law besides the ecological fiscal transfers component (e.g., cost recovery principle applied to water tariffs). This scheme was maintained in the 2013 LFL revision.

Conservation area's size is one of the criteria for the allocation of funds from the General Municipal Fund (FGM), and this mechanism effectively constitutes an ecological fiscal transfer. FGM, in which positive ecological discrimination is introduced, corresponds to 50% of the Financial Equilibrium Fund (FEF); the remaining 50% of the FEF is allocated to the Municipal Cohesion Fund (FCM), whose aim is to balance out levels of development and opportunities among municipalities. FGM monies are allocated to municipalities according to the following criteria:

- 5% are distributed equally to all municipalities;
- 65% are allocated as a function of population (weighted in order to benefit mainly municipalities with a lower population density) and of the daily average number of stays in hotels and on campsites;
- 25% are allocated in proportion to the area, weighted by elevation levels, and 5% in proportion to land designated as Natura 2000 or other Protected Areas in municipalities with less than 70% of their territory under Natura 2000 or Protected Areas regimes; or
- 20% are allocated in proportion to the area, weighted by elevation levels, and 10% in proportion to land designated as Natura 2000 or other Protected Areas in municipalities with more than 70% of their territory under Natura 2000 or Protected Areas regimes.

The ecological criterion is the total area under protection in the municipality and the proportion of municipal territory occupied by protected areas (for a detailed description of the Portuguese EFT system, see Santos et al. 2012; Santos et al. 2015). The current EFT scheme does not consider the quality or level of protection of different categories of protected areas, the ecosystem services provided by areas outside nature conservation networks or other environmental criteria.

The principle adopted for this intergovernmental fiscal transfer is non-earmarking. This means that all transfers are received as lump-sum transfers, where beneficiaries (municipalities) are free to decide on the use of the money.

Conservation effectiveness

The Portuguese EFT scheme is intended to favour municipalities with land designated as nature conservation areas, in the allocation of funds transferred from the central government to local authorities' budgets. However, the effectiveness of EFT in Portugal has yet to be clearly demonstrated (cf. Droste et al. 2016 for a first study). Although the scheme was introduced too recently to draw conclusions on its results, a major constraint of developing an ex-post evaluation of the instrument's effectiveness is that authorities did not implement a monitoring system to provide all the relevant information. On the one hand, some of the available data indicate that the scheme has had positive effects but, on the other hand, several aspects can be identified that have hindered its impact.

Aspects influencing conservation effectiveness

Complexity of the legislation: First, the effectiveness of this scheme as an instrument to promote biodiversity conservation has been hindered by the complexity of the overall Portuguese Local Finance Law, with several funds, allocation rules, and a smoothing mechanism to attenuate fluctuations between consecutive years. This complexity obscured some of the intended impacts as the financial recognition of protected areas was obscured by other and more substantive fiscal changes. The Portuguese EFT scheme was introduced in the LFL at the same time as several other changes in the funds allocation criteria that have, ultimately, resulted in a reduction in the overall amount of transfers for some of the municipalities with more protected areas in their territory (Santos et al. 2012). The introduction of the ecological component was not sufficient to counterbalance other effects and provide a greater incentive to some municipalities with a larger proportion of conservation areas.

Even the EFT computation process made by the General Directorate for Local Government (DGAL) is not easily replicated by each municipality since the allocation procedure is not fully defined in the Law. The complexity of all changes introduced into the LFL and corresponding crossover effects resulted in difficulties for the affected stakeholders (municipal authorities) in understanding the ecological transfer process and its financial incentives. Also, the impossibility of distinguishing between the individual contribution of each allocation criterion to the overall amount transferred prevents the identification of the amount of the EFT by municipal authorities. Every year the total fiscal transfers, and their three main components FEF, FSM and IRS, are published for each municipality as an appendix of the General Budget Law, but the EFT figures are not published as an autonomous component of fiscal transfers.

Adding to the crossover effects and poor dissemination of the amounts transferred as EFT, the low level of engagement of interested parties with the development and monitoring of the mechanism also leads to low visibility of EFT among mayors and other local authorities. This is clear from interviews4 with representatives of local public authorities, including mayors. All the mayors

[4] The interviews were developed in the scope of the POLICYMIX Project, in 2012, as well as in the scope of the Green Tax Reform Commission work, in 2014. The interviews with the Secretary of State for Nature

interviewed stated that they were not involved in the design and implementation of the EFT scheme, as did the National Municipalities Association. None were aware of the amount of EFT received by the municipality, only of the total amount of fiscal transfers received.

Lack of earmarking: The lack of earmarking of, at least part of, the transferred funds for biodiversity conservation activities is also highlighted as a reason for limited effectiveness. The question of the use of revenues is an important issue in discussions of EFT schemes. Although lump-sum payments are justified from a public finance perspective, it can be argued that the introduction of some form of revenue earmarking for environment-related expenses or sharing the received funds with landowners providing biodiversity benefits would enhance the effectiveness of this instrument. Santos et al. (2015) propose the use of EFT earmarking as one way to ensure the alignment of incentives between local public and private actors, contributing to the coordinated design and implementation of EFT and agri-environmental measures (AEM). Important aspects would be ensuring that local authorities (municipalities) take an interest in and benefit from the adhesion of farmers to AEM, in addition to also being eligible for them on an equal footing with private actors, and that farmers benefit from the ecological fiscal transfers received by local governments.

One of the solutions the authors propose to achieve this coordination "would be to direct part of the EFT revenues to some sort of municipal biodiversity conservation fund. Access to this fund could be awarded to eligible farmers on the basis of a competitive bidding process, whereby the most promising biodiversity conservation actions, in addition (and preferably complementary) to those already covered by an existing AEM, would be supported. By establishing the rules for access to this fund, local governments, with the collaboration of nature conservation officials, could influence the targeting of payments to those areas with higher biodiversity conservation gains and gradually pave the way for the adoption of a results-oriented approach in the existing agri-environmental measures" (Santos et al. 2015, p.92).

Ambiguous financial signals: Finally, the smoothing mechanism introduced in the final computation of the total fiscal transfers to each municipality is another factor that contributes to hide the financial incentive offered to municipalities by the introduction of the ecological fiscal transfers scheme. The goals of this adjustment mechanism are to provide more evenness in fund allocation between municipalities with different economic status and avoid strong fluctuations between consecutive years in the total fiscal transfers. In fact, there are two adjustments applied to the values calculated from the direct application of the criteria adopted in the Law. The first adjustment is designed to guarantee a minimum and maximum variation in the total amount transferred, with reference to the previous year. The second step applies if there is a global surplus after the application of the first step, and in this case the surplus is proportionally distributed to municipalities with a value of local taxes per capita less than 1.25 times the national average for the same indicator.

Despite the drawbacks of EFT, some positive aspects are notable. Although ecological fiscal transfers only represent around 2.5% of total fiscal transfers in the country, they represent an important share of fiscal transfers for several municipalities, and mainly for those with more than 70% of their territory under Natura 2000 or protected areas regimes, (e.g., around 40% in Castro Verde and more than 30% in Castelo de Vide or Arronches). If the ecological criterion were eliminated but the others maintained, municipalities with important conservation areas would be negatively impacted. From this perspective, if recognised by local decision-makers, EFT introduce a positive incentive to align municipalities' interests with conservation policy objectives.

Conservation of the previous Government and the Former President of the Institute for Nature Conservation have confirmed this fact.

In similar vein, our own calculations of the EFT value per capita (inhabitant) and per area of conservation (ha of CA), confirm its magnitude (Santos et al. 2012). The value of EFT per capita is up to €468 in Barrancos, and more than €200 in several municipalities, while the value per ha of conservation area is around €50.

However, relevant stakeholders are not aware of these figures. On the contrary, the municipalities' representatives emphasise that the amount of fiscal transfers received in 2016 is lower than in 2008 and that their perception is that theu receive no compensation for the area under protection in the municipality. A similar tendency is also evident in the accounts of the FGM (Fundo Geral Municipal) for the period 2007-2016, where the EFT component is included (5-10%) (see Table 2.2).

The changes in the total fiscal transfers and FGM are due to the recent sovereign debt crisis, particularly severe in Portugal, and the resulting public budget constraints, implying the reduction of the transfer of funds from the central to the local governments (see Figure 2.2). Thus, the political and economic contexts in which the EFT schemes were introduced contributed to hindering the benefits accrued by the municipalities for their conservation areas.

Table 2.2 Total fiscal transfers and FGM transfers in Portugal 2007-2016 (in euros)

Year	Total Fiscal Transfers	FGM transfers
2007	2,298,418,595	913,316,748
2008	2,406,532,953 (+4.7%)	940,439,804 (+2.9%)
2009	2,513,722,014 (+4.5%)	977,654,437 (+3.9%)
2010	2,625,840,322 (+4.5%)	1,031,408,761 (+5.5%)
2011	2,397,864,673 (-8.7%)	934,111,995 (-9.4%)
2012	2,283,996,289 (-4.8%)	876,011,909 (-6.2%)
2013	2,284,229,497 (+0.0%)	876,011,909 (0%)
2014	2,176,235,813 (-4.7%)	850,545,608 (-2.9%)
2015	2,302,605,962 (+1.1%)	863,399,018 (+1.5%)

Source: Own representation

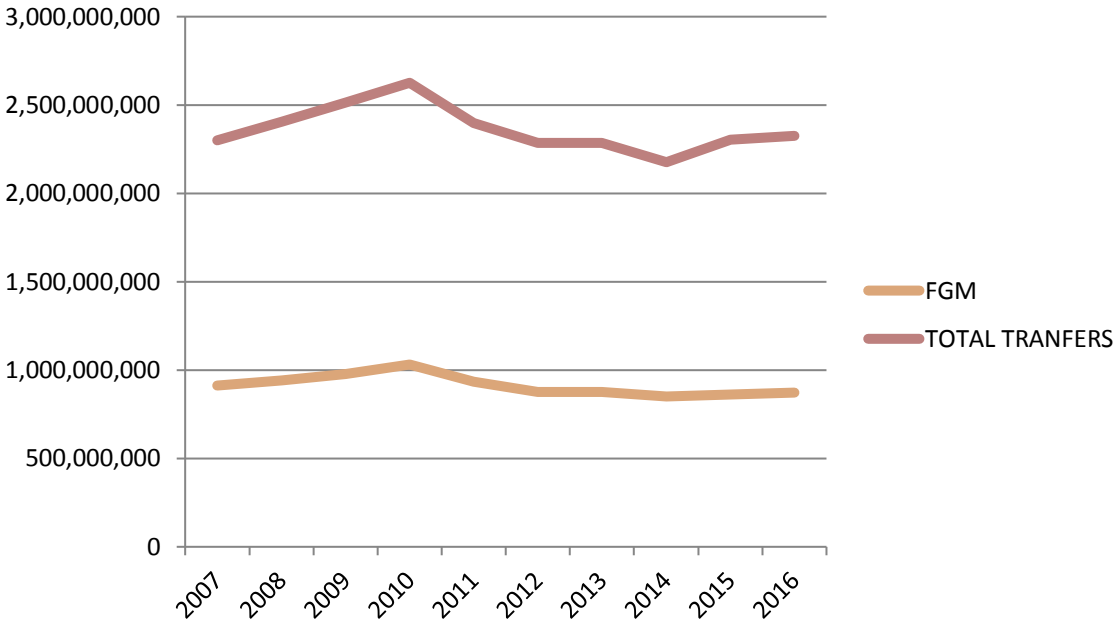

Figure 2.2 Total fiscal transfers and FGM transfers in Portugal 2007-2016

Source: Own representation

Trends in protected area coverage

Ring et al. (2011) propose that the effectiveness of EFT can be assessed on the basis of the respective ecological indicator of the instrument, as well as on its financial effects. In the Portuguese case this indicator is simply the quantity of protected areas within a jurisdiction, and accordingly a quantitative increase can be used as an effectiveness measure.

The number of protected areas in Portugal has shown a strong positive trend over the last 20 years, as shown in Table 2.3, increasing from 23 to 45. There are currently 32 national protected areas, designated by the central government (ICNF), representing an area of 743,274 hectares, including one national park, 13 natural parks, nine natural reserves, two protected landscapes and seven natural monuments. There are 13 regional and local protected areas, designated by the local authorities, representing an area of 48.666 hectares, and including 10 (regional or local) protected landscapes, one regional natural park and two local nature reserves.

In the first phase, from 1995 to 2000, there was a clear increase in the number of national protected areas, while the increase in regional/local areas occurred from 2008 when the LFL reform was implemented and the EFT mechanism introduced. A simplistic analysis could lead to the conclusion that EFT implementation strongly influenced this increase of protected areas. However, the policy context and data must be analysed in greater detail.

Table 2.3 Evolution of national and regional/local protected areas 1995-2015

Year	National PAs	Regional/local PAs
1995	22	1
1996	23	1
1997	27	1
1998	28	1
1999	28	3
2000	30	4
2001	30	4
2002	30	4
2003	30	4
2004	30	4
2005	30	4
2006	30	4
2007	31	4
2008	31	4
2009	32	7
2010	32	11
2011	32	11
2012	32	11
2013	32	12
2014	32	12
2015	32	13

Source: Own representation

A significant change in the institutional setting for the creation of protected areas was introduced with the 2008 legislative reform that established a new Legal Regime for Nature and Biodiversity (DL 142/2008). As mentioned above, this reform widened the municipalities' competencies in the designation and management of conservation areas. Between 1993 (DL 19/1993) and 2008, local and regional authorities were only allowed to propose the designation of Regional Protected Landscape Areas, subject to the approval of ICNF. Under the new 2008 regime they are allowed to designate all protected areas categories except for National Parks.

Theoretically, this reform has also potentially contributed, together with EFT, to the increase in the number of regional/local protected areas since 2007. The almost simultaneous changes introduced in a regulatory instrument (Legal Regime for Nature and Biodiversity) and a fiscal instrument (EFT), with potential cumulative impacts, leads to some difficulties in identifying the effectiveness associated with each. A more detailed analysis of the type and relevance, in terms of area, of the recently created protected areas may help in clarifying this.

After 2007, out of nine newly created regional and local PA only three were of a category that could not have been designated with the old competencies: one regional natural park and two local nature reserves (see Table 2.4 and Droste, Becker et al. 2016). These data seem to indicate that the role of EFT in the creation of new PA was more important than the change in the municipalities' competencies.

Table 2.4 Regional and Local Protected Areas (PA)

Type of protected area	Regional/local PA DL 19/1993	Regional/local PA DL 142/2008
Protected Landscape	4	
Regional Natural Park		1
Local Natural Reserve		2
Regional Protected Landscape		2
Local Protected Landscape		4

Source: Own representation

The majority of the regional and local PA corresponds to small areas, on average (3,744 ha) much smaller than the national (23,227 ha) protected areas, as expected. The four areas created in the scope of DL 19/1993 represent a total area of 10,706 ha (2,677 ha in average), while the nine areas created in the scope of DL 142/2008 represent an area of 37,960 ha (4,218 ha in average), but are case distributed very unevenly (24,767 ha, 65% of the total, is comprised by the Vale do Tua regional natural park, while the two local nature reserves have a total area of 120 ha).

Recent years have seen an increase not only in the total area of the National Network of Protected Areas (RNAP), but also the areas of Natura 2000 that are eligible for the computation of EFT. In 2010, the Natura 2000 network covered 18.8% of continental Portugal and RNAP accounted for 7.9%, while in 2013 Natura 2000 covered 20.7% of Portugal and RNAP accounted for 8.5%. The data for the period 2013 to 2015 (see Table 2.5) display the same trends.

Table 2.5 Natura 2000 and RNAP areas in Portugal, 2013-2015 (in ha)

	2013	2014	2015
Natura 2k + RNAP	1,949,364	1,974,619	1,979,201

Source: ICNF and National Institute of Statistics (INE)

Although it is not possible to identify the effective contribution of EFT to the increase in conservation areas in Portugal without further analysis of the motivations of decision-makers (cf. Droste, Becker et al. 2016), the Portuguese EFT mechanism has apparently contributed to the creation of a mind-set more favourably disposed towards biodiversity conservation. It is also clear that conservation areas have grown steadily and that several municipalities have decided to create new areas. These results are in line with the main purpose that justified the creation of the Portuguese EFT scheme: to align local public actors' interests with established nature conservation goals (generally agreed at higher levels of government) or, at least, reduce opposition to protected areas regulations, and this objective was at least partially achieved.

However, it is not possible to confirm that municipalities' opportunity costs and/or spill-over benefits receive significant compensation. It appears unlikely, based on the low value of global EFT. Several actors agree (see the section on legitimacy of EFT below) that the instrument needs to be revised and communication improved to increase its effectiveness and to reverse local opposition by internalising the spillover benefits of protected areas and other conservation measures, thus offsetting at least some of the costs to local authorities associated with conservation areas. If there is political will to revise the instrument, it can play an increasing role in the biodiversity conservation policy mix by complementing protected areas regulations and payments for ecosystem services schemes (Santos et al. 2015).

Efficiency or cost-effectiveness

According to Ring et al. (2011), following Birner and Wittmer (2004) and Wätzold and Schwerdtner (2005), the total costs of conservation policies may be divided into production costs and transactions cost. Production costs are the costs of actual conservation measures, while transaction costs refer to the costs incurred in making an economic exchange of some sort such as the costs of writing and enforcing contracts, which can include search and information costs, bargaining costs and enforcement costs.

Usually, production costs are not relevant for ecological fiscal transfers, unless they are aimed at directly financing conservation measures. This is also the case in Portugal. The main objective of the Portuguese EFT scheme is to improve the acceptance of nature conservation among local public actors. The scheme is not even designed to guarantee that transfers fully compensate the relevant jurisdictions for the land-use restrictions imposed by protected areas (opportunity costs) or for spillover benefits generated (positive externalities). Furthermore, EFT revenues are not earmarked and this is another reason why it is not possible to establish a direct link between them and the provision of the related public good 'protected areas'.

Transaction costs, which according to Ring and Schröter-Schlaack (2011) may be subdivided into implementation costs and decision-making costs, are also not relevant for EFT. Implementation costs include the costs of introducing and implementing the policy instrument itself. In the case of ecological fiscal transfers, the necessary institutions are already present and therefore it does not require new institutions or bureaucracy. The introduction costs are not significant since the instrument builds on existing institutions and administrative procedures which are part of a broader existing fiscal instrument (LFL). In Portugal, the costs of introducing the "conservation area" criterion in the FGM allocation, and the associated monitoring and enforcement tasks, are negligible. ICNF this permanent access to this indicator and annually sends this information to the General Directorate for Local Governments (DGAL), the entity responsible for the computation of fiscal transfers. This would not be the case if a quality criterion were implemented, which would imply additional monitoring costs.

Decision-making costs relate to the costs of acquiring the information necessary for the successful design and implementation of the instrument, and the costs of coordinating decision-making, including the resources spent on meetings and resolving conflicts, for example. Again, this category of transaction costs has only minor relevance for ecological fiscal transfers, especially in cases like the Portuguese scheme where an easily available indicator of existing conservation areas within municipal territories is used as the basis for allocation of fiscal transfers.

As production costs are not relevant and transaction costs are very low, the only potential relevant costs of EFT are the opportunity costs associated with the introduction of the conservation areas criterion that necessarily implies a redistribution of revenues among municipalities. It is not yet possible to analyse the balance between the costs of the revenue decrease in some municipalities and the additional benefits obtained as a consequence of increasing transfers for other municipalities.

The cost-effectiveness of the instrument could be improved if some kind of targeting could be implemented, with a moderate weighting for different conservation area categories, and a (at least partial) earmarking of EFT revenues would be implemented. Targeting and earmarking, if based on easily available information, would not increase transaction costs in a significant way and could have a positive impact oin the ecological effectiveness of the instrument. For instance, it would be easy to

acknowledge the different relevance of conservation areas included in the National Network of Protected Areas (RNAP). More difficult would be to differentiate the relevance of Natura 2000 sites that do not belong to RNAP.

Legitimacy and impacts on stakeholders

EFT affect the criteria for the allocation of tax revenue between government levels, and for this reason the decision-makers involved and those impacted by them are public actors. The legitimacy and acceptance of EFT depend on the political process followed for the design and implementation of the scheme, namely the way in which public actors' decisions, positions, contributions and involvement at different governmental levels are considered.

The introduction of EFT is a recognition of the importance of conservation areas as a public function in the fiscal transfer scheme, as well as of the need to reinforce municipal commitments to conservation and their willingness to designate new or maintain existing conservation areas, or to have national designated conservation areas in their territory. As discussed in the French context (Borie et al. 2014), supporting the social acceptance of protected areas can enhance "ecological solidarity" between various actors, which has a major social impact.

However, the legitimacy and social impact of EFT strongly depend on the way in which relevant actors are engaged in its design and implementation, including the monitoring of its performance. In interviews with municipalities' representatives and the President of ICNF it became clear that neither the municipalities nor the National Association of Municipalities (ANMP) were involved in the design of the instrument during the 2007 LFL reform, nor in the 2013 revision. There are no formal or informal mechanisms to ensure that local public actors participate in or monitor EFT implementation. The lack of engagement of relevant parties in the development and monitoring of the mechanism does not favour the legitimacy of EFT, although all legal requirements and public consultation mechanisms have been met. In addition, the poor dissemination of the amounts transferred as EFT also contributes to the low level of understanding of EFT among the mayors.

However, an interesting interaction with ANMP occurred during the Green Tax Reform process developed in Portugal in 2014. The Green Tax Reform Commission proposed, in June 2014, and as part of the overall Green Tax Reform proposal (GTRP), to reinforce the EFT mechanism in the LFL, namely assuring "more visibility to the EFT component and associated positive discrimination" and considering "the possibility of partial earmarking to biodiversity and nature conservation actions taken by the municipalities" (Comissão para a Reforma da Fiscalidade Verde 2014, p.217 f.). The GTRP was subject to a public consultation process that received many contributions. In the course of this process ANMP presented, in July 2014, a written reaction to several proposals by the Commission including one related to EFT: "ANMP defends that EFT should be an autonomous component of FEF and not one of criteria to allocate FGM, or even be a fund similar to FSM, although with less requirements in earmarking than FSM. […] [T]he objective is to improve the perception and evaluation of the mechanism by the municipalities and citizens, since currently, the positive discrimination that results from the adopted criterion is not perceived" (Associação Nacional de Municípios Portugueses - ANMP 2014, p.23).

This position of ANMP is an important contribution to increase the effectiveness and legitimacy of EFT, since it envisages making EFT and municipals' contributions to delivering national conservation objectives more clear.

To our knowledge, it is the first formal position of municipal representatives on the mechanism of EFT. Based on this position the central government and the Parliament have strengthened their legitimacy (and responsibility) to promote a revision of the mechanism and improve its performance.

Institutional context and legal requirements

Although the need for a revision of the EFT scheme is acknowledged by the most relevant actors, namely municipalities' representatives and ICNF, as mentioned above, the design of an improved EFT scheme would require another amendment of the fiscal transfers Law (LFL) and a consequent government initiative and Parliamentary approval. For this reason, strong political consensus is required in order to achieve a successful revision process, and the power dynamics between stakeholders play a crucial role. Political parties, governments at various levels, non-governmental organisations (e.g. conservation NGOs) and the National Association of Municipalities (ANMP) all play an important part in moving towards more effective ecological fiscal transfers. The Green Tax Reform process conducted in 2014 provided an excellent opportunity to develop the necessary dialogue and find consensus, but the persistent economic crisis and the need to prioritise other issues have prevented further action in recent years.

However, without an in-depth revision process, some governance issues could be considered to improve the instrument's performance using its current design. To improve incentive uptake and local actors' conservation awareness and capacity to propose improvements to the scheme, it would be desirable to improve the transparency and accountability of the EFT computation process. Examples would be providing access to the information used and the methodology adopted to implement the FGM allocation criteria, and disseminating the EFT figures with the publication of the General Budget Law every year.

Besides these aspects, the institutional and legal requirements are in general guaranteed and no major changes are necessary. Regarding formal institutions, ecological fiscal transfers are part of LFL transfers, which are a consolidated mechanism to regulate the financial arrangements between levels of government in Portugal. The baseline for the instrument's functioning is also guaranteed, since the process of designating and registering of conservation areas is also well-established and functional. Moving towards a conservation areas quality indicator would require additional efforts to establish the legal baseline.

As of 2008, private actors can designate protected areas that can be recognised by ICNF to be integrated in the National Network of Protected Areas (RNAP). In Europe there are a few nations where private landlords are allowed to create an officially recognised protected area. For this reason private decisions may directly influence the allocation of funds according to EFT, and municipalities that receive EFT might create favourable conditions for such private conservation actions.

Since ecological fiscal transfers are but one (economic) instrument in the mix of relevant policy instruments for biodiversity conservation, other opportunities can be explored to improve the alignment between private and public actors' interests. Santos et al. (2014) argue that a successful biodiversity conservation policy mix should include mutually reinforcing economic instruments directed at public and private local stakeholders. These authors present proposals for linking European agri-environmental measures (directed at private landowners) and ecological fiscal transfers (for local governments) to reinforce their individual contributions to the overall goal of halting biodiversity loss, taking the Portuguese case as an example.

2.4.2 France

Description, history and key features of the instrument

Following the 2006 reform of the law for national parks, France reformed its Fiscal Transfer Act and introduced an ecological component into the fiscal transfer system from the national to the local level (Government of France 2006, 2011). The fiscal transfer system is generally divided into two main parts: i) 85% are general-purpose lump-sum transfers, and ii) the remainder is used to equalise fiscal disparities (Borie et al. 2014). Since 2007, the lump-sum part has five main indicators (in order of importance): inhabitants, area (weighted for area conditions, e.g., mountain or overseas regions), compensations for reductions in other income sources (e.g., business tax), intertemporal stabilisation of the lump-sum transfers, and location in core areas of national parks or natural marine parks. This last and smallest part of the lump-sum transfers is considered the "ecological allocation" component of French fiscal transfers (Borie et al. 2014). The ecological component (EFT) is calculated by the following formula

$$EFT_i = \frac{a * AreaPA_i}{AreaM_i} \frac{EFTsum}{\sum_{i=1}^{n} \frac{a * AreaPA_i}{AreaM_i}} \qquad \text{Eq. 4}$$

where $AreaPA_i$ is the i^{th} municipality's area in the core zone of a national park, area coefficient a is 1 if the overall core area of the national park is < 5000 km² or 2 if the core area is > 5000 km², $AreaM_i$ is the municipalities' total area, and $EFTsum$ is the total monetary sum to be distributed (Borie et al. 2014).

Conservation effectiveness

In 2008, 150 out of 36,783 French municipalities received the ecological allocation of about 0.02% out of a total of €13.6 billion transfers which can be spent on whatever public function the respective municipality wishes (Borie et al. 2014). Since municipalities cannot designate national parks in France, the existing EFT scheme can be seen as purely compensatory. In such a scheme, the baseline for the receiving municipalities would be defined by financial criteria in terms of refinancing expenditures and tax revenues forgone. In terms of ecological effectiveness, the recipient municipality cannot provide more PA, as they already lie in the core zones of strictly protected areas. However, at the national scale, the EFT scheme may lead to increased acceptance of new national parks among French municipalities.

Borie et al. (2014) simulate how a different EFT scheme (computed for Mediterranean France) would provide a financial incentive to encourage local actors to designate PA. Since it is a simulation it 'only' allows for an ex-ante prediction of ecological effectiveness. Their study illustrates how EFT could be an effective way to improve the social and economic acknowledgment of conservation and provide a financial reward for efforts in biodiversity conservation. The different PA categories could be weighted (e.g. along the IUCN-PA categories), Natura 2000 sites could be integrated, and the funds could either be distributed on a per-hectare or a per-inhabitant basis – which would result in different winners and losers. Both would provide a financial incentive to designate PA.

Efficiency or cost-effectiveness

Borie et al. (2014) conclude that a per-hectare approach with a moderate weighting for different PA categories reduces variation in redistribution among municipalities and is therefore more sound with respect to conservation goals and equity considerations. In contrast, the per-inhabitant model has

more pronounced financial effects and is therefore more likely to incentivise municipalities to designate additional PA (ibid.).

As with all other EFT schemes, the ecological aspect of the incentive consists of the fiscal transfer formula through which PA become a source of income for the municipalities. Therefore, there are two main issues to be considered: i) PA designations by recipient municipalities are only to be expected when there are respective municipal PA designation competencies, ii) EFT may improve the disposition of municipalities towards conservation and PA designation at higher levels of government within their territories, leading to less resistance towards PA creation and iii) there is no guarantee that the ecologically distributed funds are allocated to biodiversity financing because EFT are normally general-purpose funds. Additionally, the transaction costs of introducing EFT are relatively low since this would be based on the amendment of existing transfer schemes. Access to the ecological funds is not problematic since they are distributed on a yearly basis together with regular transfers.

Legitimacy and impacts on stakeholders

The second main objective of the fiscal transfer system in France is to reduce inequalities between municipalities. This objective is basically addressed by the second part of the fund structure. However, equity considerations play also a role in the allocation of the first part of the funds since induced inequalities would have to be rebalanced later on. As said above, different designs (e.g., per-hectare vs. per-inhabitant) would have different allocative effects and different strengths as ecological incentives. Finding the correct balance between those goals remains a political decision.

There is however, one major social impact to be expected from the introduction of EFT. Through recognising the importance of PA as a public function in the fiscal transfer scheme, it is likely that municipal commitments to conservation and their willingness to conserve or to be part of a protected area or green infrastructure would be strengthened. By supporting such social acceptance of protected areas, ecological solidarity could be enhanced as well as ecological effectiveness (Borie et al. 2014).

Institutional context and legal requirements

While the specific French institutions must be taken into account in the design of an (improved) EFT scheme, they could definitely be adapted, i.e. there already is an ecological component in the existing transfer scheme. Basically an improved EFT scheme would require another amendment of the fiscal transfer act which would correct the current bias towards developmental activity designed to attract residents.

Furthermore, EFT in France must be seen in the context of tax reliefs for biodiversity conservation (see Annex 3). Tax reliefs have been specifically linked to Natura 2000 sites. While the tax reliefs themselves are granted to landowners, the state pays compensation to local authorities' loss of earnings due to the unbuilt property tax exemption.

2.5 Policy analysis of schemes under discussion

2.5.1 Germany

Description, history and key features of the instrument

As in many federal states, public functions in Germany are distributed among the different levels, namely the federal, state and local levels. For conservation, the national government legislates on the framework, which is delivered through federal nature conservation and species conservation acts (Schröter-Schlaack et al. 2013). National administrations have a few unique responsibilities such as the management of international species conservation and marine nature conservation. However, the actual implementation of the conservation law is mainly a task of the federal states that designate, manage and monitor most of the PA. The states (*Länder*) have either two or three levels of conservation authorities: the highest are state authorities such as environmental ministries, followed by the regional administrations, then the local conservation authorities which are district- or city-level administrations. PA are designated by one of these three authorities, e.g. national parks by states, or landscape protection areas by district authorities – although the details of state conservation laws and assigned responsibilities vary. Municipalities only have responsibilities in nature conservation when these are devolved by law from states to municipal authorities or a particular matter of municipal interest such as the designation of natural monuments with importance for the local level. Currently, there are proposals to include ecological indicators in fiscal transfer systems from *Länder* to municipalities (Sachverständigenrat für Umweltfragen (SRU) 1996; Perner and Thöne 2007; Ring 2002; Ring 2008b) and the federal financial equalisation system (Czybulka and Luttmann 2005; Möckel 2013; Schröter-Schlaack et al. 2013).

PA provide benefits that spill over to other jurisdictions and incur costs at the local level which are unequally distributed. Therefore, there are several proposals to include conservation-related responsibilities in state fiscal transfers that would compensate municipalities for the spill-over benefits they provide through the PA they are hosting (Sachverständigenrat für Umweltfragen (SRU) 1996; Perner & Thöne 2007; Ring 2008b; Ring 2002). Since there are 13 area states, such schemes would have to be implemented within each state's fiscal transfer law. So far, the most detailed and spatially explicit proposal has been developed for the state of Saxony (Ring 2008b).

The other proposed option would be to include an ecological indicator in the federal fiscal equalisation scheme between the states where disparate fiscal capacities are equalised. Schröter-Schlaack et al. (2013) propose the creation of an ecological indicator for a range of public ecological functions such as biodiversity conservation through weighted PA categories, species conservation and spatial features such as fragmentation. Such horizontal ecological fiscal transfers can be justified since there are significant regional differences in the provision of PA (Droste 2013). Although different PA categories have different spatial distributions across German states, the least populated states have put the largest proportion of their area under protection.

In its most basic form ecological indicators could be integrated into the fiscal transfer system in Germany by an ecological benchmark assessment based on the relative performance of states that designate PA (Schröter-Schlaack et al. 2013; Droste 2013). Equation 5 represents such a benchmark assessment for state i's conservation factor eco_i.

$$eco_i = 1 + f_{eco}\left(\frac{PA_i}{PA_{DE}} - 1\right) \qquad \text{Eq. 5}$$

The benchmarking is given by the ratio of state performance PA_i that is the PA per capita in state *i* and federal average of PA per capita PA_{DE}. The benchmark factor eco_i will be f_{eco} times bigger than

1 if PA coverage in state i is above average and f_{eco} times lower than 1 if it is below average. Factor f_{eco} would be a coefficient for conservation-related or other weights.

Conservation effectiveness

The simulation of the post-intervention development of ecological indicators for an instrument that is not yet in place presents a scientific challenge. However, it is possible to predict some consequences of a potential introduction of EFT at the horizontal fiscal equalisation stage in the German fiscal transfer scheme.

The main recipients of a horizontal EFT between the states in Germany would be the sparsely populated states since they already protect the greatest proportion of their area (Schröter-Schlaack et al. 2013). Assuming that the most sparsely populated states also have the lowest opportunity costs of conservation, since there are limited alternative land uses and users, these states would have the greatest propensity to react to the incentive in EFT and create additional PA. This however, would lead to an even more unequal spatial distribution of PA in Germany. Such an effect could counteract certain conservation goals, i.e., the goal of creating an evenly distributed habitat network (Droste 2013).

The possible imbalance above could either be addressed by other instruments in the conservation policy mix, such as in the current regulation through national standards or by including an additional indicator in the EFT, eg a bonus for connectivity (Schröter-Schlaack et al. 2013). Nevertheless, who would react to an incentive is not just a question of costs but also preferences. While the financial incentive might have the most direct effect in those states with low opportunity costs, the extra reward for conservation efforts may provide an additional element in intra-state inter-departmental decision making processes and ease the implementation of a conservation policy. Since these intra-state preferences are difficult to assess, it is challenging to predict the location of future PA that might be incentivised by a German EFT. Our assessment is that the design of EFT does not provide a spatially targetable PA designation instrument. While it may ease the designation through economic incentives, EFT can only complement the conservation policy mix that already entails spatially explicit planning procedures for conservation measures.

Efficiency or cost-effectiveness

Since EFT are generally lump-sum transfers, the cost-effectiveness of financial allocation received through EFT may vary greatly, depending on the programme in which it is spent and on the programme's cost-effectiveness.

Accessing those funds would be relatively straightforward, since there are revenue sharing and fiscal equalisation systems that transfer the respective revenues yearly. As such, an EFT reform of the existing system would integrate an ecological indicator and would thereby alter the distribution of funds but not access to them.

In an economic sense, EFT would, however, increase efficiency. Although they provide a public good with positive externalities, (local) public actors providing biodiversity conservation normally do not receive any compensation (Perrings & Gadgil 2003; Ring 2008a). Uncompensated spatial spill-over effects from PA such as climate regulation or biodiversity conservation (ten Brink et al. 2013; Gantioler et al. 2010) lead to under-provision of the respective public goods. Furthermore the imposition of conservation opportunity costs to local communities and public actors without adequate compensation for the benefits of PA likely creates resistance, thereby leading to less PA

being realised. As long as subnational governments lack sufficient incentive to take conservation benefits for other jurisdictions or other communities into account, they will not necessarily act in the common interest. EFT at least partially compensate for (opportunity) costs and spill-over benefits of biodiversity conservation are internalised. Thus local rationales and common interest are better aligned and favour the improved provision of public goods and services related to conservation.

Legitimacy and impacts on stakeholders

In the current inter-state fiscal transfer scheme in Germany, tax revenue is redistributed from wealthier to poorer states. Thereby, fiscal disparities in available revenue per inhabitant are substantially equalised. This feature of the fiscal equalisation scheme is based on equity considerations and is defined by the principles of the German Constitution and the respective fiscal transfer acts. While each state is responsible for generating sufficient tax revenue to fulfil its own public functions within the federation, the principle of solidarity also applies (Droste 2013). As such, the instrument covers structural differences among the German states such as higher fiscal needs in the three German city states of Bremen, Hamburg and Berlin. Also, the higher fiscal needs per capita of the most sparsely populated states, e.g., for infrastructure development and sustenance, are already taken into account (Schröter-Schlaack et al. 2013). What is missing so far is an appropriate consideration of ecological public functions (Ring 2002).

As soon as ecological indicators are introduced, the current distributions change. There will be both losers and winners – depending on the choice of the indicator (Schröter-Schlaack et al. 2013). Therefore, although the form of indicators is quite relevant regarding conservation benefits and economic incentive structure, the exact choice of indicators, the choice of weights, etc., is most likely subject to political negotiations. Each year, when the new round of fiscal transfers is calculated, there is repeated discussion of the need for a fiscal equalisation scheme, and of its appropriate design. Every few years lawsuits are brought regarding the legality of the current structure, and sometimes respective reforms are introduced. The fiscal equalisation system is therefore ultimately defined by constitutional rights, but the current form is greatly affected by ongoing negotiations, lawsuits and reforms.

While this creates a form of procedurally legitimate fiscal transfers, the current system lacks integrated ecological indicators. The latter have legitimacy from conservation policy goals, which are societally and politically agreed public policy goals at both the national and international levels. Accordingly, academics have proposed the integration of ecological indicators into fiscal transfers at every level, regionally at state level (Perner & Thöne 2007), nationally (Schröter-Schlaack et al. 2013) and internationally (Farley et al. 2010).

Institutional context and legal requirements

In Germany, the goals of refinancing public functions and establishing equal conditions per inhabitant are seen as particularly important and, as such, the refinancing of opportunity costs, for example, is legally difficult if not impossible. Thus, there are three particularly important features of the Germany fiscal transfer scheme when it comes to integrating any further indicators (Ring 2002; Schröter-Schlaack et al. 2013; Droste 2013;).

First, the current equalisation scheme is based upon ‘abstract’ additional fiscal needs which need to be verifiable through objective evidence. In other words, higher spending in some states in Germany cannot in itself justify a higher transfer to those regions. Acceptable reasons must stem either from the German federal structure (e.g., city states which have no surrounding rural province to support

higher spending in the states' capital) or from difficult to address structural differences between the states (e.g., the higher per-capita fiscal needs in sparsely populated states to tackle waste-water treatment, schools and roads, due to larger distances). Therefore, the inclusion of an ecological indicator also requires some empirical proof in line with these requirements for abstract and objective indicators. Droste (2013) analysed the spatial distribution of PA in Germany and found that sparsely populated states have a significantly higher proportion of the total area of PA. Hence, there is sufficient evidence that PA per capita can serve as an objective indicator of an above-average fiscal need for conservation, i.e. in sparsely populated states in Germany. Such a requirement for an objective indicator is, to our knowledge, specific for the German fiscal transfer system, while other states may have other institutional requirements.

Second, there is basically only one indicator for fiscal needs in the German fiscal equalisation scheme: inhabitants. The above-average fiscal needs of both densely and sparsely populated states lead to their receiving higher shares of fiscal transfers due to an artificial increase in their population numbers. Such artificial increase augments the inhabitants that serve as a basis to equalise available per-capita fiscal capacity. Therefore, an ecological fiscal reform of the current system would also likely need to develop such a population weighting (Schröter-Schlaack et al. 2013). However, the current solidarity pact to help developing Eastern German states will terminate in 2019 and negotiations on a follow-up system – which will probably include a reform of the fiscal equalisation scheme – are already anticipated. Since no proposal has yet gained the support of the government and Federal Council it is currently impossible to derive the specific requirements of a future system for the integration of ecological indicators.

Third, there are 13 municipal fiscal transfer schemes in the German states. While for Saxony a suggested EFT scheme has been modelled in a spatially explicit way based on observations from Brazil (Ring 2008b), some further design features have been proposed to account for other ecological public functions of municipalities in Germany (Perner & Thöne 2007). The multi-level government structure in Germany provides an opportunity to apply findings based on experiences such as those of Brazil or Portugal.

2.5.2 Poland

Description, history and key features of the instrument

The top-down approach and the lack of participation of local actors in the implementation of Natura 2000 site designation in Poland created conflict and resistance among local decision-makers (Schröter-Schlaack et al. 2014). The EU Habitat and Birds Directives were implemented through a technocratic process of national ministries' experts and involved neither local stakeholders nor civil society organisations such as environmental NGOs. The consequence was that mayors of affected boroughs issued official complaints about their lack of opportunity to articulate their own interests and needs in the planning process. Following this, the Council of the Rural Boroughs Association which represents jurisdictions with PA on their respective territories, has proposed an EFT mechanism, called the Ecological Subsidies Act (ibid.)

Conservation effectiveness

Of 2,479 Polish boroughs, about 1,300 host one or more PA categories, e. g., national parks, landscape parks or Natura 2000 sites (Schröter-Schlaack et al. 2014). To date, there is no compensation mechanism for the costs incurred by municipal lands for the often nationally-imposed PA (Cent et al. 2007). This creates resistance to the designation of PA and therefore decreases the

likelihood of effective conservation through consolidated planning, especially since local governments have PA management responsibilities but respective finances do not reach municipal administrations (Schröter-Schlaack et al. 2014). With such a baseline scenario, introduction of an EFT mechanism is likely to enhance conservation effectiveness because local municipalities would receive compensation for hosting (supra-)national PA and thus manifest much less resistance to the respective designations and management tasks.

Efficiency or cost-effectiveness

The proposed Ecological Subsidies Act is intended to compensate for the management costs as well as opportunity costs of land-use restrictions in PA. The transfers are planned as general-purpose lump-sum transfers (Schröter-Schlaack et al. 2014). The respective algorithm has been developed by the boroughs and would be included in the current allocation formula (or require additional funds (ibid.)). The total required sum is calculated to be about €200 million. Several consultations and parliamentary debates have taken place. Precise estimates would require the actual figures of management costs and lost income due to land-use restrictions in PA for both public and private land users (ibid.). Due to the recent elections, the proposal for the Ecological Subsidies Act has currently been put on hold.

Social impacts

More than half of all Polish boroughs have one or more PA on their territory and these would all benefit from the EFT scheme. Whether there would be a net gain depends on whether there is a reallocation of transfers from other funds or an additional sum made available for EFT since in the former case, some of the recipients of EFT might get less out of another transfer fund. However, the 315 boroughs with more than 50% of their territory under protection (Schröter-Schlaack et al. 2014) would most likely see a net gain, which is more than 10% of all boroughs.

Institutional context and legal requirements

The Ecological Subsidies Act Proposal was based on an algorithm developed by the Ministry of Finance (Schröter-Schlaack et al. 2014). The General Directorate of the Environment Protection, the Parliament, and the former president's office have all been consulted.

2.6 Comparative analysis and conclusions for the relevant funding instrument

2.6.1 Compare different designs for implementation

Schröter-Schlaack et al. (2014) compare the EFT schemes in Portugal and France and the proposed schemes in Germany and Poland and highlight six essential EFT design features: 1) types of costs and benefits, 2) choice of indicator, 3) scale of the scheme, 4) origin of funds, 5) amount of financial resources, and 6) type of transfers. For this comparative analysis, we elaborate on the first two of these features, and further draw on some observations from Brazil.

The first key design decision is about the *types of costs and benefits* considered in the EFT scheme (see also Ring et al. 2011). Economically, the spill-over benefits of biodiversity conservation to other regions call for compensation to enhance supply (Perrings and Gadgil 2003; Ring 2008a). However, while in Brazil, and to a certain extent also Portugal, France and Poland, it is intended that the

opportunity costs (e.g. revenue foregone due to PA designation) should be compensated, these costs do not qualify as a fiscal need according to the German fiscal equalisation act. In order to be recognised as such, an abstract indicator for above-average fiscal needs for conservation is required (Möckel 2013). As such, while it is often the case that opportunity costs and spill-over benefits are to be compensated through EFT, this is not always legally feasible. The design decision therefore needs to take into account the respective institutional setting.

The second key design decision is about the *choice of indicator*. Most commonly it is the area or percentage of area under protection that serves as a quantitative indicator for EFT – which is normally weighted by the conservation benefits and/or gravity of land-use restrictions of each PA category. Although relatively sophisticated indicators are suggested in the literature, such as the connectivity of habitat networks/fragmentation of landscape and/or site/region-specific responsibilities for protection of particular species (Schröter-Schlaack et al. 2013), these have not yet been implemented in practice. The most advanced indicator has been implemented by the pioneering state of Paraná, where, as well as the quantity (weighted by PA category), the variation or change in quality of the PA are also integrated into the EFT scheme as an additional indicator. Thereby, EFT incentivise not only the quantity but also the (management) quality of PA.

This point deserves special attention, since it is not only the choice of the indicator that determines the incentive effect. As shown in the analysis by Droste, Becker et al. (2016) of the Portuguese EFT scheme, the *respective competencies of the addressed jurisdictions* are an important factor. Without appropriate powers, decentralised jurisdictions cannot independently designate PA. Nevertheless, EFT may still result in more (and/or better) PA through increasing the acceptance of PA designated at higher governmental levels by means of a financial compensation for the 'burdens' of conservation efforts. EFT could also act as an incentive, e.g., if the addressed jurisdiction has management responsibilities and the indicator of choice concerns management quality, an improvement in this aspect would be expected.

Furthermore, EFT are normally not earmarked, which means that it cannot be ensured that the respective revenue is actually spent on conservation. Nevertheless, there is an incentive to introduce EFT since PA can provide a direct source of income for the respective jurisdictions (May et al. 2002; Ring 2008c; Santos et al. 2012). Therefore, and based on further empirical findings from Brazil (Droste et al. 2015) and Portugal (Droste, Becker, et al. 2016), the introduction of EFT could lead to an increase in PA.

2.6.2 Transfer potential to other EU Member States

So far, Portugal is the only EU Member State which has implemented an EFT scheme that covers the entire range of PA categories and provides a general-purpose transfer to all municipalities that host a PA on their territory (Santos et al. 2012; Schröter-Schlaack et al. 2014). France compensates those municipalities in the core areas of national parks and natural marine parks with a lump-sum transfer (Borie et al. 2014). In Germany, there are specific-purpose earmarked transfers to municipalities to cover their expenditure for devolved environmental public functions, which may include conservation activities (Ring 2002). These countries, however, may serve as a basis to estimate the potential for an implementation in other Member States.

The only clear demonstration of the capabilities of EFT as a conservation instrument is the Portuguese example which shows great potential regarding increased fiscal transfers to municipalities hosting PA, where EFT can amount to about 30% of overall municipal budgets. This case also displays potential for an increase in municipal PA after EFT introduction in 2007 and the corresponding 2008 nature conservation reform (DL 142/2008) that authorised municipalities to

designate all PA categories apart from that of National Park (Droste, Becker, et al. 2016). However, as recent interviews have confirmed, the effectiveness and legitimacy of the instrument in Portugal could likely be enhanced by making EFT a more explicit and autonomous component within the transfer scheme such that it becomes more visible and accessible for local decision makers. Nevertheless, much can be learned from the Portuguese example in terms of ecological and cost-effectiveness for application in other countries.

France might consider an extension of its current system, by including other PA categories. According to Borie et al. (2014), the suggested adoption of a broadened EFT scheme in France should be designed with care, constant monitoring and flexibility to counteract potentially unforeseen distributive effects. This, however, could also be managed with proper ex-ante simulations to estimate financial effects – and would very likely be a feature within the political negotiation processes leading to a corresponding reform of the current scheme.

According to Schröter-Schlaack et al. (2014), the main task in Germany is to get EFT into the policy arena. While the academic community has provided elaborate proposals (Schröter-Schlaack et al. 2013), the EFT debate currently remains relatively local and is overshadowed by the overall distributive effects of the anticipated fiscal equalisation reform due in 2019. However, certain states have expressed interest, i.e., environmentally proactive ones that would benefit most from the introduction of an EFT scheme (Schröter-Schlaack et al. 2014). The German Green Party has also articulated interest in the instrument (Ring and Mewes 2013), and some simulations are available for a state-level implementation, e.g., for Saxony (Ring 2008b).

In Poland, several actors are already involved in discourse about introducing a compensation scheme for land-use restrictions in Natura 2000 sites. These parties include the association of boroughs, the parliament, the Finance Ministry, political parties and others (Schröter-Schlaack et al. 2014). One issue is that losses in income incurred by private land-lords and public revenue for jurisdictions would – according to the proposal – have to be calculated, and there are not yet detailed management plans for the Natura 2000 sites, which makes this an almost impossible task (ibid.). The proposal has not progressed much in recent years due to elections and the subsequent changes in the political landscape in Poland.

These case studies show that a relatively time-consuming reform process is often a necessary precursor to the introduction of ecological indicators into fiscal transfer systems. However, the potential of application to other Member States is by no means limited by the time it might take them to implement the instrument. To our knowledge, all EU Member States – whether they have unitary or federal governments – have some sort of fiscal transfer scheme, making an introduction feasible. The caveats are that the design must correspond to the respective constitution and – potentially the bottleneck – there must be sufficient political will (including or supported by civil society actors).

2.6.3 Transfer potential to other governmental levels

While EFT originated in a single state in Brazil that introduced ecological indicators in its state to municipality fiscal transfer scheme, which was then emulated by the majority of other Brazilian states (Droste et al. 2015), Portugal introduced an EFT scheme within transfers from the national government to municipalities in a unitary state. Since there are fiscal transfer schemes in almost every political system, ranging from unitary governments to federations (Boadway & Shah 2009), EFT schemes can theoretically be implemented in states with any constitutional structure.

However, the scenario of federal states is generally associated with a higher likelihood that respective subnational areas have legislative powers and can, for example, designate PA independently. This federal structure only occurs in a few EU Member States such as Germany, Austria, and Belgium. In addition, while it is clear that this capacity exists for the German "*Länder*" who designate all PA including national parks, the case of Portugal shows that this does not necessarily apply to municipal powers; Portuguese municipalities have even greater conservation authority than German ones.

Thus, the potential of introducing EFT does not depend on whether the state in question has a federal constitution but on whether the respective subnational jurisdictions receive some transfer (or a share of tax revenue), which is the case in almost every country. As long as there is such a transfer scheme, ecological indicators can be introduced alongside other criteria – only the details of the design vary, depending on the specific constitutional and legal context. However, the quality of the incentive does depend upon the subnational authorities of the jurisdictions that receive EFT (i.e. their ability to designate PA as a response) as well as an appropriate information policy, so that recipient jurisdictions know to what extent they financially benefit from EFT.

For multi-level governmental structures, which are more common in federal states, there is potential for the transfer of EFT to other government levels within the relevant country. For example, in Portugal there is only one transfer scheme from the national to the local level but not from, eg, regional governments to local governments. Thus, within Unitarian states like Portugal, there is no potential for the transfer of EFT to yet another governmental level. In Germany, an EFT scheme could be introduced at state level first, as in Brazil. In such a scenario, it could be transferred to other government levels, like the federal financial equalisation system – which has already been suggested (Schröter-Schlaack et al. 2013).

An application of EFT-like mechanisms could even be envisaged for confederate-like structures such as the EU itself (see below).

2.6.4 Potential for upscaling to EU level

According to Möckel (2013) and Schröter-Schlaack et al. (2014), there is considerable potential for the use of Natura 2000 sites (e.g. in proportion to the jurisdictions' area) as suitable indicators for the design of national EFT schemes. For example, the six-year reporting cycle of the progress reports for the implementation of the EU Habitats and Birds Directives could provide data for the design of qualitative EFT indicators. Potentially, these or similar ecological indicators could be integrated into the allocation criteria of one of the many EU funds (such as, for example the European Regional Development Fund – EFRD).

Kettunen et al. (2014) review the financing mechanisms for Natura 2000 measures from planning to environmental education and implementing conservation measures in established Natura 2000 sites, and identify various sources ranging from LIFE+, EU Regional Development Funds, to research funding programmes such as Horizon 2020. Furthermore, the authors suggest that existing schemes should be complemented with innovative financing instruments, such as several fiscal instruments (tax incentives, cap-and-trade schemes, or tradeable development rights).

Based on the assessment of the results of existing EFT schemes and the institutional options regarding EU funds, Droste, Ring, et al. (2016) propose that a potential EU EFT scheme may be implemented as a allocative mechanism for regional EU funds, e.g. the EFRD. This way, the financial resources would flow to regional levels such as NUTS2 regions or authorities at regional levels.

On a mechanistic level, Droste, Ring et al. (2016) propose that EU-EFT schemes could consist of two parts, one quantitative and the other qualitative – similar to the original EFT design from Brazil. Formally, this could be expressed as

$$EFT_i = \left(\frac{CF_i}{\sum_j^n CF_j}\right) fund\ , \qquad \text{Eq. 6}$$

where

$$CF_i = \frac{PA_i}{area_i} + \frac{FCS_i}{habitats_i}\ , \qquad \text{Eq. 7}$$

The EFT for jurisdiction i would be defined as a share of the overall available $fund$ (e.g., a part of the EFRD) that is provided to all j jurisdictions. The central measurement, the Conservation Factor (CF) of jurisdiction i could be determined by the sum of i) the proportions of Protected Area expanse (PA) and area ($area$), such as the percentage of land under protection, and ii) a qualitative measure such as number of habitats with favourable conservation status (FCS) and total number of reported habitats ($habitats$).

Droste, Ring et al. (2016) analyse and discuss the outcomes of the suggested model in terms of conservation effectiveness and distributive effects. The authors summarise the EU-EFT proposal and model the outcomes as follows: "the main extension would be that an EU-EFT scheme would grant general-purpose transfers to regions that supply most (or best managed) [Natura 2000] sites" instead of funds that are earmarked for specified purposes. The main recipients of the proposed mechanism would be those who carry out the most conservation measures, as indicated by parameters such as Natura 2000 site coverage and favourable conservation statuses of reported habitats according to the Habitats and Birds Directives. The EU regions that perform best, according to such an ecological fiscal mechanism, would be remote, mountainous and economically poor regions that would therefore receive the highest EU-EFT payments.

2.6.5 Consideration of the actual / potential contribution of the instrument relative to the assessed financing needs for biodiversity and Natura 2000 in the case study countries

Due to the performance-based nature of the EFT mechanisms discussed and the non-earmarking of the fund distributed accordingly, ecological fiscal transfer mechanisms are not particularly suited for re-financing financial needs for conservation. Previous studies have demonstrated the financing gap for Natura 2000 implementation (Kettunen et al. 2011). Earmarking EU funds for conservation, such as LIFE+ and others, and appropriate conservation financing at Member State level, appear to be the most suitable methods of closing this gap. Beyond the general financing needs for EU conservation policies that need to be met through sufficiently large, and potentially earmarked EU funds, an EU-EFT scheme could provide one main contribution to support Natura 2000 implementation – the incentive structure inherent in allocating funds according to ecological performance (Droste, Ring, et al. 2016).

Furthermore, Schröter-Schlaack et al. (2014, p.111) suggest that "spot-lighting nature conservation as an important public responsibility eligible for fiscal transfers [through], EFT may also help to mainstream biodiversity conservation in regional state and local development policies. The major drivers of biodiversity loss imposed by local development, such as habitat destruction through urban sprawl, infrastructure development and land-use intensification, could thus be counterbalanced."

2.7 References

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3 Tax reliefs for biodiversity conservation

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3.1 Summary

Tax reliefs supporting biodiversity conservation are linked to general taxes, such as property, income or inheritance taxes and aim to incentivise general tax payers to adopt biodiversity-friendly behaviours. Tax payers who comply with specified requirements, which aim to deliver conservation objectives, receive exemptions or reductions from general taxes. Tax reliefs for biodiversity conservation are currently used in only a limited number of EU Member States and non-EU countries, including for instance France, the UK, the Netherlands, the US, Canada and South Africa.

The most developed tax relief system within the EU is in place in France where exemptions are available from (i) property taxes for un-developed property on Natura 2000 sites, (ii) inheritance taxes for the transfer via succession or gift of unbuilt property located on a Natura 2000 site, and (iii) income taxes for Natura 2000 site management costs.

While some information can be found on the effectiveness and adequacy of the French system there is only a very limited amount of empirical evidence available on the overall effectiveness of tax reliefs supporting biodiversity conservation.

As tax reliefs in the majority of cases, by definition, do not deliver funding, their main role in supporting biodiversity conservation is to incentivise tax payers to maintain the status of ecologically important lands. Although there is limited scope to specifically target tax reliefs for delivering conservation objectives, tax reliefs can easily be incorporated into existing fiscal infrastructures, because they do not require new instruments to be created.

3.2 Description and basic features of the economic instrument

3.2.1 Definition and key design features

Tax reliefs for biodiversity conservation are defined as "arrangements and provisions in general tax schemes, with the explicit aim of providing positive financial incentives steering the taxpayers' behaviour in a more biodiversity-friendly direction" (Oosterhuis, 2011, p.89). Within this chapter we apply this definition and by tax reliefs we cover a range of taxation tools, including tax exemptions, tax reductions and tax benefits.

Environmental taxes – taxes with a base which "*is a physical unit (or a proxy of it) of something that has a proven, specific negative impact on the environment*" (Eurostat, 2016) - are excluded as they serve as revenue-raising tools compared to tax reliefs which, by definition, do not raise any revenue but provide financial incentive to taxpayers.
In recent publications it has been noted that tax reliefs are similar to Payment for Ecosystem Services (PES) in that they also reward positive conservation efforts (Oosterhuis, 2011, ten Brink and Oosterhuis, 2014), but are very distinct from PES in terms of the mechanisms of providing the incentives. For instance, a key difference between tax reliefs and agri-environmental measures under the EU's Common Agriculture Policy (CAP), which can be seen as a type of PES, is that while agri-environment payments are in most cases based on the farmers' costs and income foregone, the

amounts of the financial incentives resulting from the tax reliefs are not linked to the cost or benefit of the conservation action but are related to general tax, e.g. property or income taxes.

Tax reliefs supporting biodiversity conservation are linked to general taxes which are imposed by public institutions. Within this chapter the three main types of tax reliefs that are analysed are the following:

- Land and/or property tax exemptions or reductions for nature areas: these tax reliefs are usually applied at the local level and can have important revenue loss implications for local and regional authorities (see section 3.4 for the impacts of the French unbuilt land property tax exemption on local administrations). Shine (2004) further differentiates the property tax-related tools into two categories: the previously mentioned tax exemption or reduction for nature areas, and property taxes with differentiated rates for specific land categories.
- Inheritance, capital gains, gifts and transfer tax exemptions or reduced rates for nature areas: in contrast to the above tax exemptions these tax reliefs are usually applied at the national level and are used when specified land is transferred from one owner to another, either due to the death of the original owner or as part of a donation.
- Income and corporate tax exemptions or reductions: similarly to the above category, these tax reliefs are also generally applied at the national level and are linked to expenses or investment in nature. In this sense, these tax reliefs in some ways can provide more direct funding for biodiversity conservation measures (see section 3.4 for the French tax exemption from income taxes for Natura 2000 site management costs.

In addition to the above categories, Oosterhuis (2011) also notes that reduced tax rates could be used for product taxes, VAT and import and export duties in the case of eco-labelled / certified products and that exemptions can be provided from resource use taxes if resources are sustainably used. Nevertheless, in this case study national examples were only identified for the first three categories and therefore the latter ones are not detailed in subsequent sections.

3.2.2 Relevant actors

As indicated above, tax reliefs for biodiversity conservation are linked to general taxes which are imposed by public bodies and thus such bodies are mainly responsible for their implementation. Furthermore, tax authorities and public bodies dealing with biodiversity conservation can also coordinate their activities (Oosterhuis, 2011).

It should also be mentioned that the power to levy taxes is an EU Member State competence and therefore the EU itself can only play a very limited role in this domain. The same therefore applies to tax reliefs supporting biodiversity conservation.

The 'beneficiaries' of the tax reliefs are tax payers on whom general taxes are levied. On the other hand, tax reliefs have wider implications for the general public as they reduce the overall tax base, thus requiring reductions in public expenditure or additional sources of tax revenue. In addition, as the tax reliefs analysed in this chapter aim to support biodiversity conservation, the general public benefits from the enhancement of these public goods.

3.2.3 Range of application of the instrument

Since general taxes (e.g. property taxes, inheritance taxes and income taxes) are applied in almost all countries, in theory tax reliefs linked to these taxes could be very widely used for conservation purposes. Nevertheless, experience (e.g. Oosterhuis, 2011) and our research shows that tax reliefs supporting biodiversity conservation are not common and only a limited number of nations apply them to a significant extent (see sections below).

Oosterhuis (2011) notes a set of practical constraints in relation to their wide-scale use:

- Tax reliefs can be only used if the general taxes to which they are linked exist in the first place. For instance, in many countries there are no property taxes on agricultural and horticultural land or forestry. Furthermore, many public entities are not required to pay income or corporate taxes.
- In countries with significant tax evasion problems, tax reliefs might not provide sufficient incentive. Furthermore, if taxes can be legally avoided through tax exemptions this can reduce the significance of biodiversity-relevant tax incentives.
- Tax reliefs provide greater benefits to tax payers with higher incomes and can thus exacerbate social inequalities.
- In terms of the tax reliefs' conservation effectiveness, an important constraint is that it is not possible to differentiate the level of conservation efforts as individual taxpayers cannot be distinguished.
- Finally, while Oosterhuis (2011) indicates that cost-effectiveness is one of the main advantages of tax reliefs, the French experience, presented in section 3.4, shows that in practice this is not always the case.

3.3 Case studies of the use of the instrument for biodiversity financing

3.3.1 EU Member States having implemented the instrument

The most developed system of tax reliefs for biodiversity conservation in the EU is currently implemented in France, where various tax incentives and reductions are in place that support nature conservation objectives specifically linked to Natura 2000 sites. The three main tax reliefs are the following:

- Exemptions from property tax, granted for un-developed property on Natura 2000 sites;
- Exemptions from inheritance tax for the transfer via succession or gift of unbuilt property located on a Natura 2000 site; and
- Tax exemptions for Natura 2000 site management costs.

All three exemptions are conditional on a commitment by the owner to comply with certain management practices which are supported by specific contractual tools between the landowners and the local authorities. A state compensation tool is also closely linked to the property tax exemption: local authorities receive yearly financial compensation from the state as a result of the loss of revenues they incur through the unbuilt land property tax exemption. Furthermore, while environmental taxes are not strictly within the scope of this case study, a planning tax on construction works raised by local authorities in France, part of which is spent on the conservation of

local sensitive natural areas[5], is also described in the sections below due to its contextual importance.

The French tax reliefs supporting biodiversity conservation have now been in place for more than 10 years and therefore provide valuable insights into the conservation effectiveness and cost-efficiency of the system. In section 3.4 the various tax incentives and the additional revenue raising and compensation tools are further analysed and assessed from various perspectives.

Similar to the inheritance tax exemption in France, inheritance tax and capital gains tax exemptions may be granted in the UK when certain assets, including land of outstanding natural beauty and spectacular views and land of outstanding scientific interest (including special areas for conservation of wildlife, plants and trees) are donated or change ownership if a set of specific conditions is fulfilled (see Box 3.1)

Another approach in the UK is the so-called Gift Aid scheme which provides tax relief to general tax payers when they donate to charities, including environmental charities. Through the scheme, charities can claim an extra 25p for every £1 donation and donors can deduct the donation from their income tax (GOV.UK, 2015).

Box 3.1 The Conditional Exemption Tax Incentive in the UK

In the UK, under the Conditional Exemption Tax Incentive, certain assets can be exempt from Inheritance and Capital Gains Taxes when they are given to a new owner or inherited following the death of the original owner. A system of tax reliefs for heritage property of national importance – buildings, land and other objects of significant cultural value – has been in place in the UK since 1975 and was introduced with the aim to conserve and protect these community assets and to keep them in private hands (Natural England 2008).

The qualifying assets include the following (HMRC, 2016):

- land of outstanding natural beauty and spectacular views;
- land of outstanding scientific interest (including special areas for the conservation of wildlife, plants and trees)
- buildings, estates or parklands of outstanding historical or architectural interest; and
- objects with national scientific, historic or artistic interest.

The claim for tax exemption must be sent to HM Revenue and Customs (HMRC) within two years of the transfer of the asset (Natural England, 2008). The new owners should enter into an agreement, also known as the 'undertakings', which requires them to adequately manage the asset and to look after it, to provide access to the general public and to keep the asset within the UK. A Heritage Management Plan is drafted for each asset which provides the specific management plans. In case of non-compliance with these conditions the tax exemption is withdrawn and the tax must be paid. In the case of outstanding land the undertakings specifically relate to the maintenance of the land and the preservation of its character (Natural England, 2008).

Source: HMRC, 2016, Natural England, 2008

Another example of biodiversity-related tax reliefs can be found in Finland. Withana et al. (2014) indicate that in Finland the real estate tax has different rates for unused land in highly populated areas in order to incentivise re-use of land and to reduce pressure on undeveloped land.

[5] Before 2012, local authorities could levy a separate tax on sensitive natural areas nevertheless as part of a tax reform in 2012 this tax was merged into the more general planning tax.

Nevertheless, further details of the scheme are not available and thus its scale of application and its effectiveness are unclear.

Finally, in the Netherlands, a Green Funds Scheme (*Regeling groenprojecten*) exempts investments in eligible green projects from income tax, including biodiversity-related projects in the areas of nature, forestry, landscape and organic agriculture, . The scheme is a joint initiative by the Dutch Ministry of Infrastructure and Environment and the Ministry of Finance and was set up to encourage projects which have environmental benefits. An income tax exemption is offered to 'green' investors and savers and in addition banks can offer loans with lower interest rates for investors in green projects (Netherland Enterprise Agency n.d.). In order to qualify for a green project a 'green certificate' needs to be acquired. Oosterhuis (2011) indicated that in 2002 –7 years after the initiation of the programme – the Green Funds Scheme was assessed by KPMG and CE, but the conservation effectiveness of the programme could not have been quantified with the two exception that certain species were found to be more abundant on organic farmlands. However, additional bird deaths were also recorded under certain eligible projects linked to the deployment of wind turbines.

Similar to the UK Gift Aid scheme, individuals in the Netherlands who donate to Public Benefit Organisations (PBOs), which are defined as institutes with at least 90% of their efforts focusing on public wellbeing (Tax and Customs Administration Netherlands n.d.), can deduct the value of their gifts from their income and corporate taxes. This scheme is also very similar to Canada's Ecological Gift (Ecogift) Programme, which is described in Box 3.2, Oosterhuis (2011) notes that, according to the analysis of the Dutch Ministry of Finance in 2009, the gift deduction scheme did not have a statistically significant impact on the number of donations, whereas the Canadian scheme is considered to be very effective in increasing donations.

3.3.2 Wider experiences and proposals outside the EU

Several biodiversity conservation-targeted tax relief schemes have been also implemented outside the EU. As noted above, Canada's Ecogift Programme provides tax benefits to individuals who donate their ecologically sensitive land to a set of specified recipients who are then responsible for the conservation and sustainable management of the land. The US has implemented tax incentives linked to conservation easements, primarily at the state level – see Box 3.2.

Box 3.2 Tax incentives in the United States and Canada linked to conservation easements and ecological gifts

In North America, both within the United States and Canada, tax incentives have been implemented to provide fiscal incentives for biodiversity conservation.

In the US, conservation easements have an important role in biodiversity conservation. These are legally binding restrictions placed on a piece of property with the aim to protect it and its resources through the prohibition of specific development on the land. As of October 2015, 113,038 conservation easements with a total area of 23.5 million acres existed in the US (National Conservation Easement Database, 2015). One explanation for the popularity of the conservation easements is that US environmental land-use regulations are relatively weak and are governed at the local level, motivating private land owners to sell or donate the public interest of their land (ten Brink, 2011).

Donations of conservation easements are incentivised by tax reductions and charitable deductions. At the federal level the donations are supported via income tax incentives and land under conservation easement has reduced federal estate tax as inheritance. Furthermore, federal tax reliefs exist for expenditures arising from conservation measures and for revenues resulting from natural habitat management actions (Oosterhuis, 2011).

In addition to the incentives at the federal level, some US states also provide tax reliefs for those who maintain wildlife habitats (Oosterhuis, 2011). However, there is considerable variation between these systems and their effectiveness differs correspondingly.

In Canada, the Ecological Gift Programme established in 1995 offers significant tax benefits to owners of ecologically sensitive lands when they donate their land, fully or in part, to a set of specified recipients. These include environmental charities, federal, provincial and territorial governments and municipalities, and become responsible for conservation on the donated land. According to the Ministry of Environment and Climate Change Canada (2016), between the launch of the programme and January 2016 more than 1000 Canadians have donated over 1200 ecological gifts, valued at more than CA$748 million.

In return for the donation of the land, the donors receive special income tax benefits. The donors receive a tax receipt which reflects the full value of the donated land. Private individuals use this amount to calculate a non-refundable tax credit, while corporate donors can directly deduct from their taxable income. If a proportion of the tax receipt remains unused, it can be carried forward for up to 10 years and capital gains are exempt from taxes.

Source: Ministry of Environment and Climate Change Canada 2016, National Conservation Easement Database 2015; Oosterhuis, 2011; ten Brink, 2011

Oosterhuis (2011) noted that South Africa has previously offered tax exemptions for any land or building located within national parks. However, the National Parks Act which provided the legal basis of this exemption was repealed by the Protected Areas Amendment Act in 2003, and the exemptions were abolished. Under the South African Income Tax Act, expenses for the eradication of invasive alien species and invasive alien vegetation can be deducted from income taxes. Nevertheless, according to Paterson (2005) the restricted eligibility of both the landowners and the eradication activities limit the effectiveness of this tool.

In Bolivia, certified forestry holders receive a tax benefit for an amount that approximately offsets the direct costs incurred for acquiring the certification (Oosterhuis, 2011).

Finally, similar to the Dutch Green Funds Scheme in which banks can provide low-interest loans to eligible projects, urban greening in Nagoya, Japan is supported by the Nagoya Bank via a loan scheme with low interest rates. Land holders are required to make 10% to 20% of their land covered by green space, and a new certification scheme was implemented in 2008 (Hayashi, 2010).

3.4 Analysis of the French system

3.4.1 Description, history and key features/design of the instruments

As indicated above, France is the EU Member State with the most developed tax relief system for biodiversity conservation.

In France, a number of tax reliefs have been introduced in recent years which can be regarded as financial incentives for biodiversity conservation. These tools are specifically linked to Natura 2000 sites and contractual tools linked to these sites have been identified as a characteristic feature of the French approach (Allagh Dhuisme et al. 2015).

Management agreements (*engagements de gestion*) are one example of such contractual tools, which can take the form of Natura 2000 Charters or Contracts (see Box 3.3). Through these,

landowners commit to site-specific objectives as set out in a Document of Objectives (DOCOB) prepared by the local authority in consultation with all stakeholders.

Box 3.3 Natura 2000 Contracts and Charters

Natura 2000 Contract (Contrat Natura 2000) defines management lines in conformity with the DOCOB. It sets out the nature and modalities of State aid (notably tax breaks to cover the site's management costs) and the signatory's obligations in return (Article L414-3-I Environmental Code).

Natura 2000 Charter (Charte Natura 2000) is a softer tool, but nevertheless renders its signatories eligible for certain tax benefits. It does not however, provide any direct financial state support from the State for the management of the site (Article L414-3-II Environmental Code).

Source: Environmental Code

Landowners who commit to these agreements can benefit from various tax reliefs – a financial 'compensation' seen as a way to ameliorate possible reluctance to accept the scheme and its attached duties. There are currently three main types of tax reliefs in France to incentivise landowners. The first is an exemption from property tax *(exonération de taxe foncière sur les propriétés non bâties, TFPNB*), which is normally applicable to unbuilt land but fully extended to Natura 2000 sites. Also, a Natura 2000 site may be eligible for a 75% reduction of inheritance tax when gifted or transferred through a will, if the recipient enters an 18-year management agreement conforming to the site objectives. Finally, tax reductions or breaks are available for landowners who have incurred costs in the management of the site. While landowners can only benefit from the latter if they commit to Natura 2000 Contracts, the property tax and inheritance tax exemptions also apply to those who enter the Natura 2000 Charters.

While different in nature, revenue-raising taxes and a compensation scheme which aim to finance local authorities' conservation policies are closely linked to the tax reliefs and are also therefore presented in this chapter. To account for local authorities' loss of earnings due to the unbuilt property tax exemption, for example, the state pays a yearly compensation to the authorities, covering part of the cost. The department also levies a planning tax (*taxe d'aménagement, TA*) on all construction works subject to authorisation, part of which can then be allocated to the conservation of local sensitive natural sites. Before 2012, local administrations could levy a separate tax on sensitive natural areas (*taxe départmentales des espaces naturels sensibles, TDENS*, but this was merged into the more general planning tax in 2012.

The relationship of the tax relief and compensation schemes in France, which are based upon the landowners' endorsement of management agreements, is illustrated in Figure 3.1

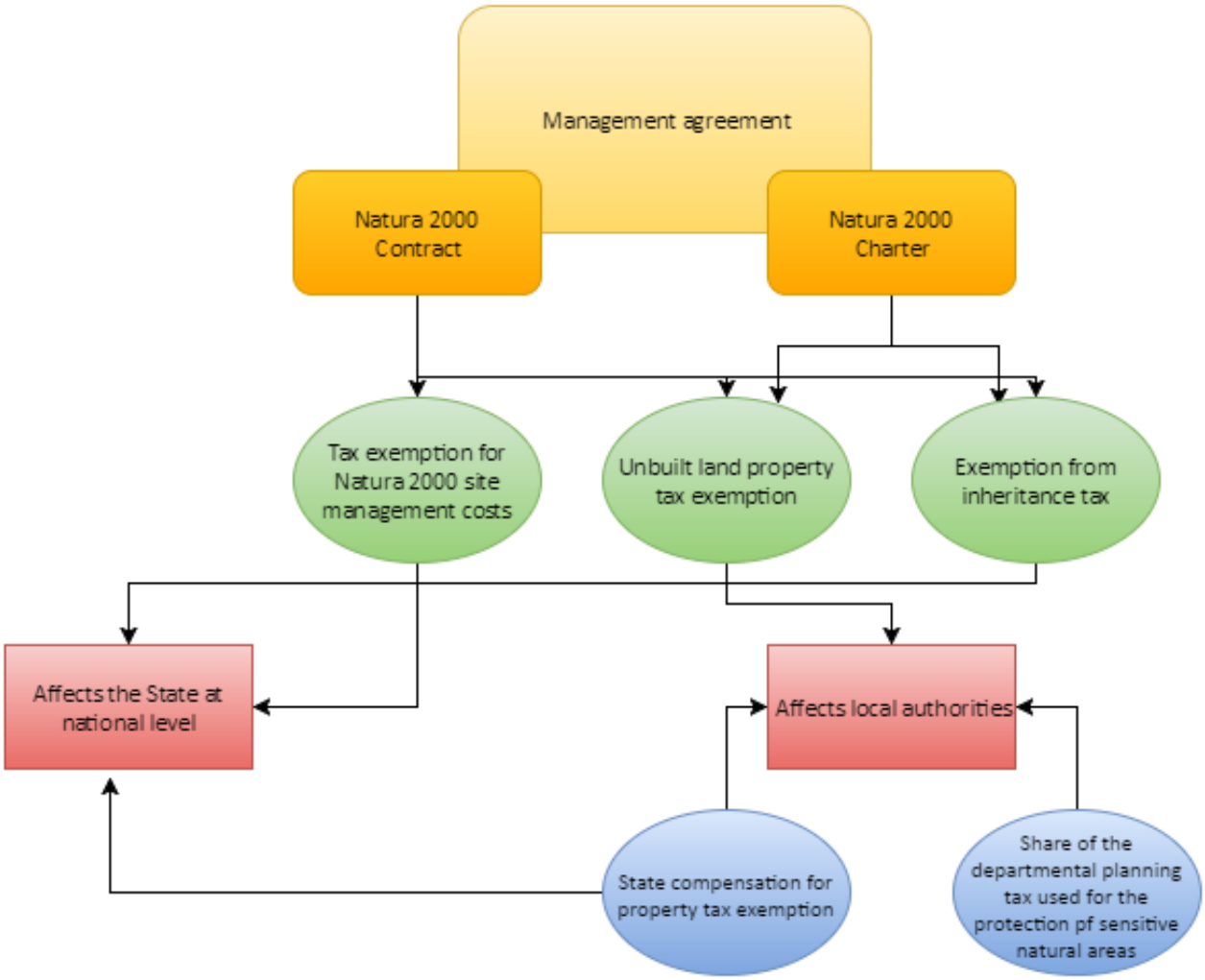

Figure 3.1 Tax relief schemes and revenue raising and compensation tools in France supporting biodiversity conservation in Natura 2000 sites

The tax relief tools were mainly introduced in 2005 through the Law on the Development of Rural Areas (*Loi sur le développement des territoires ruraux*). They were the result of the assessment of the French Government of budgeting for natural heritage and specifically for Natura 2000 (Allag Dhuisme et al. 2015).

The scheme has now been in place for over 10 years, and stakeholders have identified the important role it has played in overcoming opposition to Natura 2000 among landowners. Its direct implications with regard to conservation objectives are difficult to assess due to a lack of structured monitoring and information on potential results, but it is generally thought that the tax benefits linked to the long-term conservation agreements have had a positive impact on Natura 2000 sites.

However, concerns about the cost-effectiveness of the scheme have brought some of its landmark elements under consideration in recent parliamentary debates. For example, during the formulation of the 2016 annual Tax Law (*Loi de Finances*), senators narrowly voted against an amendment by the 1st parliamentary chamber (*Assemblée Nationale*) to abolish. the unbuilt property tax exemption In addition, although the scheme initially supported strong involvement of municipal and departmental

authorities, modality changes to the state compensation and planning tax have also affected the French Natura 2000 governance and institutional model (see details below).

Further details of the various tools are provided in the subsequent sections, while the key characteristics of the tax relief schemes and the relevant revenue raising and compensation tools are summarised in Table 3.1 and 3.2, respectively.

Table 3.1 Overview of the tax relief schemes supporting biodiversity conservation in France

	Unbuilt land property tax exemption	Exemption from inheritance tax	Reduction of net taxable property income for improvement of unbuilt property and major works of maintenance and restoration	Tax deduction for the maintenance and protection of natural heritage
Name of scheme in French	Exonération de taxe foncière sur les propriétés non bâties (TFPNB)	Exonération de droits de mutation à titre gratuit en faveur des successions et donations intéressant les propriétés non bâties (zones NATURA 2000, inclues)	Déduction de l'impôt sur le revenu foncier des dépenses d'amélioration afférentes aux propriétés non bâties ainsi que des travaux de restauration et de gros entretien effectués sur certains espaces naturels	Réduction d'impôt sur le revenu au titre des dépenses réalisées sur certains espaces naturels en vue du maintien et de la protection du patrimoine naturel
Year of introduction	2005	2006	2005	2009
Short description	Exempts the landowner from the property tax on unbuilt land normally collected by the commune (or group of communes).	Exemption of 75% of the inheritance tax for the transfer via succession or gift of unbuilt property located on a Natura 2000 site.	Expenses incurred for the improvement of unbuilt property and major works of maintenance and restoration on a Natura 2000 site are deductible from net taxable property income.	Tax reductions for landowners, on the basis of expenses (other than interests on a loan) incurred for the maintenance and protection of natural heritage.
Legal base	Art. 1395 E General Tax Code	Art. 793, 2. 7° General Tax Code	Article 31-I-2°-c quinquies General Tax Code	Art. 199 octovicies General Tax Code
Conditions	1. The site must be on the list of Natura 2000 sites designated by the departmental prefect and have an officially approved DOCOB. 2. The landowner must enter a management agreement (Natura 2000 contract or charter), and a copy must be attached to the tax return before the 1st of January of the year following the signature.	1. Heir, legatee or donee to enter an 18-year land management commitment in compliance with DOCOB conservation objectives. 2. The act stating the gift/the declaration of succession must be supported by a copy of the administrative decision justifying that the property in question is the object of a management agreement conforming to the conservation objectives for the site.	1. The works must receive prior approval by the departmental authority checking compatibility with the site's DOCOB. 2. The landowner must include with tax return: - A copy of prior authorisation by the departmental authority for works carried out; - Documents justifying the nature, amount, and payment for the works; - A copy of the administrative decision designating the sites in question (on which the works are carried out) as Natura 2000 (e.g. a copy of a Natura 2000 charter or contract).	1. Landowners need to obtain a French Heritage Foundation label (*Fondation du Patrimoine*), which requires the site to be open or accessible to the public (unless the site is too vulnerable for this). 2. They must be able to produce, upon request: - A copy of the Heritage Foundation label award decision; - A favourable decision from the authority in charge of environment regarding the expenses; - Proofs of expenditure.

Duration	Applicable for 5 years, and renewable for the same duration.	N/A, one-off	For expenses incurred in the taxable year.	For expenses incurred in the taxable year.
Amount	100% tax exemption	75% of inheritance tax on land is exempt	100% tax reduction	Taxation rate is fixed at 18% of expenses (subject to review). Maximum recoverable per year is 10 000€.

Table 3.2 Overview of the related revenue-raising and compensation tools available to French authorities

	State compensation for property tax exemption	Share of the departmental planning tax
Name of scheme in French	Compensation par l'État de l'exonération de TFPNB	Part départementale de la taxe d'aménagement (TA) Before 2012: Taxe départementale des espaces naturels sensibles (TDENS)
Year of introduction	2005	First introduced in 1985 but was reformed in 2012. Until 2012 a separate tax existed which targeted sensitive natural areas.
Short description	The State compensates the communes (or group of communes) for their loss of earnings due to the exemption.	This share of the planning tax – levied by the department – aims to finance the local authority's policy for the protection of sensitive natural areas.
Legal base	Art. 146 Law for the Development of Rural Land	Art. L331-3 Urbanism Code
Conditions	N/A	Applies to whole departmental territory (not only sensitive areas): for all building projects, renovation or any other work that is subject to authorisation. - It is triggered by delivery of permit - Department can design tax allocation between protection of sensitive natural areas, and expenses of the councils for architecture, urbanism and the environment; pursuing the objectives set out in Art. L142-1 of the Urbanism Code.
Duration	Yearly/monthly	Ad hoc (upon grant of planning authorisation).
Amount	Calculated yearly and for each commune (or group of communes). Up to 2009 it was 100% but has been successively reduced: 83 % in 2010, 78 % in 2011, 72 % in 2011, 61 % in 2012, and 51 % in 2013.	Before 2012 the rate of the specific tax on sensitive natural areas was capped at 2%. From 2012 the total planning tax rate cannot exceed 2.5%. The calculation for the general planning tax is done as follows: (taxable surface (construction or planning) x flat-rate value (except set value for certain planning works) x rate set by the Council.

3.4.2 Conservation effectiveness

The various tax relief measures' structure seem to deliver adequate objectives for biodiversity conservation. Conditional upon adherence to a management agreement conforming to the objectives set out in the DOCOB, the property and inheritance tax exemptions and the tax reductions for maintenance and protection expenses provide a financial incentive to engage in a contractual commitment to maintain and protect the site. One report stated that around 50% of Natura 2000 charters are signed on the basis of such tax benefits (Allag Dhuisme et al. 2015, p.35).

In theory, the tax reduction tools for major works carried out on the site or expenses incurred for its maintenance are well-designed to guarantee control over the usage of the land: any tax deduction for the landowner requires proof of prior approval from the departmental authority in charge of environmental matters (Caudal, 2008).

The duration of the schemes also seems appropriate to encourage ongoing management and conservation: the property tax exemption is provided for an initial 5 years and renewable6; the expenses incurred for maintenance and/or protection of the site are recoverable on a yearly basis through tax reductions; and the transferees of a property located on a Natura 2000 site are required to enter into an 18-year-long contract (committing to the site's conservation objectives) in order to benefit from an inheritance tax exemption.

In terms of geographic distribution, the state has committed to increase the involvement of local authorities in the implementation of Natura 2000. However, several stakeholders at the local level consider that this commitment is not matched by appropriate funding measures. The state compensation for the loss of earnings resulting from the unbuilt land property tax exemption has been progressively lowered since 2009, and there is no independent source of revenue for the regions (compared to the departments' benefit from the planning tax)7 (Allag Dhuisme et al. 2015). In her article, Delivré (2006) is generally positive about the tax as a tool for local environmental fiscality. But, without changing the process of collection of the tax, she suggests that the revenues it yields could be redelivered to regions; for instance, to facilitate the protection of natural spaces under their charge.

There is also concern about the lack of indicators to assess conservation progress in general in France, with the observation that policy focuses more on the *means* and *implementation* rather than the results. "Providing better tools for monitoring and evaluating conservation outcomes" was identified as one of the main areas for improvement for Natura 2000 sites in France, in a recent report commissioned by the Ministry for the Environment, Energy and Sea (Allag Dhuisme et al. 2015, p.3). The authors suggested that a clear baseline and means to evaluate progress in terms of both expectations and efforts are needed to sustain the motivation of the different actors involved in the scheme and achieve effective conservation outcomes. Consequently, these concerns also have implications for the assessment of the conservation effectiveness of the tax relief tools.

[6] Even though Caudal (2008) suggests that some adjustability should be in place to extend that period beyond 5 years – rather than impose a complete renewal of the administrative process where long-term plans are already in place for the protection of biodiversity.

[7] As of August 2016 the administrative divisions in France look as follows: The French Republic is divided into 18 regions (including 13 metropolitan and 5 overseas regions). The 13 metropolitan regions are then subdivided into 96 departments which correspond to local authorities. These departments are subdivided into 323 arrondissements, which are then subdivided into 1995 cantons. Finally, the cantons are subdivided into 36,529 communes.

3.4.3 Efficiency or cost-effectiveness

It is difficult to evaluate the cost-effectiveness of the tax relief, because information on the subject is limited. Nevertheless, it was noted in parliamentary debates that the cost of existing fiscal measures is relatively low for the State (Sénat, 2015c). In particular, the documents produced by the French Senate, supporting the preparation of the 2016 Tax Law, and specifically examining fiscal expenses for Ecology, Sustainable Development and Mobility (Sénat, 2015a; Sénat, 2015b[8]) provide further insights into this subject. Table 3.3 below summarises State expenses based on these sources; the numbers represent estimations for 2015 used in the course of parliamentary debates.

Table 3.3 Estimated fiscal expenses for State or local tax measures linked to Natura 2000 sites in France in 2015

State or local tax measures contributing to Natura 2000 in France	Estimated expenses in 2015
Unbuilt land property tax exemption	€3.7 million
- Cost of the TFPNB exemption for local authorities	€2.7 million
- Cost of the TFPNB exemption for State (compensation)	€1 million
Tax exemptions for Natura 2000 site management and protection costs	€1 million
Exemption (3/4) from inheritance tax	€5 million

Source: Sénat, 2015a; Sénat, 2015b; Sénat, 2015c

One prominent concern, however, is that the low cost for the State is linked to the low cost-effectiveness of the tools in place; with a low number of beneficiaries/undertakers. One report states that "they are not delivering the effects anticipated at the time of their implementation", and are only "very feebly incentivising for the individuals or companies involved" (Pelosse et al. 2011). It therefore seems pertinent to examine the cost-effectiveness of the different tools in turn.

Unbuilt land property tax exemption

The efficiency of different tax mechanisms designed to incentivise individuals and/or companies to take action for the protection of biodiversity was evaluated in an annex for the preparation of the 2011 Tax Law (Committee for the monitoring of fiscal expenses and social niches 2011). The authors judged the property tax exemption to be of poor efficiency, and concluded that taxation on unbuilt property is not the primary factor affecting the transformation of sensitive natural sites (Committee for the monitoring of fiscal expenses and social niches 2011). The tool was designed to compensate landowners for consequences stemming from the designation of their land as Natura 2000. The 2011 report predicted that the average annual cost of this measure would rise, with no positive effects for conservation due to landowners subscribing to more soft

[8] This report on the same 2016 tax law provides additional information on the cost of the unbuilt property tax exemption for local authorities and the state respectively. See in particular reference to a 2011 report by the Committee for the monitoring of fiscal expenses and social niches on the estimation of these costs, accessible at: http://www.economie.gouv.fr/files/rapport-comite-evaluation-depenses-fiscales-et-niches-sociales.pdf

agreements (Natura 2000 charters) rather than contracts. However, the fiscal expense has not changed over time.

In a 2015 parliamentary debate it was stated that the property tax exemption is currently utilised by around 5300 parties, explaining the relatively low cost to the national government of around €1 million. In the debate, the Government emphasized the inefficiency of the system, while senators stressed the importance of the schemes in achieving public uptake and therefore also meeting conservation goals (Radisson, 2015).

Exemption from inheritance tax

The exemption from inheritance tax seems to be the most effective tool in place. In 2011, it already appeared the most popular with tax-payers (with an average annual cost of around €2 million). It was assessed in the 2011 report as being an effective measure, of intermediate efficiency (Committee for the monitoring of fiscal expenses and social niches 2011). In the 2016 tax year, expenses for the exemption were estimated to be around €5 million, indicating a potential increase in the use of the mechanism (Sénat 2015a). The long period of commitment to which an heir, donee or legatee must subscribe, in order to benefit from the exemption, also ensures durable protection of the site, with a one-off administrative expense (Caudal, 2008).

Tax exemptions for Natura 2000 site management costs

Tax exemptions include (i) reduction of net taxable property income for improvement of unbuilt property and major works of maintenance and restoration and (ii) tax deductions for the maintenance and protection of natural heritage.

Although the tax benefits for landowners maintaining and protecting natural heritage were expected to be more effective, they were, at least in 2011, not widely used. In particular, the 2009 adoption of Art.199 octovicies of the General Tax Code was expected to provide a strong incentive, by allowing a direct tax reduction rather than a deduction from taxable income. Nevertheless in 2011, the Heritage Foundation (in charge of providing a label to sites whose landowners wish to benefit from tax reduction, see above) was said to have only confirmed 2 labels since the measure was introduced. The fiscal cost of this was therefore only €5000 over two years (Pelosse et al. 2011). This can notably be linked to other available funding from the Heritage Foundation, such as project subsidies for the protection of biodiversity, with between €100,000 and €150,000 spent over three years. Rambaud (2012) explained this as a result of poor information and complex implementation of the scheme, with the involvement of the Heritage Foundation.

State compensation for property tax exemption

State compensation is not very costly, but it is also not considered cost-efficient by the government (see above the Government's comments on the unbuilt land property tax exemption itself).

Initially, state compensation was calculated by multiplying the sum lost with the unbuilt property tax rate voted by the commune. However a reform in 2009 introduced the digressive reimbursement by the State to the local authorities of their loss of earnings (*dégressivité du remboursement par l'Etat aux communes de leur manque à gagner*). The proportion compensated shrunk from 83% in 2009 to 51% in 2013 (Ministère de l'égalité des territoires et du logement 2013).

In the debate preceding the introduction of the Tax Law for 2016, the finance committee stated that "nothing indicates that the unbuilt land property tax exemption effectively favours the protection of sensitive natural sites"; that more direct and efficient forms of aid to achieve this purpose are already in place (a predicted cost of €7 million for 2016); and that removing the exemption from the General Tax Code would be a simplification, and would not jeopardise the protection of Natura 2000 sites (Sénat, 2015b).

Share of the departmental planning tax and the former tax on sensitive natural areas

It is difficult to assess whether the revenues collected through the departmental tax were used efficiently for the conservation of biodiversity. Generally, the available information highlights very disparate usage by different departments, with poor transparency as to distribution.

As indicated above, prior to the 2012 reform a separate tax on sensitive natural areas (TDENS) existed which could have been levied by local administrations (departments) and its revenues were used to manage natural sites and for restoration activities. This tax was considered inefficient by several authors. For instance, Delivré (2006) noted the slow process of collection, accountancy and re-delivery of the TDENS to the departmental authorities, although she emphasises that this is not unique to this tax.

In 2012, the TDENS was merged into a general planning tax collected by the department – with little change expected in terms of effect. The following points highlighted as being characteristic of the TDENS between 2000 and 2009 are therefore still relevant (Pelosse et al. 2011):

- Under-consumption: €370 million remained as surplus over the 9 year period as a result of credit postponement to the following year.
- Varying tax rates: in 2009, 9 out of 100 departments had not implemented a TDENS, and tax rates in other departments varied between 0.1% and 2%, with an average of 1%.
- Rising revenue from TDENS between 2000 and 2009 (€102 million in 2000 and €226 million in 2009)
- Varying uses of revenue: At the end of the period, 2/3 (63) departments had a positive balance, 2 were stable, and 22 had a negative balance.
- Poor visibility of uses, and ensuing difficulty in assessing cost-effectiveness.

From this information, it seems that considerable revenue was raised from low rates (with recurring surpluses); suggesting significant potential for a more cost-effective use of the measure/its revenues. It was also suggested that there might be alternative sources of funding which are not documented.

3.4.4 Social impacts

Overcoming public opposition has been one of the principal challenges in the implementation of the Natura 2000 network in France (Allag Dhuisme et al. 2015). The tax relief tools appear to address this appropriately, by proposing "compensation" for management agreements through local and site-specific contracts. DOCOBs are developed by a site-specific steering committee (*comité de pilotage, COPIL*) formed upon designation of the sites and composed of a variety of stakeholders:

e.g. State and local authority representatives, trade unions, conservation organisations, landowners (Ministère de l'Environnement, de l'Energie et de la Mer, 2011).[9]

The tax tools implemented do contribute to improving public acceptability. As mentioned above, it is estimated that at least 50% of Natura 2000 charters or contracts are entered into for the accompanying tax benefits (Allag Dhuisme et al. 2015). However, the low subscription to the scheme minimises its potential impact and highlights issues of procedure – notably a lack of information and a complex implementation of the scheme (Rambaud 2012).

It was also stressed by different actors that a satisfactory balance between management actions and personal costs, which is necessary for public acceptance, is intricately linked to the level of exemption received by the site owners, or the amount paid to local authorities in the form of compensation. In a 2015 report analysing Natura 2000 in France, the authors stated "many rural communes gain an important part of their revenue through the unbuilt land property tax, and that [the affection of state compensation by a digressive rate] therefore weakens those localities very directly, jeopardising many years of concertation around Natura 2000" (Allag Dhuisme et al. 2015). This is particularly the case in some rural areas where – according to Senator Jean-Paul Emorine – up to 15% or 20% of land is designated as Natura 2000 (Sénat, 2015c).

3.4.5 Institutional context and legal requirements

Delegating governance to local authorities for better achievement of conservation objectives has been another key element of the French approach to Natura 2000. There seems to be a general consensus on the added value for local governance of the documents of objectives (DOCOBs) and steering committees (COPILs) for each site – 60% of which are led by local representatives (Allag Dhuisme et al. 2015).

Nevertheless, Allag Dhuisme et al. (2015) noted in a recent report that Natura 2000 in France is still seen as a state policy; and that reductions to state funding (mainly the digressive compensation for loss of earnings from the unbuilt land property tax exemption, and a reduction in the share of maintenance work expenses deductible from taxes) could lead to a disengagement from stakeholders. The delegated authorities in charge of Natura 2000 – the Regional Directorate for Environment, Development and Housing (DREAL) and the Departmental Directorate for Territories (DDT) – are often weak in terms of staff availability or competences regarding biodiversity. Allag Dhuisme et al. (2015) suggest that an evaluation of needs should be carried out first, followed by an evaluation of management and mobilisation of competences, in order to optimise the efficiency of implementing Natura 2000 depending on needs.

Another prominent issue in the French public debate on biodiversity financing is the lack of funding for the regional authorities in particular, compared to the departmental ones, which are at a lower administrative level. The planning tax enables *departments* to raise revenue dedicated to the restoration or conservation of sensitive natural sites – but there is no equivalent source of revenue for the regions. In 2006, Delivré was generally positive about the planning tax as a local environmental fiscal tool. Without changing the process of collection of the tax, she suggested that the revenues it yields could be redelivered to regions, for example to enable the protection of natural spaces under their charge (Delivré 2006). The authors of a 2011 report commissioned by the French Government also noted that "the regions were recently explicitly entrusted with specific

[9] Note however considerations of the limits of this deliberative approach, e.g. in Foriter 2014.

responsibilities in terms of biodiversity, without the creation or transfer by the State of financial means specifically dedicated to this end, such as the ones available to departments through the [departmental tax affected to the protection of sensitive natural sites]" (Pelosse et al. 2011). There has been a renewed call, at the time of the reform of the departmental tax associated with the protection of sensitive sites, to allow regions to collect tax on new developments or works (Stop aux Subventions a la Pollution 2012). However, members of the French Assembly of Departments (ADF) remain opposed to this suggestion (Pelosse et al. 2011).

Generally the government's position is to simplify processes, with the perception that finance for Natura 2000 tax benefits preserves an unnecessary "fiscal niche" which has been replaced by "more powerful measures" (Sénat 2015c). For instance, a Secretary of State noted in a recent debate that the (now) Ministry for the Environment, Energy and Sea dedicates €4.4 million per year to the protection of Natura 2000 sites, with an additional €4.03 million from the European Agricultural Fund for Rural Development (EAFRD)– rendering the tax benefit measures obsolete.

Finally, there is also a question as to the fitness of certain tools for the protection of biodiversity, when these rely on existing frameworks for the protection of cultural or architectural (rather than natural) heritage; and a suggestion that biodiversity-specific organisations should be put in charge of controlling these tools. For example, tax reductions for landowners, on the basis of expenses incurred for the maintenance and protection of natural heritage, require the obtainment of a "Heritage Foundation" label, from an organisation created for and mainly in charge of preserving architectural heritage. Pelosse *et al.* (2011) therefore conclude that this process is ill-adapted to achieve conservation goals as set out under Natura 2000 and that this explains the lack of subscription to the scheme. Caudal (2008) also suggests that an organisation with specific scientific knowledge on biodiversity would be better suited to oversee the maintenance, works and activities carried out on sites.

3.5 Conclusions

3.5.1 Comparing the different designs for implementation with a focus on the French example

Examples of tax reliefs supporting biodiversity conservation can be found in Europe, North America and some parts of the developing world. However, due to the different nature of the types and designs of tax reliefs applied in these countries it is challenging to draw overarching conclusions. At the same time, there are some similarities between the different national schemes. For instance, the French and UK inheritance tax exemptions are both applied to assets which are transferred via succession or as a gift, but, while in France this exemption is specifically linked to unbuilt properties on Natura 2000 sites, the UK system has a wider scope and land of outstanding natural beauty is only one of several categories of assets to which the inheritance tax exemption can be applied.

Income tax deductions rewarding gifts and donations for environmental charities and similar organisations were also identified in several countries, such as in the UK, the Netherlands and Canada. There are instances of income tax deductions for charitable donations in other EU Member States as well, but their relevance to biodiversity protection is less clear.

Although information is available on the design of the identified tax relief schemes, there is only very limited empirical evidence on their conservation effectiveness and therefore this aspect cannot be compared.

At the same time, drawing on the tax relief system in France, several conclusions can be made:

- One of the key characteristics of the French biodiversity-related tax relief system is its link to Natura 2000 sites, which makes it unique within the EU. The policy framework guiding the Natura 2000 network in the EU provides a strong base for the national tax relief system and seems an effective strategy of overcoming public opposition to Natura 2000 sites in France. The contractual tools used in France also proved to be an effective way to avoid non-compliance.
- Although the conservation objectives of the tax reliefs are supported by long-term agreements, there is a general lack of indicators and monitoring systems and therefore it is very challenging to adequately assess conservation effectiveness.
- Compared to the (potential) positive impacts on conservation objectives and social acceptance, evidence of the cost-effectiveness of the tax relief system in France is less convincing and concerns have been raised by various actors.
- With regard to the role of tax reliefs in the overall policy mix supporting biodiversity protection, the French example highlights the need to carefully assess the combined effect of tax reliefs and other incentives in order to avoid double compensation. At the same time, a system where tax reliefs can act as a supporting tool to maintain already existing nature-friendly practices, with further financial incentives aiming to provide added value, can be effective.
- Finally, in order to achieve a high uptake of tax reliefs, the policy context within which the tax reliefs are applied needs to be assessed. This was also highlighted by the North American and South African examples.

3.5.2 Transfer potential to other EU Member States

Since general taxes, such as property taxes, inheritance taxes and income taxes, are applied worldwide, in theory tax reliefs linked to these taxes could be very widely used for conservation purposes. As there is no need to create new taxes these tax reliefs could easily fit into existing fiscal infrastructures.

At the same time, it is essential to assess the role of tax reliefs in the broader policy mix, in particular their impacts on other financial incentives, such as grants (see the point above about the French system).

Research conducted for this case study confirmed that tax reliefs for conservation purposes are not used on a large scale, and that information on the few existing schemes is also fairly limited. We therefore suggest that knowledge could be further shared and promoted in other EU Member States. For instance, the lessons learnt from the French example presented in this chapter, which to our knowledge has not been analysed elsewhere in such detail, should be further disseminated to other EU Member States.

3.5.3 Transfer potential to other governmental levels

Tax reliefs are linked to general taxes which are levied by national, regional or local governments depending on the governance structure of the state in question, and can thus be applied at all governmental levels.

The French example showed that the application of the tax reliefs can lead to various problems at different governmental levels. For instance, the revenue losses for local authorities as a result of the applied property tax exemptions created difficulties at the local level and necessitated state compensation. Furthermore, the more recent decrease in such compensations has led to additional problems and evidence suggests that it may have further negative impacts on the effectiveness of the whole system and lead to the disengagement of key stakeholders.

3.5.4 Potential for upscaling to EU level

As already indicated, the power to levy taxes and thus tax reliefs is an EU Member State competence and therefore the EU itself can only have a very limited role in this sense. At the same time, the EU could, for instance, promote the use of tax reliefs delivering environmental objectives in the country-specific recommendations as part of the European Semester process, the EU initiative supporting economic and fiscal policy coordination.

As Withana, Kretschmer and Farmer (2013) note, environmental concerns have been mainstreamed into the European Semester process to only a limited extent. Nevertheless, there have already been instances in which Member States were asked to increase their use of environmental taxes. This could set a precedent to promote the wider application of environmental fiscal reform, including the use of tax reliefs.

3.5.5 Consideration of the actual / potential contribution of the instrument relative to the assessed financing needs for biodiversity and Natura 2000

Due to their nature, tax reliefs are primarily not designed to provide funding for biodiversity conservation per se and are therefore not particularly suited to deliver the finance needs to fulfil EU conservation objectives or to reduce the funding gap of implementing Natura 2000. They may, however, reduce the need for dedicated funding for conservation purposes, particularly the need for compensation payments made to prevent changes in land use.

Beyond contributing to financial needs, tax reliefs for biodiversity conservation can have a role in promoting biodiversity-friendly use of land by the general public. At the same time, given the limited extent to which tax reliefs can deliver conservation objectives, they might be more appropriately employed in maintaining the status quo, e.g. keeping land unbuilt, rather than incentivising specific actions and delivering conservation gains.

3.6 References

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4 Marketed products supporting biodiversity conservation

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4.1 Summary

Marketed products for biodiversity conservation (MPBC) seek to link revenue streams from their sale to biodiversity conservation activities. This can either happen indirectly by providing finance to conservation organisations (supportive MPBCs), or directly by supporting the protection of particular species or habitats affected by the production process (protective MPBCs). Alternatively, producers may be persuaded to adopt more biodiversity-friendly production or collection practices (persuasive MPBCs). It has been found that MPBCs can sometimes deliver better biodiversity conservation results than command-and-control regulation. This is especially true in a context of growing environmental concerns and awareness, where consumers are allowed to discriminate between MPBCs based on functional effectiveness in conserving biodiversity. However, in order to build consumer trust and have the potential to be scaled up, MPBCs need to tie with strong certification systems capable of demonstrating their benefits to nature and be supported by effective marketing campaigns and awareness raising activities.

4.2 Description and basic features of the economic instrument

4.2.1 Definition and key design features

Marketed products for biodiversity conservation (MPBC) tie revenues from the sale of specific consumer goods with the expenditures incurred in protecting endangered species or habitats, or adopting more widespread biodiversity friendly practices. Some examples of MPBCs linking products to protected landscapes can be found in some regional parks in Spain and France, including Natura 2000 areas, and appear to have potential to enhance revenues for producers while generating income that benefits conservation and helps to maintain biodiversity-friendly land management. While MPBCs' fundamental characteristic is to allocate part of their revenues to conservation activities, they can take various forms and be subject to a range of certification and labelling schemes. They may include small-scale, local products (e.g. local produce from a national park supporting overall park management costs, local agricultural products) or products that are manufactured or commercialised on a large scale (e.g. corporate goods and international brands supporting biodiversity friendly actions through their sale or benefitting from services provided by natural ecosystems).

MPBCs can be considered as a particular form of ecolabels with a specific focus on biodiversity conservation and protection. According to the Global Ecolabelling Network (GEN, 2004), an ecolabel is a "label which identifies overall environmental preference of a product (i.e. good or service) within a product category based on life cycle considerations" and is "awarded by an impartial third party to products that meet established environmental leadership criteria". As emphasised by GEN, ecolabels cover a wide range of products and services and their environmental impacts, from greenhouse gas emissions to water use, air pollution, use of non-renewable resources, chemical emissions or waste

amounts. Most ecolabels have some relevance for biodiversity directly or indirectly, for example by reducing energy, pollution or resource use and this way reducing pressure on biodiversity. -Some may, however, have more indirect effects on biodiversity or an even unclear relationship with it (e.g. ecolabelling of electrical goods), which makes it hard to categorise them as MPBC.

In the above context MPBCs can be considered as a particular group of ecolabelled products which are marketed as the products of biodiversity friendly production systems and – through their sale – seek to raise revenues to promote the maintenance of those systems and related investments in species and habitat conservation. They may include products that seek to reward production methods and systems that benefit biodiversity, are based on healthy natural ecosystems (e.g. maintenance of cork oak woodlands or biodiversity friendly coffee growing systems) and/or channel a proportion of revenues or profits into conservation activities (e.g. proportion of sales go into investments in species or habitat conservation measures).

Based on a similar reasoning as the one used by Treves and Jones (2009) to develop a typology of ecolabels, one can distinguish three types of MPBC. The retained earnings from the sale of MPBC can 1) finance conservation organisations or remote actors involved in conservation activities (supportive marketed products), 2) help conserve particular species or the ecosystems on which they depend through particular conservation or 3) restoration actions (protective marketed products), or foster adoption of biodiversity friendly production practices, either linked to the manufacturing or collection of biodiversity resources (persuasive marketed products).

It is often suggested that the communication role of ecolabels – i.e. their ability to impart information to the buyer about the environmental aspects of production– is critical to recruit consumers to a particular wildlife conservation strategy (Treves & Jones, 2009). Labels act as a signal to consumers pointing, for example, to the types of conservation projects their purchases would contribute to and, in the case of persuasive marketed products, the positive outcomes on biodiversity these would generate through the promotion of specific methods of production. In economic terms, labels reduce the information asymmetry between the producer/seller and the buyer by providing information to a customer who takes an item's capacity to fund biodiversity into account when purchasing it (Amstel et al. 2007). Therefore, one may argue that the commercialisation phase of MPBCs will often have more chances to succeed when coupled with labelling instruments that are capable of reducing the information asymmetry by informing consumers about their products and their impacts on biodiversity. However, as Amstel et al. (2007) have argued, the strength of ecolabels also lies in their capacity to translate an abstract notion like biodiversity into terms relevant to a specific supply chain and their ability to make that information comparable to other labels available on the market.

It has also been suggested that, when the interests of both conservation-minded producers and consumers align, a reliable message will be more effective in changing consumer buying habits (Dunwoody 2007). For this reason, marketed products, when supported by strong certification schemes, are often perceived as being more credible to achieve the stated objective than non-certified goods. Certification schemes are governed by transparency rules between parties regarding specific standards, compliance herewith and third-party verification (Amstel et al. 2007). An example of (persuasive) marketed product is the coffee labelled "bird friendly" by the US Smithsonian Migratory Bird Center. The rules governing this American certification scheme make it mandatory for producers to grow their beans organically and under high-quality shade and be subject to inspections and certifications by agencies accredited by the USDA's National Organic Program. This is said to assure consumers of quality control for the benefit of tropical and migratory birds (SNZPCBI, 2016).

Although many existing mainstream ecolabels and organic standards may offer some degree of protection of biodiversity, most of them are only rather indirectly biodiversity focused. MPBCs therefore represent a certain niche in ecolabels and require more focused approaches to certification/ verification rather than mainstream certification. MPBCs may not necessarily involve formal or complex certification schemes and may rely on less formal approaches to certification and labelling, such as more bespoke schemes, NGO verified schemes, affidavits, or schemes supported by the producers themselves.

4.2.2 Relevant actors

A broad variety of actors may be involved in MPBCs. At one end of the spectrum, producers of MPBCs can be manufacturers or collectors responsible for the assembly or production of a marketed product. Examples include farmers, wine makers, olive oil producers, or any private company from food producers to packaged goods, clothing or beverages manufacturers in the consumer goods industry. Consumers and consumers associations are the end-users of a marketed product.

In between, there exist a plurality of actors being related in one way or another to the supply chain of the MPBC (e.g. shops and other types of distributors) or acting as a catalyst in the launch of the product. While public authorities and agencies often have a role in supporting a producer's or producer association's initiative, non-state actors such as environmental NGOs are also relevant as they are often the initiators of the project.

Finally, although producers of MPBCs may not be necessarily subject to formal certification systems, verification bodies are often found to have a role, and are important in ensuring the credibility and authenticity of MPBCs. These include auditing companies, certification bodies and other third-parties with expertise or interests in the conservation of biodiversity. The difficulty to verify impacts on biodiversity often requires more focused approaches to certification/verification rather than mainstream certification. Besides their role as partners in the creation of MPBC, NGOs may also get involved in verification (providing bespoke control and advice) and marketing.

4.2.3 Baseline for the instrument

Environmental awareness: Markets for products and production practices that conserve biodiversity are stimulated by growing consumer environmental concerns (Business@Biodiversity, 2010). According to Treves and Jones (2009), many charismatic species and their ecosystems are well-known and iconic in wealthy countries and may therefore be attractive marketing emblems for MPBCs. In this context, marketed products in favour of biodiversity often emerge voluntarily by companies seeking to gain enhanced market access or the right to set a price premium from labelling the marketed product as 'wildlife or nature friendly'. Under certain assumptions (i.e. transparency on compliance with the labelling schemes, presence of performance audit and comparability of information), MPBCs, as a (stimulated) self-regulation through the market, can potentially be even more effective to reverse the loss of (agro)biodiversity than command-and-control regulation (Amstel et al. 2007).

Public support: Public support is often instrumental to the development of MPBCs. As illustrated by the different examples below, public support can consist of funding or the provision of additional resources (e.g. staff, infrastructure) to get schemes off the ground. Local and national governments can also be the initiator of the project as illustrated by the Lesser Grey Shrike Fund example.

Credibility via certification: The credibility of marketed products is an important element to ensure consumer buy-in and rests often on well-defined labelling organisms and verification methods. Yet, as is highlighted by Treves and Jones (2009), verifying successes and failures with wildlife conservation can be complex, technical, and costly. This explains why marketed products, like wildlife conservation eco-labels, can vary widely in their claims and certification standards. Indeed, a producer facing high verification costs will likely pass on these costs on consumers, which might result in higher prices (and less margin) but increased confidence in the marketed product. In short, when verification mechanisms affect marketed products, a conflict of interest may arise between consumers and producers. This situation has been described by Treves and Jones (2009). The often opposing forces that exist between consumer confidence and producer incentives is depicted in Figure 4.1. As is emphasised by Treves and Jones (2009), the certifier finds himself often in the middle of this complex relationship between price and confidence and will experience pressure to dilute standards or cultivate a niche market of dedicated consumers willing to pay premium prices.

For example, supportive MPBCs which embrace verification systems are subject to financial audit performed by independent actors (e.g. consultants, accountants). These actors often limit themselves to verifying whether the funds have been transferred to the third party recipient and not whether these have been used effectively. Persuasive MPBCs claim to change producer behaviour and foster the adoption of biodiversity friendly practices. Verification varies from affidavits to third-party inspection of the production sites. Protective MPBCs claim to help conserve ecosystems on which they depend. This can be directed to wildlife protection, particular ecosystems and habitats or plant species. Verification rests on evidence that the protected species reproduced in and around the certified business, on the ecological diversity of certain ecosystems, on the effective preservation of certain habitats. Verification methods range from third-party monitoring of ecological richness to producers' reports of wildlife sightings.

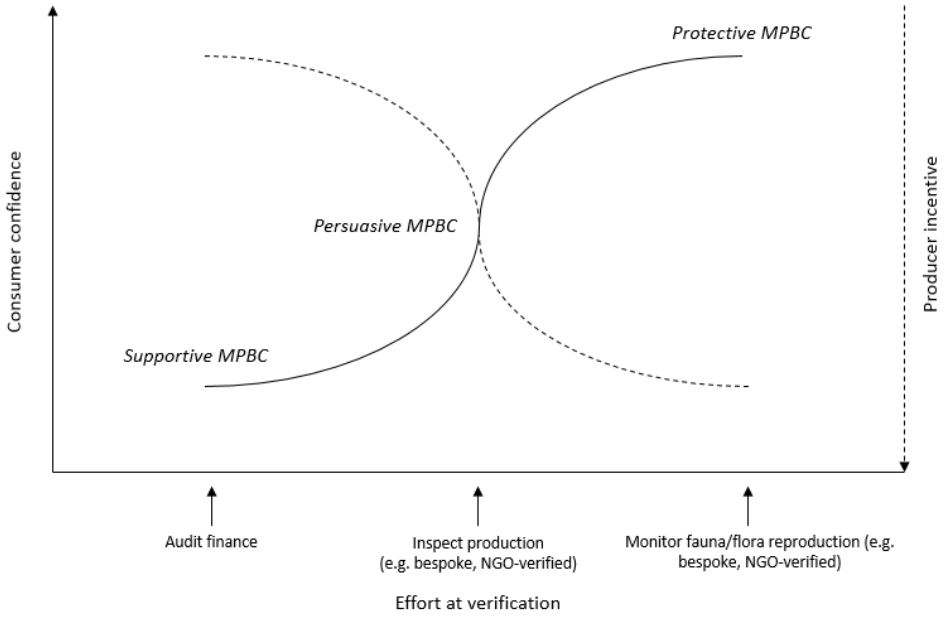

Figure 4.1 Typology of MPBC and theoretical relationship between consumer confidence in MPBC, verification types and the incentive for producers to participate

Source: Adapted from Treves & Jones, 2009

4.2.4 Range of application of the instrument

The existing MPBCs differ according to the following characteristics:

- Classification typology: persuasive, protective or supportive MPBC
- Consumer good category: MPBCs are potentially found across all industries (e.g. food, beverage, forestry, meat, cosmetics, clothing, etc.) as long as they can demonstrate a link with biodiversity and be included in one of the three above-mentioned categories.
- Habitat or species protection: MPBCs can support specific animal or plant species or have broader habitat conservation goals.
- Relationship with certification scheme: MPBCs can be tied with certification schemes (which are governed by transparency rules between parties regarding specific standards, compliance herewith and third-party verification), or informal approaches to labelling and marketing.
- Scale / geographical coverage: MPBCs may range from the very local (e.g. products originating from a Natura 2000 site or cluster of sites) to the international scale (e.g. coffee sourced from different countries that meets specified biodiversity conservation standards).

Table 4.1 List of MPBC types and examples

Type of MPBC	Country	Name of MPBC	Consumer good category	Habitat or species protection	Link to certification scheme	Source
Persuasive	ES	Natura 2000 label	Food products	Habitat	Yes	https://es.fsc.org/preview.presentaciones-de-la-jornada-del-17-de-junio-en-cuenca-sobre-aprovechamientos-forestales-certificacin-
Persuasive	ES	Olivares Vivos	Food products	Habitat	Yes	http://www.olivaresvivos.com/
Persuasive	ES	Naturagro	Food products	Habitat	Yes	http://www.webrednatura.org/naturagro.html
Persuasive	FR	Lesser Grey Shrike Fund	Beverage	Species	No	-
Persuasive	UK	Coed Cymru	Forestry products	Habitat (forests)	No	http://www.coedcymru.org.uk/projects.html
Protective	UK	Coppice Products	Forestry products	Habitat (forests)	No	http://www.coppice.org.uk/
Protective	UK	Wild Deer Venison Project	Meat	Habitat and species	Unclear	http://www.thedeerinitiative.co.uk/what_we_do/promoting_venison.php
Persuasive	ZA	Red meat initiative	Food products (meat)	Habitat	Yes	http://www.sanbi.org/sites/default/files/documents/documents/case-study-3-bri-stewardship-kamiesberg-uplands.pdf
Persuasive	US	Bird Friendly Coffee	Coffee	Species	Yes	https://nationalzoo.si.edu/scbi/migratorybirds/coffee/
Supportive	US	Endangered species chocolate bar	Candy	Species	n.a.	http://www.chocolatebar.com/
Supportive	US	My Lip Stuff Charitabalms	Lip balms	Species	n.a.	http://www.mylipstuff.com/charitabalms.html
Supportive	US	Conservation Alliance	Outdoor industry	Habitat and species	No	http://www.bluetoad.com/publication/?i=288816&pre=1

4.3 Case studies of use of the instrument for biodiversity financing

4.3.1 EU Member States having implemented the instrument

Natura 2000 products supported by Global Nature Fund (Castilla-La Mancha (Spain)

Fundación Global Nature (FGN), a Spanish NGO, has developed an initiative to support farmers active in Natura 2000 sites in the Spanish central regions of Castile-La Mancha and Castile-Leon. With financial support from the EU LIFE fund, FGN started packaging and commercialising nature-friendly legumes, almonds and other crops, making clear reference to their origin and the environmental benefits of the production method. To support differentiated marketing, distribution agreements have been established with other entities both at national and international level.

The production is currently completely organic, and farmers follow environmental guidelines that have been agreed upon and are clearly linked to biodiversity protection. These measures include creating hedges and boundaries for crops to provide shelter and food for fauna species, replacing the use of chemical fertilisers by natural products, promoting crop rotation with varieties of legumes and fallow land to create a mosaic of cultures.

There has been growing interest from farmers in this win-win approach to Natura 2000 conservation and farming over the years. Around 400 farmers have been involved in different project activities in the past four years, with about 20,000 ha of land surface managed. Within five years, 243 legume producers became involved, producing 115,000 kilos of legumes for total revenue of €225,100[10].

The promotion of sustainable economic activities is one of the objectives of the Natura 2000 network. Almost 40 % of the Natura 2000 area in the EU is farmland, demonstrating the importance of supporting sustainable farming in the network. This project is an excellent demonstration of how producers can consider Natura 2000 as a source of support for differentiating their products in the market. GNF's efforts to promote biodiversity-friendly agricultural practices resulted in being awarded one of the best Natura 2000 projects in 2016 (EC, 2016).

Lesser Grey Shrike Fund (France)

In the lowlands of the Aude region in France, the largest wine cooperative has become involved in the protection of birds, especially the Lesser Grey Shrike, a species which has become emblematic of this area. Agri-environmental measures have been implemented to improve the habitat by maintaining trees and ditches, tackling shrub encroachment and protection of vineyards. This has benefited growers by developing local identity, diversifying activities into nature tourism and contributing to product quality and marketing.

On the initiative of the winemakers of Enserune and the Regional Department for the Environment, a special vintage 'Lesser Grey Shrike' has emerged since 1996, and part of the proceeds from these wine sales is donated to a special fund concerned with the conservation of the bird and its habitat. The specific intention of the programme, i.e. premium pricing due to association with a species of interest or more sustainable production methods vs. standard pricing with the earmarking of part of the proceeds, may provide an interesting contrast with the Spanish example above (Milieu et al. 2016).

[10] No information on the costs involved by the management of Natura 2000 in the area has been found.

A university thesis by Rongeard (2006) investigated the success of this initiative. The study indicated that the creation of this new vintage was part of a larger programme designed to protect the environment and develop the economy on the lowlands territory of Aude. Although the economic benefits of the vintage on the wine cooperative have been quite limited (the production of the special vintage was abandoned after seven years), the media impact has been significantly higher as numerous press and scientific articles contributed to promote the region. The vintage earned local, national and even international recognition for being innovative and the Lesser Grey Shrike has become the iconic wild bird of the Aude region. Despite limited economic and touristic impacts, the operation generated wide ecological outcomes. The new vintage stimulated additional conservation actions, contributed to changing behaviours amongst producers and winemakers and fostered a positive dialogue between producers and naturalists (bird counts were carried out in collaboration between both groups). The latest counts of Lesser Grey Shrike population indicated that the number of birds had stabilised or slightly declined in 2006.

Wild Deer Venison project (the UK)

In 2009, the Wild Deer Venison project was introduced by the Deer Initiative[11] to tackle expansion of the deer population in East England. Damage from the growing wild deer population has caused significant damage to the profitability of woodland businesses, and has adversely affected biodiversity. The impact on the region's economy in terms of damage to crops, traffic accidents and trees, woodland flora and wildlife habitats was estimated to be a net cost of between £7.0 and £10.2 million per year (RDI Associates, 2009).

The promotion and marketing of wild deer venison was seen as a potential solution to foster a sustainable management regime for wild deer capable of halting a severe threat to the ecological importance of many types of woodland, particularly Ancient Semi-Natural Woodlands. The project has aimed to facilitate the development of a food supply chain of wild venison from the countryside in the East of England and the Rockingham Forest through to end users in the region, nationally and abroad (RDI Associates, 2009).

A study conducted by RDI Associates (2009) estimated that the project could produce an average economic return of between £950,000 and £2,500,000 p.a. through adding value and marketing 10,000 processed deer, while at the same time helping to manage the deer population of the region. It was highlighted that this project would fit with the Rural Development Programme for England (RDPE) in terms of strategic need (i.e. safeguard and enhance the rural environment, improve the competitiveness of the agricultural sector and foster competitive and sustainable rural businesses and thriving rural communities). The project was seen to deliver the following benefits:

- Business efficiency - in terms of generating a new supply chain and producing a quality product that has full traceability.
- New markets and products – in terms of adding value to regional raw materials and developing new markets
- New businesses and enterprises in the rural economy – through collaborative working new businesses will be established and existing ones will diversify
- Conservation of the natural, built and historic environment – through careful management the key outcome will be to conserve and improve natural habitats (RDI Associates, 2009).

[11] http://www.thedeerinitiative.co.uk/

The Wild Deer Venison project was supported by The East of England Development Agency (EEDA) and received £580,000 in funding from the RDPE, under Axis 1, Measure 123 'to add value to agricultural and forestry products for small businesses and individuals' for the period 2010-2013. The Forestry Commission contributed £15,000 per annum to cover various costs which were not otherwise eligible for EU funding and providing financial management in parallel with the Woodfuel East Project. In total, 49 projects were successfully funded among which 44 businesses (FCE & DEFRA, 2014). The project also led to positive economic (e.g. job creation) and ecological (e.g. deer population control) benefits, as further discussed in below.

4.3.2 EU Member States considering implementation of the instrument

The above examples and those listed in Table 4.1 demonstrate that MPBCs can be applied to a variety of products and contexts. While they often benefit from publicly funded demonstration schemes, they are also often introduced by private producers, co-operatives and NGOs at local or regional scale. MPBCs could therefore potentially be introduced in all Member States, operating alongside other conservation initiatives and more traditional financing schemes. While it is hard to predict which Member States are planning to introduce MPBCs on their territory, some MPBC projects having applied for EU funds have been made public. This is the case for the Spanish "LIFE Olivares Vivos" project which is supported by the European Commission and its project partners with a total budget of 2.8 million euros for the period 2015-2020. SEO / BirdLife, the beneficiary of the project, will create certification mechanisms that support biodiversity conservation by oil producers and establish a strategy to enhance profitability from the ecolabel Olivares Vivos.

4.3.3 Wider experiences and proposals outside the EU

MPBCs are applied across the world and can take a variety of forms. Examples of MPBCs outside of the EU are outlined below.

Endangered Species Chocolate bar (US)

Endangered Species Chocolate can be considered as a supportive marketed product because it claims to donate "10% of net profits to help support species, habitat and humanity"[12]. Its website indicates the company donates to various causes, wildlife conservation being one of several. Therefore, the consumer must be satisfied with the reputations and philanthropic messages of recipient organisations. Although an auditor can account for use of funds, the sceptic will wonder if funds are well spent.

Charitabalms (the US)

"My Lip Stuff" is an American brand and online store of lip balms. Since its creation in 2001, the brand has teamed with several organisations and supports various nature-related causes. Among these, the brand has partnered with the American animal advocacy NGO, Born Free USA, and

[12] www.chocolatebar.com

donates 50% of the retail price of its charitabalms[13], a special edition lip balms, to help Born Free USA in their efforts to help the animals.

The Conservation Alliance (the US)

The Conservation Alliance was cofounded by Patagonia back in 1989 together with other peer brands in the outdoor industry to build a new source of funding for groups working to protect threatened wild places throughout North America. The intention of this Alliance was to collect annual dues from companies in the industry, and contribute 100 percent of those dues to grassroots conservation organisations. The alliance now boasts 180 member companies and has contributed more than $10 million. In 2011, the alliance achieved its long-term goal of contributing more than $1 million in a single year, granting $1.05 million to 35 conservation organisations.

The true measure of The Conservation Alliance's success is what grantees accomplish with the funding. In 2011, various conservation victories led to the protection of 420,755 acres and 82 river miles, the removal of one dam, and the acquisition of one popular climbing area. Patagonia contributes $100,000 annually to The Conservation Alliance. All of these funds go directly to the most effective conservation organisations in North America (Patagonia, 2012).

The Conservation Alliance demonstrates the ability of some types of MPBC schemes (in this case 'supportive' ones) to be scaled up at national or global level.

4.4 Policy analysis of existing instruments / schemes

4.4.1 Conservation effectiveness

MPBCs have many similarities with ecolabels, one of which is that they are a credence good, which means consumers cannot discern whether the producer's claim is based on facts or falsehoods (Amstel et al. 2007). Although MPBCs may be accompanied by verification mechanisms, verifying whether a business conserves biodiversity can be challenging and monitoring of impacts is not always straightforward (Treves and Jones, 2009).

Various studies linking to the examples cited above have demonstrated the relative efficiency of MPBCs on wildlife conservation or wider biodiversity preservation goals. A study by Rongeard (2006) dedicated to investigate the success of the Lesser Grey Shrike Fund showed that the project had not been able to restore Lesser Grey Shrike population in the region with bird numbers stabilising or even declining in 2006. Despite these poor results and the production of the Lesser Grey Shrike vintage being halted in 2003 due to changing priorities in the context of the wine crisis, the ecological outcomes generated by this initiative were positive: the new vintage stimulated additional conservation actions and contributed to changing behaviours amongst producers and winemakers. The lowlands of the Aude became a Natura 2000 area in 2004. However, the Lesser Grey Shrike Fund was probably not the only factor helping to support the designation of the area as a Natura 2000 site, as the wine cooperative was already sensitive to ecological issues (Rongeard, 2006).

A report published in 2014 by the Forestry Commission of England (FCE) and the Department for Environment, Food and Rural Affairs (DEFRA) (FCE & DEFRA, 2014) showed that the Wild Deer Venison project was successful in reducing the deer population in East England thereby preventing

[13] http://www.mylipstuff.com/charitabalms.html

deer damage to the ancient broadleaved woodlands. While it is expected that data collected in 2019 will provide more insights into the effective changes on biodiversity, the report highlighted the positive role of the project on woodlands overall. It was indicated that, in 2014, 39% (639 hectares) of the total 1640 hectares of Woodland Sites of Special Scientific Interest targeted by deer population management were in favourable condition and 60% (997 hectares) in unfavourable but recovering condition. The project led to a "positive deer control management" and "minimal deer browsing on regenerating coppice" and "supported a rich ground flora including a large population of nationally scarce oxlip – a plant particularly vulnerable to deer grazing". The project also had indirect impacts on woodland by providing capital equipment to help deer management and hence woodland condition, and through providing opportunities to inform and discuss with stalkers and landowners their management objectives for woodlands (FCE & DEFRA, 2014).

As can be seen, there exist different ways whereby conservation effectiveness of MPBCs can be verified. This will be strongly influenced by the context, objectives, and, hence, the type of MPBC considered. For example, it may be evidenced by:

- Maintenance of existing, biodiversity friendly farming or forestry systems (e.g. in Natura 2000 areas) which might otherwise be threatened from intensification or abandonment;
- The results of conservation initiatives funded by the proceeds of MPBCs, in terms of their effects on species and habitat conservation;
- Positive trends in relevant biodiversity indicators in the areas covered by the schemes (e.g. increases in species population, habitat condition).

However, as is illustrated with the above examples, ecological effectiveness of the schemes is often limited because of the relative immaturity (i.e. they have not been running very long) of many of the schemes described, and their relatively small scale compared to the pressures around them.

4.4.2 Efficiency or cost-effectiveness

The efficiency of MPBCs needs to be examined with reference to the conservation benefits they deliver, relative to the costs incurred.

MPBCs emphasise the joint delivery of market and public goods and services – the production of marketed products such as food and timber is achieved in a way that delivers public goods such as biodiversity and related ecosystem services. It therefore potentially delivers greater benefits than would be achieved through conservation or commodity production alone. Modernisation and intensification of production systems may reduce production costs but, by reducing biodiversity and ecosystem service delivery, lead to inefficient outcomes from the perspective of society as a whole. MPBCs – along with other initiatives such as agri-environment schemes – help to reward the biodiversity benefits of production and can help to deliver more efficient outcomes.

The Wild Deer Venison project, for example, was seen as highly cost-effective and able to generate substantive and sustainable improvements in deer management in the short term and maintain landscapes according to a report published by FCE and DEFRA (FCE & DEFRA, 2014, p.1). The report showed that the administrative and financial support provided by the sharing of the staff utilised under the Woodfuel East, a Rural Development Programme for England-funded project, was "very cost-effective and worked well" (FCE & DEFRA, 2014, p.22).

The case of the Conservation Alliance, the cost-effectiveness of conservation action is guaranteed by the statutes which identified the "permanent and quantifiable protection of a specific wild land or

waterway" as one of its funding criteria to conservation organisations. Since inception in 1989, the Alliance funding has helped save more than 45 million acres of wildlands, protect 2,972 miles of rivers, stop or remove 28 dams, designate five marine reserves, and purchase 11 climbing areas (The Conservation Alliance, 2016).

Despite the above examples, evidence of efficiency – in terms of the costs and benefits – of existing MPBCs is often limited, perhaps reflecting the recent history of most schemes. However, the relatively low uptake of MPBCs to date may suggest that the barriers to organising effectively functioning markets represent significant challenges to efficient delivery. This has been illustrated by the low sale volumes generated by the Lesser Grey Shrike vintage in comparison to traditional products, for example.

Furthermore, a major additional cost of MPBCs – and obstacle for further expansion – relates to that of certification and verification. This can add to production costs, but is often necessary in order to enable consumer trust and a functioning market. Not all MPBCs are subject to verification schemes, as indicated earlier. The effort invested in verification should be optimized to match the standards for certification and the target level of consumer confidence. Certification standards range from trust in producer testimonials (affidavits from certified businesses) through independent (third party) field verification using approved scientific methods. The three types of MPBCs described above – supportive, persuasive and protective – experience different functional limits to credibility because of inherent constraints on the verification methods each can apply (Treves & Jones, 2009).

4.4.3 Social impact

MPBCs tend to have positive impacts on employment and rural development. By providing increased margins to producers and farmers, they tend to be generally well accepted by stakeholders globally.

The Wild Deer Venison project, for example, supported 44 businesses and enabled the creation of 9.75 full-time equivalent jobs. It was responsible for generating a sustainable supply chain of wild venison into the local economy and tripling the volume of wild venison into the local food chain and economy. The improvement of both the quality and quantity of venison products through a more robust supply chain was seen as being "desirable" (FCE & DEFRA, 2014). The Lesser Grey Shrike Fund received similar support from stakeholders whose commitment led to developing and running various actions in parallel to the vintage.

By diversifying or transforming production practices, MPBCs can in principle provide an effective solution to the economic and environmental crisis that is affecting traditional farming practices. However, the cases presented have only provided little evidence on this aspect, given the low uptake or immaturity of projects to date.

On the consumer side, certain MPBCs can experience strong demand, as illustrated by the growing sales to venison outlets between 2009 and 2013, with a measured 233% increase in year 1 and an estimated return on investment of over 2.5.

In Spain, a market testing exercise has been carried out by SEO/BirdLife with products specifically labelled as 'Natura 2000 Product' (e.g. oil, eggs, olive oil, honey, etc.). The tests were carried out in shops in the cities of Zaragoza and Barcelona. The results showed that a majority of participants in customer surveys were prepared to pay 5% more for a labelled product than a non-labelled product, and were more likely to buy the labelled product, with actual sales of the same product significantly higher with the label than without it. The European Commission and Spanish Agriculture, Food and Environment Ministry are studying the possibility of extending these successful trial results to the full

market, and there is similar interest in other EU countries, including France. Products with the Natura 2000 label easily commanded a premium, and the success of the label indicates that the programme has potential for scaling up (Milieu et al. 2016).

However, developing strong and sustainable supply chains supported by effective marketing campaigns often underpins the viability and success of MPBCs, and a failure to do so often leads to halting a project, as emphasised by the Lesser Grey Shrike project experience.

4.4.4 Institutional context and legal requirements

MPBCs schemes are essentially voluntary but, as described above, can benefit greatly from the involvement of trusted verification bodies, such as NGOs.

Furthermore, most have benefited from public funding (e.g. LIFE, agricultural and regional development funds) as a means to design and develop them and as a catalyst for action.

4.4.5 Relationship with other instruments, and contribution to the policy mix

As already emphasised, MPBCs can be considered as a particular form of ecolabels with a specific focus on biodiversity conservation. Some MPBCs can also be considered as voluntary fiscal transfers. An example of this is the Conservation Alliance, which calculates yearly membership based on a company's annual revenues.

Seeing the success achieved by certain MPBCs, it can be argued that MPBCs, as opposed to command-and-control regulation, can often have a complementary role in financing biodiversity activities. Some success stories have demonstrated the highly cost-effective, substantive and sustainable solution they represent to longstanding biodiversity degradation problems with results achieved in the short term.

The examples above show that both relatively small (e.g. Wild Deer Venison project) and large-scale projects (e.g. The Conservation Alliance) are able to generate positive outcomes. While most MPBCs seem to be oriented at local or regional level, some US examples have demonstrated their capacity to be scaled up.

Public funding – including EU funding through EAFRD, LIFE, ERDF or other sources – can play an important role in financing the establishment of the initiative and provide the necessary incentive for its uptake. This has been demonstrated by different examples having benefited from public funding to get started.

4.5 Comparative analysis and conclusions

4.5.1 Compare different designs for implementation

The review makes it clear that marketed products can take a wide range of different forms and can contribute to biodiversity conservation in different ways – by providing funding (supportive MPBCs), maintaining biodiversity friendly management practices (protective MPBCs), and/or influencing biodiversity management in the supply chain (persuasive MPBCs).

4.5.2 Transfer potential to other governmental levels

MPBCs can operate at a range of levels, from the very local (e.g. produce from a single Natura 2000 site or cluster of sites) to the international (e.g. supporting biodiversity-friendly commodities sourced from different countries). They are frequently introduced by private companies or co-operatives, although many may benefit from involvement of the public sector or NGOs in catalysing action or overseeing market development. Public/private or private/ NGO partnerships are often therefore involved.

4.5.3 Consideration of the actual / potential contribution of the instrument relative to the assessed financing needs for biodiversity and Natura 2000 in the case study countries

Each of the three MPBC designs described above seems to be potentially relevant to funding and supporting biodiversity conservation in the EU, including the management of the Natura 2000 network, as illustrated by the examples given above.

4.5.4 Potential for upscaling to EU level

By mobilising the preferences and willingness to pay of consumers, MPBCs can offer a practical response to the urgent, global crisis of biodiversity loss. By tying the sale of revenues of certain consumer goods to conservation action, MPBCs offer producers a premium that encourages them to transform their production practices or diversify their product range. As for ecolabels, MPBCs are often perceived as being more credible to consumers to achieve the alleged conservation objective than non-certified goods when supported by strong certification schemes and verification approaches. However, despite the numerous types of MPBCs encountered, MPBCs are often found to have a limited and niche role. Their success also depends on strong supply chain systems, effective marketing campaigns and involvement of actors.
Certain MPBCs, however, have potential to generate scalable biodiversity finance, as illustrated by the scope of US MPBCs. In the EU, new projects (i.e. Naturagro, Olivares Vivos) in Spain will test whether it is possible to harmonise the environment, economy and agriculture based on product differentiation.

Opponents of economic and/or market-based approaches to conservation may see the state as the most legitimate authority for regulating production practices to produce a public good, in this case a protected environment.

To date, MPBCs have operated at a relatively small scale and played a niche role in supporting conservation activities in the EU. However, they have the potential to influence biodiversity on a wide scale, particularly by influencing biodiversity management across the whole supply chain. For instance, the adoption of policies by some major retailers to source all of their fish from sustainable sources has the potential to influence management of marine biodiversity on a wide scale. It is likely, therefore, that different MPBCs will play different roles – some supportive MPBCs will remain niche in their focus while persuasive MPBCs have the potential for larger scale impacts on biodiversity.

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5 Recreational user fees and charges supporting biodiversity conservation

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5.1 Summary

User fees and charges are economic mechanisms which secure revenues from users of biodiversity and ecosystem services. While sharing some similarities with environmental taxes, user fees and charges differ from the former in that they are only incurred by those who benefit from the service provided. These fees and charges take a variety of forms, reflecting the different ways in which biodiversity and natural resources are used.

This case study focuses on recreational user fees and charges which are considered as possible avenues for scaling up financing targeted to biodiversity conservation. Recreational fees and charges may be levied on consumptive use (e.g. fishing, hunting) and/or on non-consumptive use related to tourism (e.g. bird watching, climbing, hiking, diving and other outdoor recreation) of biodiversity resources and the natural environment. User fees and charges may be compulsory for visitors or collected voluntarily through visitor payback schemes.

While user fees and charges may offer different practical benefits including flexible management, fairness and greater financial accountability, they may also face serious obstacles (e.g. high transaction and collection costs) which make their potential to be scaled up limited.

The case study finds that certain user fee and charge types such as recreational consumptive fees (e.g. fishing and hunting licences) have a longstanding tradition in some EU Member States but limited capacity to raise substantial fiscal revenues at national level. With regard to such fees, a key question is whether the revenues only fund general administrative and operational needs or are earmarked and also used for conservation purposes. The recent introduction of fishing licences and a specific earmarking scheme in Ireland has for instance proven to be a possible important source of funding for inland waters conservation actions at national scale.

Similarly, entrance fees may also represent a cost-effective method for financing conservation activities, but tend to be relatively more important in high biodiversity areas (such as the overseas territories of EU Member States). The problem with entrance fees is that they are often impractical as a means of collecting revenues from users of protected areas (PAs), due to the multiple entry points and size of PAs.

Visitor payback schemes have the potential to overcome some of the limitations related to entrance fees by harnessing the willingness to pay of the wider visitor population. By involving local businesses, they can also share transactions costs and provide local businesses as well as visitors the opportunity to support conservation of the natural environment. However, due to their relatively small scale and limited experience in the EU, visitor payback schemes are unlikely to play a major role in raising sufficient money to close the funding gap for biodiversity conservation in the EU in the immediate future.

5.2 Description and basic features of the economic instrument

5.2.1 Definition and key design features

User fees and charges are economic mechanisms which are able to capture significant revenues from the use of biodiversity resources, such as fishing and hunting fees and tourism-based activities to support PAs, and finance conservation efforts.

This case study focuses on recreational user fees and charges, which are levied on consumptive use (e.g. fishing and hunting fees) and on non-consumptive use (e.g. nature park entrance fees) of biodiversity resources. While non-consumptive recreational user fees and charges tie revenue streams directly with conservation activities, the costs for supplying recreational services, the demand for natural resources and the value visitors place on their experience at the site are often only partially reflected by these (CBD, 2001).

Although sometimes used interchangeably, the terms “fee,” “charge,” and “tax” have subtle differences. According to the European Commission, an environmental tax is defined as “a tax whose tax base is a physical unit (or a proxy of it) that has a proven specific negative impact on the environment” (EC, 2001. p.12). Unlike taxes, fees or charges are payments for a service, i.e. requited payments.

The OECD defines charges and fees as “compulsory, requited payments to either general government or to bodies outside general government, such as for instance an environmental fund or a water management board” (OECD, 1999, p.9). However, in this case study we also include voluntary payments linked to the use of the natural environment, collected through visitor payback schemes. While hunting and fishing fees are in most cases applied at the national level this is not the case for the non-consumptive user fees and charges. With the exception of some national-level schemes, most user fees and charges are site-based financing mechanisms broadly referred to as visitor use fees (CBD, 2001).

Recreational fishing and hunting licenses need to be obtained in return for the use of biodiversity resources (fish stocks and game populations) and the revenues raised do not necessarily support conservation actions but can end up in general state budgets. Nevertheless, there are some Member State examples where licenses are designed in a way that the collected revenues are specifically earmarked for conservation purposes.

While the impacts of recreational fishing and hunting on biodiversity have been well-studied and been discussed for a long time (see for instance Arlinghaus and Cooke 2009, Granek et al. 2008, Adams et al. 2006) information on the use of fishing and hunting fees for conservation purposes and their effect on conservation action is very limited. This chapter therefore assesses the potential of fishing and hunting fees to support biodiversity conservation via empirical examples in two EU Member States which primarily build on with interviews with key stakeholders (see below).

Non-consumptive user fees and charges are usually designed to support conservation activities, but may serve other purposes as well such as fighting corruption and pursuing profit motives. Non-consumptive user fees and charges often aim to support the operating costs of PA management and seek to achieve conservation objectives (CBD, 2001).

5.2.2 Relevant actors

As fishing and hunting fees are in most cases applied at the national level, state level authorities are responsible for their administration and collection. In many cases, especially when the collected revenues are earmarked, specialist agencies are established to collect the fees and control the spending of the revenues. In addition to government actors, research organisations and academia can play an important role in monitoring activities. Finally, the fees target recreational anglers and hunters who are required to pay for the use of biodiversity resources.

A broad variety of actors may be involved in recreational non-consumptive user fees and charges:

- National/regional/local governments are often the primary authority in charge of the administrative procedures linked to the design, collection and control of fees and charges. As some of these tasks may also be entrusted to local businesses, organisations and communities, local governments will also ensure businesses are sensitive to and supportive of the schemes and values supported by the PA community before providing concessions (CBD, 2001).

- Tourists are the ones targeted by user fees and charges and may be required to pay differentiated prices based on their income. Foreign tourists, for example, may be asked to pay significantly higher user fee rates than domestic ones (CBD, 2001).

- Businesses may also be targeted by user fees and charges, and/or involved in their collection. These include food services businesses, accommodation providers such as hotels and guest houses, airline companies and other transport agencies, recreational businesses linked to outdoor activities such as kayaking, sport fishing, snorkelling, scuba diving and other water–based recreation, souvenirs and other retails sales (CBD, 2001).

Visitor payback schemes may involve a range of different types of organisation – local authorities, environmental organisations, tourist associations and/or individual companies (The Tourism Company, 1998). They often involve public/private/voluntary sector partnerships with these organisations working together to a common aim. Tourism businesses are often involved in the collection of revenues from their customers, through a range of mechanisms such as donations, product sales and voluntary levies on accommodation or other goods and services. Public bodies may be involved in co-ordinating and facilitating schemes, while environmental organisations are frequently involved in advising on expenditure priorities and the delivery of conservation activities.

5.2.3 Range of application of the instrument

As highlighted above, recreational user fees and charges can be structured around two different types of activities:

- Consumptive user fees and charges, including hunting and fishing fees
- Non-consumptive recreational fees and charges / tourism user fees, including park entrance fees, voluntary payback schemes, car park fees, etc.

The traditional non-consumptive fees charged directly to users of a nature site include:

- Entry fees or permits for users of national parks, reserves or PAs;
- Related fees such as car parking charges;
- Fees or permits for particular recreational uses, such as fees charged to divers visiting marine nature reserves.

In addition to the above, more broadly targeted visitor payback schemes can be applied to non-consumptive use. These are voluntary payments, collected from tourist visitors to an area, and used to fund the management of the natural environment, heritage and/or tourism infrastructure of the area. 'Visitor payback', often also referred to as 'visitor giving' is a process by which visitors choose to give money (or other help) to assist the conservation or management of places they visit (The Tourism Company, 1998). Rather than being compulsory, like a tourist tax, it works on a voluntary basis (see Box 5.1).

Box 5.1 Visitor payback schemes and how they can support biodiversity conservation

Visitor payback offers a direct way of tapping tourist spending power, which can be linked directly to specific local conservation needs. It has the advantage of enabling visitors to relate personally to the contribution that they are making. Similarly, tourism enterprises which participate are able to do something practical to help their local environment. Visitor payback schemes have often been initiated to address limitations in the availability of public funding to maintain the places that tourists visit, which are themselves often affected by tourism pressure.

Visitor payback schemes may collect funds in a variety of ways, including:

- Voluntary cash donations through boxes and envelopes;
- Opt-in or opt-out levy schemes (e.g. voluntary levy on the cost of a night's accommodation);
- Merchandising schemes, collecting a proportion of sales of a product;
- Membership schemes, involving subscription to a club or society supporting a particular cause;
- Volunteering schemes, where tourists are directly involved in conservation activities;
- Fund-raising campaigns;
- Business sponsorship;
- Loyalty cards, securing discounts from local businesses on payment of a fee (Reed et al. 2013).

Modern technology is enabling new payment mechanisms to be developed. For example, Reed et al. (2013) reported on the development of smart phone apps which enable donations to be collected from visitors.
Visitor payback schemes may use these funds for a variety of local management activities, typically linked to the conservation and maintenance of the area that visitors come to enjoy, and/or the management of visitor impacts and pressures. Most are small in scale, and many may collect revenues for purposes other than biodiversity conservation – such as management of landscape, the built environment and visitor infrastructure. Therefore their current role in financing biodiversity priorities should not be overestimated.

5.3 Case studies of use of the instrument for biodiversity financing

5.3.1 EU Member States having implemented the instrument

Many types of recreational user fees and charges are in place in EU MS and used as a payment for natural resource use. A non-exhaustive list of examples is given in the tables below.

Recreational fishing and hunting fees are in place in many EU Member States (e.g. Austria, Bulgaria, the Netherlands). Nevertheless, only a limited number of examples exist where revenues raised by the fees are known to be earmarked specifically for conservation purposes (e.g. Estonia and Ireland). If not earmarked, revenues can either directly go the national state budgets or be used for various purposes or can cover general administrative or operational costs related to fishing or hunting.

While most parks in Europe are funded mainly from public sources (Bednar-Friedl & Behrens, 2012), some national parks have chosen entrance fee as an economic instrument for funding conservation

activities. These include France (e.g. Porquerolles Island NP), Italy (e.g. Miramare Marine Reserve) and Netherlands Antilles (e.g. Bonaire Marine Park and Saba Marine Park) (Lindberg & Halpenny, 2001). Many of the more significant examples of entrance fees relate to the overseas territories of EU Member States. The overseas territories tend to have a greater concentration of suitable biodiversity hotspots which are attractive to tourists and sensitive to visitor pressure – in these instances entrance fees can represent a cost-effective means of raising revenues for local conservation activities, while managing visitor pressures. As well as entry fees, some protected areas in the Overseas Territories have also introduced additional fees for particular recreational uses, such as diving in marine reserves (Table 5.1).

In the UK, National Parks are open free of charge to all, but many collect significant fees through car parking charges. Car parking fees have the advantage of relatively low collection costs (through automated pay and display machines and periodic inspections), as well as being consistent with the polluter pays principle. The Lake District National Park states that "All car park charges go towards keeping the National Park special for the future"[14] while the Peak District National Park lists the uses of car park fees as including to "help conserve the special qualities of the national park" as well as to maintain visitor infrastructure[15].

Vistor payback schemes have been introduced in some Member States, including the UK and Greece (Table 5.1).

5.3.2 Wider experiences and proposals outside the EU

Examples of recreational user fees and charges also exist outside the EU. A non-exhaustive list of some of these fees and charges are presented in Table 5.2. In general entry fees for national parks and protected areas tend to be more significant as a source of revenue outside the EU, especially in biodiversity hotspots such as national parks and private reserves in Africa

[14] http://www.lakedistrict.gov.uk/visiting/planyourvisit/travelandtransport/carparks
[15] http://www.peakdistrict.gov.uk/visiting/parking

Table 5.1 EU Member State examples of recreational user fees and charges related to the use of biodiversity resources or non-consumptive use

Type of user fee/charge	Member State	Name of user fee/charge	Short description	Source
Consumptive user fee	Austria	Hunting and fishing fees	Recreational hunting and fishing fees are in place in Austria. Hunting fees are only earmarked in Styria.	Withana et al. 2014, OECD Database
Consumptive user fee	Estonia	Hunting and fishing fees	Recreational hunting and fishing fees are earmarked for conservation purposes in Estonia and transferred to the Environmental Investment Centre.	Withana et al. 2014, EIC 2016
Consumptive user fee	Bulgaria	Hunting licenses	Hunting permits need to be obtained in Bulgaria in order to hunt, rates are differentiated based on the type of animals. Revenues are not earmarked.	Withana et al. 2014, OECD database
Consumptive user fee	Netherlands	Hunting and fishing fees	Both hunting and fishing fees are in place in the Netherlands but revenues do not seem to be earmarked for conservation purposes. Revenues from hunting fees are earmarked to regulate wildlife hunting.	Withana et al. 2014, OECD database
Consumptive user fee	Ireland	Salmon fishing license	Fifty per cent of revenues raised by recreational and commercial salmon fishing are dedicated to the Salmon Conservation Fund.	Inland Fisheries Ireland 2016
Visitor payback scheme	UK	Nurture Lakeland	Visitor giving scheme in the Lake District, North West England	Reed et al. 2013
Visitor payback scheme	UK	Arran Trust Visitor Gifting scheme	Isle of Arran, Scotland – scheme invests in wildlife conservation, conservation of historical buildings, and development and promotion of paths and trails	Reed et al. 2013
Visitor payback scheme	Greece	Friends of the Ionian	Has used membership, donations, discount card and merchandising to raise funds for local conservation schemes	Scott et al. 2002
Non-consumptive user fee	Italy	Miramare Marine Reserve entrance and additional user fee	On top of charging entrance fees, the reserve charges fees for activities such as snorkelling and educational programmes, funding 25% of its total budget.	Galvin et al. 2012
Non-consumptive user fee	Netherlands Antilles	Bonaire National Marine Park (BNMP) user fee	The BNMP is often cited as an example of successful user fee implementation because it is wholly financed by user fees imposed on divers.	Uyarra et al. 2010, 2001

Table 5.2 Country examples implementing recreational user fees and charges outside the EU

Type of user fee/charge	Country	Name of user fee/charge	Short description	Source
Consumptive user fee	Canada	Recreational fishing licenses and fees on Prince Edward Island	Recreational anglers on the Prince Edward Island are required to obtain an angling license as well as pay the Wildlife Conservation Fund fee.	Department of Communities, Land and Environment 2016
Consumptive user fee	Canada	Recreational fishing license in Ontario	A fishing license needs to be obtained in Ontario by all recreational anglers. Revenues collected go to the Fish and Wildlife Special Purpose Account.	Ontario Government 2016
Consumptive user fee	United States of America	Hunting and fishing license in Florida	Revenues raised by the hunting and fishing licenses in Florida go to the Florida Fish and Wildlife Commission who ensures the sustainable use of fish and wildlife resources.	Florida Fish and Wildlife Conservation Commission 2016
Entrance fees	United States of America	Yellowstone National Park	Annual pass or fees charged per type of vehicle.	Lindberg & Halpenny, 2001
Entrance fees	Kenya	Aberdares, Amboseli, & Lake Nakuru; Tsavo East & Tsavo West; etc.	Kenya has a long history of nature-based tourism and has long charged fees for access to its parks.	Lindberg & Halpenny, 2001
Non-consumptive recreational fees (entrance and diving fees)	Costa Rica	National park user fee (e.g. Cocos Island) per trip and dive tax	Costa Rican National Parks successfully raised entrance fees based on "willingness to pay" research.	Galvin et al. 2012; Lindberg & Halpenny, 2001
Non-consumptive recreational fee	Australia	Great Barrier Reef Environmental management charge (EMC)	The EMC is charged on operators who pass this cost on to boat passengers via the ticket price or as a separate cost of the park visit.	Lindberg & Halpenny, 2001

5.4 Policy analysis of recreational hunting and fishing fees

5.4.1 Recreational hunting and fishing fees in Estonia

Description, history and key features/design of the instruments

Recreational hunting and fishing fees are both in place in Estonia. The legal base of the fees is laid down in the Estonian Environmental Charges Act (2005), as well as in the Estonian Fishing Act (2015) and the Estonian Hunting Act (2013). The Environmental Charges Act serves as an overarching legal tool which determines all environmental charges (including the hunting and fishing fees) and establishes the rates of the charges, the procedures for payments and the use of the revenues obtained from the charges. At the same time, the Fishing Act and the Hunting Act establish the specific requirements of fishing and hunting in Estonia, including for instance quotas for fishing and hunting or the requirements of monitoring the stocks.

Fishing fees were introduced in Estonia in the early 1990s. The fees are differentiated according to the purpose of fishing; rates are separately established for commercial, recreational and special purpose fishing[16]. Recreational fishing fees are based on the fishing time period and rates currently are as follows: 24 h – €1; 7 days – €3; 6 months – €13; 12 months – €20 (Ministry of the Environment, 2016). Fishing permits can be obtained via mobile phone payment, online payment or direct purchase. With regard to exemptions, no recreational fishing permit is needed for pre-school children, students under the age of 16, pensioners and people with disabilities.

In order to fish in nature protection areas, recreational fishers need to buy a special fishing card which are more expensive than general fishing permits and can be only obtained for a maximum of one month. Each year only a limited number of fishing cards are issued and only for specific fish species. Those who fish with fishing cards are obliged to submit catch data within a specific time period (Ministry of the Environment, 2016).

Hunting fees were also introduced in Estonia in the late 1990s and were substantially reformed in 2013. Before the introduction of the new Hunting Act in 2013, hunting fees were differentiated by the main game species and the class of the quality of the hunting grounds (Statistics Estonia, 2009a) and it was the State's responsibility to compensate the landowners for the damages caused by wild game. In contrast, the new act introduced an annual hunting right fee which is currently €10 (Interview with Mr Lamp, Ministry of the Environment, 2016).

The new act also made substantial changes with regard to game damages as it is now the hunters' responsibility to prevent these damages and pay compensation for the damages caused by the wild game directly to the landowners on the hunting districts. This was initially opposed by the hunters as they were concerned that the payment they would need to provide directly to landowners for game damages would be high. In order to mitigate this opposition, the Ministry of the Environment decided to initially keep the hunting fees relatively low, at least for the first few years. Nevertheless, initial experience with the new rules suggests that the game damage compensations are not too

[16] According to the Fishing Act (2015) special purpose fishing can be carried out for the following reasons: environmental research, to collect roe needed for the production of restocking material, to catch breeder fish, to collect hypophysis, to transplant fish and to avoid the death of fish or improve the ecosystem of a water body (paragraph 19).

high which might make it possible to raise hunting fees in the coming years (Interview with Mr Lamp, Ministry of the Environment, 2016).

Conservation effectiveness

The revenues from both fishing and hunting fees are earmarked and provide an important financial source for research, conservation action and awareness raising activities which support the achievement of conservation objectives. While experience suggests that the use of the revenues have achieved positive conservation outcomes no quantitative analysis has been made on this aspect.

In 2015, 17,571 recreational fishing cards were bought, 3% more than in 2014 and 11% more than in 2013 (Ministry of the Environment, 2016). While the Ministry of the Environment welcomes the growing number of recreational fishers it also highlights that as a result there is an increasing pressure on fish resources (Ministry of the Environment, 2016).

Within the recreational fishing sector a special monitoring system exists: some fish are labelled with small plastic tags in order to follow their migratory routes. While it is mandatory for recreational fishers to submit fishing information when they fish in environmental protection areas (see above) an additional incentive also exists: if recreational fishers submit information on species, weight, length, sex of the labelled fish alongside the time and place the fish was caught and the fishing gear used, for each submission they receive €5.11, a gift and a letter with the data collected on the fish (Ministry of the Environment, 2016).

With the introduction of the new Hunting Law, monitoring activities were changed as previously the quality of habitats was evaluated while now status of the game populations is monitored.

Efficiency or cost effectiveness

As indicated above, the use of revenues collected from environmental fees and charges are guided by the Environmental Charges Act (2005) and are "*used for the restocking and protection of such resources*". Paragraph 13 of the Environmental Charges Act indicates that revenues from both charges are transferred to the state budget and funds arising from fishing and hunting fees are earmarked at the proportion of 2009 year tax-base, i.e. all additional funds that are collected above the 2009 tax year-base go to the general state budget and are not earmarked for conservation purposes (Interview with Mr Lamp, Ministry of the Environment, 2016). For fishing fees (both recreational and commercial), more than 75% of the revenues are earmarked.

The earmarked revenues are transferred to the Environmental Investment Centre (EIC), a state agency dealing with environmental issues, which then distributes the revenues in the form of grants (EIC, 2016).

The earmarked revenues from the fishing fees are used for research (e.g. building an inventory of fish stocks and establishing fishing quotas for commercial fishing each year), conservation actions (e.g. river restoration) and awareness raising (e.g. summer camps for children where they are taught about the importance of sustainable fishing) (Interview with Mr Lamp, Ministry of the Environment 2016). Earmarked funds from the hunting fees are used for replenishing and monitoring wild game resources, training, research and hunting grounds surveying and management planning (OECD Database).

In 2007, the total revenues from both fees (also including commercial fishing fees) only accounted for 0.4% of all revenues arising from environmental taxes in Estonia (Statistics Estonia 2009b). In 2015, total revenues from fishing fees (including commercial fishing fees) were €1.57 million out of which 77% were earmarked for conservation purposes. According to Mr Lamp (2016) on average half of the total revenues came from commercial fishing and the other half from recreational fees.

According to Mr Lamp (2016), hunters in Estonia have in recent years numbered around 13,000, which means that total revenues from the annual hunting fees (which cost €10) have been around €130,000.

As payments can be made online, the administrative burden of managing the fees is very low for the Ministry. In addition, since the system is made very user-friendly – for instance, fishers can dial a phone number to pay the fees which are then added to their phone bills – it has also resulted in a decrease in illegal fishing and hunting activities (Interview with Mr. Lamp, Ministry of the Environment, 2016).

Social impacts

In general, both fishers and hunters seem to welcome the investments that are being made with the use of the collected revenues to ensure sustainable natural resource use (Interview with Mr. Lamp, Ministry of the Environment 2016). In this sense, transparency and communication of how the revenues are used are essential aspects to which the state pays careful attention. Detailed information on the use of revenues and the conservation projects which are being funded by the environmental fees is available to the general public on the Environmental Investment Centre's website (www.kik.ee).

As indicated above, in order to mitigate hunters' opposition to the new hunting rules (related to game damage payments), the hunting fee was initially set relatively low. Nevertheless, the fee might be raised in the coming years as the impact of the new game damage rules turned out to be much less significant than expected (Interview with Mr. Lamp, Ministry of the Environment 2016).

Institutional context and legal requirements

In general three components can be highlighted that seem to ensure that hunting and fishing fees are well-embedded in the current institutional context in Estonia. First, the Environmental Charges Act, which outlines the key requirements and roles of the fees, seems to have an important overarching role and creates a solid basis for all environmental fees and charges in the country.

Secondly, in 2001 with the establishment of the Environmental Investment Centre, the Estonian Government created an effective system to collect and distribute the revenues raised by the environmental fees and charges, including the hunting and fishing fees. The Centre also has a crucial role in providing transparent information to citizens on the use of the collected revenues which in turn creates trust amongst the fishers and hunters.

Finally, a key enabling factor in the effectiveness of the hunting and fishing fees is the user-friendliness of the revenue collecting system, i.e. that fishers and hunters can buy the permits online or even on their mobile phones. This not only reduces the administrative burden on the government but also deters citizens from illegal activities.

5.4.2 Salmon fishing licenses in Ireland

Description, history and key features/design of the instruments

In 2007, in order to improve the conservation of Atlantic salmon, the regulation of salmon fishing in Ireland was reformed. Salmon stocks throughout Europe have been recognised to be declining for decades (e.g. WWF, 2000: Nasco, 2016; IUCN RedList, 2016) and this new licensing scheme was part of the broader efforts aimed at supporting the conservation of salmon in Ireland.

Since then a dedicated share (50%) of revenues collected by the Irish licencing scheme for recreational angling and commercial fishing of salmon, targeting both wild salmon and sea trout, are earmarked to contribute to the Salmon Conservation Fund. The fund is used to finance activities related to the conservation and sustainable management of salmon. The licencing scheme helps to regulate the fishing pressure on the salmon stocks while the funding provided by licencing provides an important source of funding for conservation actions, including for instance restoration of habitats, fish passage improvements, protection of river banks and riparian zone improvement. In general, based on the annual reports of the Salmon Conservation Fund it, seems that basic monitoring of the status of stocks (e.g. monitoring conservation limits and establishment / maintenance of fish counters in rivers) systematically takes up around 40% of the annual budget of the fund.

The current licence fees range from tens of € to more than €100 and depends on the the number of river basin regions and/or time period they cover. The upper band of the fee in 2014 was €100 / year, nevertheless the fee has been fluctuating since 2007 (e.g. in 2007 the upper band was €128 while in 2009 it went up to €134). The revenues raised by the licenses in the Salmon Conservation Fund (both recreational and commercial) also fluctuated and have slightly decreased in recent years (see 5.3).

Table 5.3 Revenues raised and funding provided for conservation projects by the Salmon Conservation Fund between 2007 and 2014

Year	Fee (€)[1]	Funds collected via licence sales (€)	Total funds available (€)[2]	Number of project proposals received[3]	Total funds requested	Number of projects funded	Total funds allocated to projects (€)	No. project proposed vs. approved	Funds requested vs. funds allocated
2007	128	636,858	636,858	64	1,460,000	34	636,000	53%	44%
2008	134	697,186	882,402	39	2,814,585	10	774,085	26%	28%
2009	134	654,157	762,474	25	2,041,626	12	756,000	48%	37%
2010	120	579,552	67,352	42	1,267,812	25	615,385	60%	49%
2011	120	607,704	973,539	40	992,389	37	682,927	93%	69%
2012	120	555,799	1,237,144	29	684,281	26	397,054	90%	58%
2013	100	541,070	1,381,160	46	1,016,740	39	571,996	85%	56%
2014	100	512,248	1,321,412	29	794,768	26	730,985	90%	92%

1) Upper band fee (Class 'A' licence)
2) Including unallocated funds carried forward from previous year
3) From 2010 onwards, fund opened for external (non-IFI) applicants

Source: Kettunen (2016) in [ref to be added] based on Salmon Conservation Fund annual reports (2007-2014)

The Salmon Conservation Fund, which collects the earmarked revenues, is managed by Inland Fisheries Ireland together with a range of actors (e.g. fishery owners and angling clubs), which are responsible for implementing concrete conservation projects on the ground. Up until now the projects have mainly involved actors in the recreational fishing sector, and not commercial fishers.

Conservation effectiveness

The assessment of the conservation status of Atlantic salmon in Ireland shows a slight improvement with a change in the overall status of "unfavourable-bad" during the 2001-2006 period to "unfavourable-inadequate" in 2007-2012. The Irish conservation regime for salmon is delivering some improvements, especially in terms of status of salmon habitats, which has improved from unfavourable to favourable[17].

The licence scheme and the earmarked revenue use is generally considered as an integral part of this success. Nevertheless, the licencing system can only target (both recreational and commercial) salmon fishing in the inland water habitats of species while several aspects related to the conservation of salmon in its marine environment (e.g. pollution and climate change) cannot be targeted by the system.

Consequently, efforts to restore river and coastal habitats – no matter how successful – have not been able to guarantee the overall success in conservation with only limited improvements in salmon stocks visible. The above highlights the complexities related to the conservation of mobile species and importance of placing biodiversity funding mechanisms within the context of a wider policy mix relevant for species survival.

Efficiency or cost effectiveness

As indicated above in Table 5.3, the Salmon Conservation Fund has raised significant revenues via the licensing system. Nevertheless no exact figures are available on the actual share between recreational and commercial fishing licenses.

At the same time, the evidence of ecological effectiveness of the scheme suggests that the highly targeted earmarked salmon licencing system can be considered a cost-effective means of supporting salmon conservation within the inland water phase of the species' life-cycle. However, it is difficult to draw any conclusions as regards the cost-effectiveness of an inland water targeted instrument in the overall salmon conservation regime, including the marine element.

[17] EU EIONET database: http://art17.eionet.europa.eu/article17/reports2012/species/report/?period=3&group=Fish&country=IE&region=

Social impacts

The undisputable scientific evidence of the declining salmon fish stocks and a general understanding of the issue amongst key stakeholders supported the introduction of more stringent salmon conservation and management rules and ensured the legitimacy of the new regime, including the earmarking via the Salmon Conservation Fund.

While the impacts of the new system were less visible on the recreational fishing sector, the more stringent fishing quotas, which were also part of the new rules, had a significant impact on the commercial sector and resulted in a significant reduction in the numbers of commercial salmon fishermen. While a dedicated compensation scheme was established to support the fishermen who opted to exit the sector, applying the increase in licencing fee across all stakeholders, including both commercial and recreational fishermen, was considered to help to balance the burden between the key stakeholder groups, improving the acceptance of the overall reform (Interview with Dr. Byrne, Inland Fisheries Ireland, 2016).

Institutional context and legal requirements

The licence fee is one component of a broader salmon management tagging scheme for wild salmon and sea trout that has been in place since 2001, underpinned by dedicated legislation (Fisheries (Amendment) Act, No. 35 of 1999) and is also supported by annual quotas for recreational and commercial salmon fishing.

Both the salmon licencing scheme and the Salmon Conservation Fund are managed by the same administrative body, Inland Fisheries Ireland, which is responsible also for the conservation and sustainable management of salmon stocks (e.g. monitoring).

This means that the key financing instrument for salmon conservation is well embedded in the broader institutional framework for the protection of the species providing what seems like a fit-for-purpose premise for harnessing and applying the funding.

5.5 Policy analysis of non-consumptive / tourism user fees

5.5.1 Nature park entrance fees

Description, history and key features/design of the instruments

A potential solution to generate revenue streams from wildlife and conservation in PAs is to levy targeted entrance fees on visitors wishing to enter a park or PAs. This ‘user pays’ view is often opposed to the ‘public good’ view which argues that natural areas are part of the national heritage and should therefore be supported by public funding to secure free access for all (Reynisdottir et al. 2008).

A common way to find the optimal level of entrance fees is to calculate the visitor’s willingness-to-pay (WTP) for the benefits experienced while hiking, wildlife watching or during any other form of non-consumptive outdoor recreation. As emphasised by Behrens et al. (2009), the WTP usually depends on “attractiveness” of the location to visitors, which is determined, for example, by ecosystem conditions and tourism infrastructures. While most research on and experience of entrance fees comes from the United States, where federal recreation fees have been applied since

the early 20th century, several studies have used the WTP approach to calculate the optimal levels of entrance fees in European parks. Reynisdottir et al. (2008), for example, provided evidence that a successful entrance fee programme can be designed to provide additional revenue to alleviate the financial shortage faced by natural attractions in Iceland.

While nature-based tourism might be effective in raising revenues, its adverse effects in the form of habitat disturbance represent a cause of concern (Behrens et al. 2009). Effects of disturbance have been documented in the literature and include increse in vigilance or escape to less disturbed (but probably less suitable) areas, lower breeding successes at the population level and reduction of the overall carrying capacity of sites (Bednar-Friedl & Behrens, 2012).

To address the two-edged effect of tourism on biodiversity, researchers have advocated visitor fees for those willing to pay for their recreation benefits, in order to generate sustained revenues for conservation actions and reduced pressures on wildlife (Behrens et al. 2009). The ability to achieve this trade-off has been tested to the Mallnitz valley of the Hohe Tauern, Austria's highest mountain range and largest PA in the Alps (Getztner et al. 2009) (See Box 5.2).

Box 5.2 Using user fees to manage and create funding for the Hohe Tauern Natura 2000 area (Austria)

The Hohe Tauern Natura 2000 area, which has an astonishingly large species variety, is the living area of the rock partridge *(Alectoris saxatilis graeca)*, a game bird protected by the EU Birds Directive as a species of particular conservation concern for which special protection areas have to be designated. The rock partridge, whose breeding grounds are found in the bottom of the Alpine valleys (between 1,780 m and 2,040 m), is particularly sensitive to human disturbance during nesting and hedging.

Using a mathematical model Behrens et al. (2009) found that conservation and tourism are not necessarily contradictory but can actually support each other to yield sustained revenues for the park management while ensuring that the endangered species reaches its conservation target in the long run. Indeed, when conservation is prioritised over tourism, i.e. the number of visitors is restricted, which results in attracting visitors that are ready to pay more to visit a site in better condition. In other terms, parks opting for "high quality tourism" are able to open up new sources to compensate costly conservation efforts.

Conservation effectiveness

There exists a large body of literature emphasizing the role user fees can play in the management of national parks and PAs (Alpizar, 2006; Krug et, al., 2002; Gelcich et al. 2013; Kaffashi et al. 2015). Although most of the research has focused on developing countries, findings may, to some extent, also be applicable to developed countries. In both developing and developed countries, for example, revenues from tourism are frequently merged with other sources of general revenues without being earmarked for park maintenance and conservation efforts (Krug, 2002; Reynisdottir et al. 2008). Imposing entrance fees therefore often seeks to counteract the threat of inadequate public funds for site maintenance and management. By earmarking revenues to conservation efforts, entrance fees are able to considerably raise the total revenues allocated to park management and deliver direct benefits to nature. This is especially relevant for countries where the total budget supplied by the government tax revenues is often insufficient to cover the effective costs of park maintenance. In Iceland, for example, where the maintenance, management and development of natural attractions have long been financed by tax-payers, charging entrance fees to visitors can offer additional resources to cover the running costs of the natural attractions (Reynisdottir et al. 2008).

While it may create a barrier for less wealthy visitors, the introduction of an entrance fee might help park managers reduce congestion and achieve conservation outcomes. Behrens et al.. (2009) showed that enhanced conservation of ecosystems can be obtained through a severe reduction in visitor numbers. Furthermore, improvements in the conservation status of species and habitats can increase visitors' willingness to pay to enter a PA and therefore the price that can be charged for entry (Bednar-Friedl & Behrens, 2012). This makes high quality ecotourism not only an attractive scenario for park managers but also for conservation purposes as higher net benefits from tourism and the achievement of the species conservation target are both safeguarded.

However, as indicated by Behrens et al. (2009) the ability to raise conservation funding is conditional on the popularity of the habitat, species characteristics, the species' vulnerability and conservation status. Controlling visitor numbers (by, for example, setting entrance fees) might therefore not always be appropriate for species that are less charismatic, more vulnerable to human impact and living in less popular/visited landscapes.

Efficiency or cost effectiveness

According to a WWF report, setting an appropriate PA entrance fee - one that covers both the PA's capital and operating costs, and ideally even the indirect costs of ecological damage – "is one of the best and most used ways for management agencies to capture a larger share of the economic value of tourism in PAs" (Font et al. 2004, p.23). Different studies have advocated for entrance fees as an effective means to raise revenues for PA management in Europe (Reynisdottir et al. 2008; Bednar-Friedl & Behrens, 2012).

Setting high entrance fees to control visitors while responding to both conservation and economic considerations appears to be particularly efficient in unique destinations such as the Galapagos National Park (GNP) in Ecuador or the Mon Repos National Park in Queensland.

Box 5.3 Entrance fee system in the Galapagos National Park (Ecuador)

In the GNP the revenue produced from the collection of entrance fees to the GNP nearly doubled from 2002 to 2007, thanks to an increase in the number of tourists (Table 5.4). While a small proportion of tourism income contributed to national revenues (e.g. municipalities, provincial council, navy), about 40% goes directly to the GNP financing 45% of its budget used for the management of the GNP and the Galapagos Marine Reserve.

Table 5.4 Revenues received annually from the collection of entrance fees to the GNP from 2002 to 2007

Year	Total revenues collected (million US$)	Number of visitors
2002	5.6	77,571
2003	6.1	91,345
2004	7.6	108,934
2005	8.6	121,676
2006	9.7	145,229
2007	10	-

Source: Adapted from Oleas, 2008

However, for most PAs the income obtained from admission fees does not cover maintenance costs, as is the case in the US parks where revenues collected are equivalent to 5-6% of the expenditure of the park's agency.

While introducing entrance fees represents an effective instrument to raise revenues at first sight, there exist a number of challenges for effectively implementing entrance fees in PAs. These include:

- Inefficient and expensive fee collection due to multiple entry points and size of the PA, which results in losses of entrance fee revenue from PAs - entrance fees might therefore be only suitable for those PAs where access is limited and controlled;
- Risk of redeploying scarce personnel resources towards collection of fees instead of protection of resources;
- Fear and resistance from users; and
- Corruption and bribery at entrance gates.

Potential ways to avoid the corruption problems are to implement transparent systems of accounting for revenues and expenditure, or design a cash-free system of entry at gates as introduced by the Kenya Wildlife Service (KWS).

Social impacts

Despite the numerous advantages provided by entrance fees to PAs (e.g. resource allocation efficiency, congestion alleviation, reducing costs and generating revenue for maintenance), public opinion remains divided on their use (Herath, 2000). Opponents have argued entrance fees can create adverse distributional consequences and represent double taxation. Other arguments against them include that public resources should allow equal access for all (Herath, 2000). In the UK for example, National Parks aim to promote free access for all and to widen access to the countryside among disadvantaged groups. A potential solution to address these multiple challenges could be to introduce voluntary payback schemes as presented above.

Institutional context and legal requirements

Pricing: Setting the optimal level of entrance fee is determined by the visitor WTP – which is itself influenced by the attractiveness of ecosystem conditions and some (exogenous) quality index for tourism infrastructure, and the PA conservation target. The aim of the park manager is to set entry fees at levels that achieve the right balance between visitor control and conservation funding, so as to maximise the long-term net benefits to the site and the species that depend on it (Behrens et al. 2009).

Operationalisation: According to Kirkbride-Smith et al. (2016), cooperation among visitors, tourism enterprises and park managers is a precondition for implementing a successful fee system. Visitors will also be encouraged to accept fees where clarity on how the money is used and managed is provided. This has been demonstrated by Casey et al. (2010) who found that user fee acceptance improves if visitors have knowledge that their funds are managed appropriately (e.g. nature protection and park management). On the other hand, providing a proportion of the entrance fee revenues to operators might represent an effective incentive to foster adoption and collaboration (Kirkbride-Smith et al. 2016). Furthermore, implementing an effective entrance fee system in a PA

rests on building the necessary infrastructure and capacity (e.g. personnel, buildings, etc.) to allow collection of fee revenues and control of visitors.

5.5.2 The Nurture Lakeland visitor payback scheme in England, UK

Description, history and key features/design of the instrument

The Lake District National Park in North West England is an area rich in landscape and biodiversity and a tourism hotspot. The National Park receives 16 million visitors a year. Inevitably this leaves some impact on the landscape and local environment. Addressing the environmental impact of tourism, and maintaining and enhancing the conservation interest of the area, is constrained by the available funding (Nurture Lakeland, 2016).

The initiative was originally launched in 1994 as the 'Lake District Tourism and Conservation Partnership', which brought tourism businesses together to collect donations from visitors through voluntary additions to room bills and other transactions. The organisation was rebranded 'Nurture Lakeland' in 2008 to recognise the new challenge of climate change and the role of the initiative in promoting responsible tourism (Nurture Lakeland, 2016).

Nurture Lakeland represents responsible tourism on the Lake District National Park Partnership and the Business Task Force. The organisation holds a CBEN Gold environmental management award, was a 'Tourism for Tomorrow' finalist in 2011 for Destination Stewardship and won the Virgin Holidays Responsible Tourism Award 2010 Best Destination (Nurture Lakeland, 2016).

In practice, the initiative works through the tourism industry. Tourism businesses collect the contributions from their customers, using a variety of methods suited to different types of businesses, who serve as a conduit between their customers and the conservation activities supported. The money raised supports a variety of projects across Cumbria, delivered by a range of organisations. Since the launch, the initiative has raised millions of pounds and supported hundreds of conservation projects and tourism businesses. For example, Nurture Lakeland raised a total of £111,674 in 2013/14 through funds collected by 149 different fundraisers (Nurture Lakeland, 2014).

These funds are raised through a variety of different transactions. Examples given in the 2013/14 annual report include:

- Hotels and bed and breakfast providers add £1 to £2 to the cost of a night's stay;
- Elder Grove provides funds from sale of home-made jam
- Dolly Wagon Guest House sells packed lunches and 2nd hand books
- £1 is charged for a bag of crumbs at Grasmere Gingerbread shop
- Postcard sales at Ellas Crag Guest House
- Bottled water sales at The Cottage in the Wood
- 10p on a cup of tea at The Square Cafe
- Ticket sales at Ullswater Steamers
- 5p on a pint of Jennings beer.

Customer donations are voluntary. For example, guests of hotels or bed and breakfast establishments may be invited to "opt-in" or "opt-out" of making a small donation when paying the bill for their stay.

Conservation effectiveness

The donations from Visitor Payback are used to support projects which go beyond statutory requirements, and are not used to support activities which the government has a statutory duty to perform.

The £116,674 raised for conservation in 2013/14 was distributed to a wide range of conservation projects outlined below.

Fix the Fells (£43,383): Fix the Fells is a partnership programme between the Lake District National Park, National Trust, Natural England, Nurture Lakeland, Friends of the Lake District and Cumbria County Council to repair erosion scars from recreational use and ensure that they are prevented in the future. The work being aims to prevent this loss of grass and soil by designing and creating paths that are resilient to wear and tear and reduce the impact on the surrounding landscape. This includes laying of stone on steep slopes and the use of a soil inversion technique on less steep slopes. The project also supports fencing, walling, hedge laying and tree planting. Sites to benefit in 2014 included Crinkle Crags, Harter Fell, Striding Edge and Dale Head. At Catbells, the team planted 240 trees on and around erosion scars to obscure the lines of the scars, deter people from walking on them, and stabilise the surface (Nurture Lakeland, 2015a).

Dubwath Silver Meadows (£1,858): Dubwath Silver Meadows is a new 7 hectare wetland nature reserve which was once part of Bassenthwaite Lake and is now home to a range of special wetland flora and fauna. Donations in 2014/15 funded improvements for visitor facilities including new display boards, a new picnic table (from a local sawmill), repairs to the boardwalk, working with an artist on the information board project and a leaflet reprint (Nurture Lakeland, 2015c).

Experience the River (£1,271): This project, run by South Cumbria Rivers Trust, provides educational visits to local rivers for children from local schools. Funding from Visitor Giving has been vital to the continued implementation of the project, which reached more than 1000 local children between 2006 and 2015 (Nurture Lakeland, 2015b).

Red Squirrels (£6,374): The project supports networks of volunteers and contractors to carry out grey squirrel control in nature reserves and 5km buffer zones, and train volunteers to assist with population surveys and monitoring. The project also provides education programmes and web-based teaching materials for schools, and awareness raising activities such as educational walks, talks, community events, signs and interpretation panels at the reserves, a website and local media. The project recently won “Wildlife Success Story of the Year” in the BBC Countryfile Magazine Awards (Nurture Lakeland, 2015d).

In addition to the above, other projects received a sum of £31,147.

The above examples demonstrate that visitor giving has supported a diverse portfolio of conservation activities in the Lake District, delivering tangible conservation outcomes. Because of the link to visitor giving, many of the funded activities have a clear link to the tourism sector, including through the provision of visitor infrastructure and management of visitor impacts. As a funding scheme, the overall ecological effectiveness of Nurture Lakeland depends on the ecological effectiveness of the different projects which it funds.

Efficiency or cost effectiveness

Visitor giving collects funds relatively cost-effectively by relying on tourism businesses to secure voluntary donations from their customers. The scheme works on the principal that many small contributions combine to deliver significant levels of funding. The scheme is specifically designed to work in the tourism industry. The joined-up and strategic approach is seen as more effective and understandable for both visitors and potential investors than many small disparate approaches.

An analysis by Reed *et al.* (2013) found that the main costs of running the visitor giving scheme are staff costs (86% of total scheme operating costs). Staff time was required for establishing the scheme, creation and maintenance of websites, applying for grant funding and processing (and sometimes following up on) donations. The other main costs were for marketing, IT (including website hosting charges and PayPal licenses - 2.5% of total costs) and overheads (7.5% of total costs).

Further in the process, the use of volunteers enhances the cost-effectiveness of the conservation projects funded by the scheme. For example, volunteers provided 1,497 days of labour to the Fix the Fells project in 2014.

Social impacts

Because of the voluntary nature of the scheme, for both visitors and businesses, there is limited risk of adverse social impacts. Nurture Lakeland suggests that it delivers a range of positive social benefits, arguing that the scheme represents a “win-win”, in that visitors are more connected to the places they enjoy visiting and experience satisfaction from contributing to their future. The scheme is also characterised by its low participation effort and threshold, making it easy for thousands of visitors to contribute relatively small sums, which accumulate to provide funding for practical conservation.

Market research by Nurture Lakeland has found that both visitors and owners of tourism businesses have a strong bond and loyalty to the Lake District’s landscape and natural environments. More than 90% of those surveyed said that they felt they ‘should’ make a small voluntary contribution towards the upkeep of the area. The opt-out scheme with participating accommodation businesses has a 95% take up (100% online) by guests.

Nurture Lakeland reports that visitor giving has also helped to enhance businesses’ understanding of the natural environment and their support for activities to protect and enhance it. It states that surveys conducted at the beginning and end of projects financed by the scheme have established that businesses feel they have learned more about the natural environment and were keen to stay involved.

Nurture Lakeland employs two staff members. Volunteers play an important role in supporting the work of the initiative, by helping in the office, recruiting businesses into the visitor giving scheme, researching the tourism sector, promoting responsible tourism, and undertaking marketing and fundraising work. This is evidence of engagement in the initiative by communities and visitors.

Institutional context and legal requirements

Nurture Lakeland is steered by a board of trustees from the environment, business and tourism sectors in the Lake District and Cumbria, which meets quarterly to provide strategic guidance to the work of the organisation.

An independent Grants Panel makes the decision as to which projects receive funding. This is guided by Nurture Lakeland's internal strategy, identification of areas of need, and knowledge of conservation/environmental issues locally. The Grants Panel is made up of representatives across all sectors, including the conservation sector and the tourism sector. Projects themselves submit an application and this is assessed against set criteria. Assessment is made by the grants panel twice a year but submissions may be made at any time.

The projects supported by Nurture Lakeland are delivered by a range of public and voluntary sector organisations, including local authorities, conservation agencies and NGOs. These projects also receive funding from other sources, including core public funding, grants and charitable donations. The funded activities are guided by the objectives and plans of the partner organisations and the target sites.

5.6 Conclusions

5.6.1 Compare different designs for implementation

Hunting and fishing fees are levied on recreational hunters and anglers and aim to raise revenues for the use of natural resources, i.e. fish stocks and game populations. While such fees and/or permit systems are in place in many EU Member States the use of revenues and whether they are specifically earmarked for conservation purposes varies. The Irish and Estonian cases are examples where the funds raised by the licenses are channelled to a dedicated authority and/or fund and are used to maintain and manage the sustainable use of fish stocks and game populations. In both cases the revenues raised are used to financially support specific projects aiming to achieve conservation objectives.

Entry fees and visitor payback schemes both seek to raise funds from users of the natural environment, which then contribute to its management. While entry fees are levied at the point of entry or use of the site, and are compulsory in nature, visitor payback schemes are voluntary and are used to raise funds from the wider population of visitors, in order to support conservation management and visitor infrastructure.

Experience suggests that entry fees are suited to limited cases in the EU – very special places for which people are willing to pay for entry, and with distinct entry points where those who refuse to pay may be excluded. While they may play a significant role in raising funds for conserving some of the world's greatest biodiversity hotspots, their role in the EU is more limited. This is partly because the EU's biodiversity is more dispersed and provides less of a concentrated experience to visitors, and partly because the transactions costs of excluding non-paying visitors are high due to the extensive nature of many of the EU's PAs.

As well as raising funds, entry fees and permits can have added benefits in controlling visitor pressure, by limiting the numbers of recreational users. This can be an added benefit in the case of the most unique and sensitive protected areas.

Visitor payback schemes can overcome some of these limitations by harnessing the willingness to pay of the wider visitor population. By involving local businesses, they can also share transactions costs and provide local businesses as well as visitors the opportunity to support conservation of the natural environment. Visitor payback schemes have been proven to be effective in channelling funding into conservation at the local level, but this has occurred only on a relatively small scale to date. This may be because schemes are voluntary in nature and tend to involve relatively small payments.

5.6.2 Transfer potential to other governmental levels

Hunting and fishing fees are in most cases applied at the national level. Nevertheless, they can be differentiated based on the areas / water bodies they target. In the case of the Estonian example a special fishing card was introduced by the national authorities, in order to allow recreational fishing in PAs. At the same time, local and regional authorities may play a role in the implementation of the specific conservation projects which are taking place at specific areas.

Both entry fees and visitor payback schemes need to be applied at a local level, taking account of the characteristics of the area and visitors willingness to pay, as well as site access arrangements (in the case of entry fees) and the structure and level of commitment of the local tourism economy (in the case of visitor payback schemes). Regional and national governments may have a role to play in sharing experience and promoting and mainstreaming successful approaches.

5.6.3 Potential for upscaling to EU level

Hunting and fishing fees are widely applied in EU Member States. Nevertheless, their contribution to conservation efforts varies. The two examples presented in this case study may serve as good practice for others on how earmarking of the revenues raised by such fees can ensure that significant funding is dedicated to the achievement of conservation objectives. While revenues are not considered to be on a sufficient scale to substantially close the funding gap for biodiversity conservation in the EU, they can play a role in maintaining healthy fish and game populations and habitats and may also support awareness raising.

Entry fees are a well-known instrument, and the limited funding that they provide for biodiversity conservation in the EU suggests that there are significant barriers to their greater application. These relate to the uniqueness of EU sites and species (and hence the willingness to pay to enter protected areas in the EU), the difficulty of restricting entry to extensive protected areas, the transactions costs of collecting entry fees, and concerns about the social impacts of charging for entry to nature sites.

Visitor payback schemes have perhaps been less widely tested in the EU context, and may offer more potential for growth, particularly in areas where the business community can be mobilised to raise funding for conservation activities. The effort needed to develop successful partnerships is a significant barrier, and evidence to date suggests that the resulting funding is often fairly small in scale, even in highly visited areas. New technological solutions – such as smart phone apps used to collect visitor donations – may offer potential for growth.

For the reasons identified above, neither entry fees nor visitor payback schemes are likely to generate funds on a sufficient scale to close current funding gaps. Both may play an enhanced role at a local level, while visitor payback schemes perhaps offer the greatest potential for growth across the EU.

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