

PART II

Chapter 5

Biodiversity: Protection of areas of outstanding natural beauty

This chapter analyses the efforts made by France to strengthen its policy framework for the protection and sustainable use of biodiversity. It describes the status and development of biodiversity in France, as well as the pressures upon it. The chapter analyses the strategic, legislative and institutional framework in place and ongoing efforts to streamline the governance of biodiversity. It examines the increase in protected areas, the instruments used for conservation and the sustainable use of biodiversity, as well as funding resources. The manner in which biodiversity-related objectives are integrated into agriculture, land use planning, infrastructure and urban development is also analysed.

1. Status, trends and pressures on biodiversity

1.1. Status and trends

Due to its geographical position in Europe and overseas, France has an extremely rich natural heritage that makes it one of the 18 megadiverse countries (Mittermeier et al., 2008).¹ The Mediterranean basin forms part of the world's 35 biodiversity "hotspots",² along with the Antilles, the Amazon, the Indian Ocean Islands, New Caledonia and the Pacific Islands, where various French overseas territories are located (with a total land area of 119 394 km²) (Conservation International, 2015; Mittermeier et al., 2008). According to the French National Inventory of Natural Heritage (INPN), new species are discovered in these areas at a rate of over 10 000 per year. Because of its overseas territories, France is the world's second largest maritime nation, with over 10 000 000 km² of maritime area under its jurisdiction in all the oceans and in French Polynesia in particular. France is therefore responsible for 10% of the world's coral reefs and 20% of its atolls. It is one of the countries with the most threatened species and therefore has huge responsibilities in this respect (Bocquet and Gargominy, 2013).

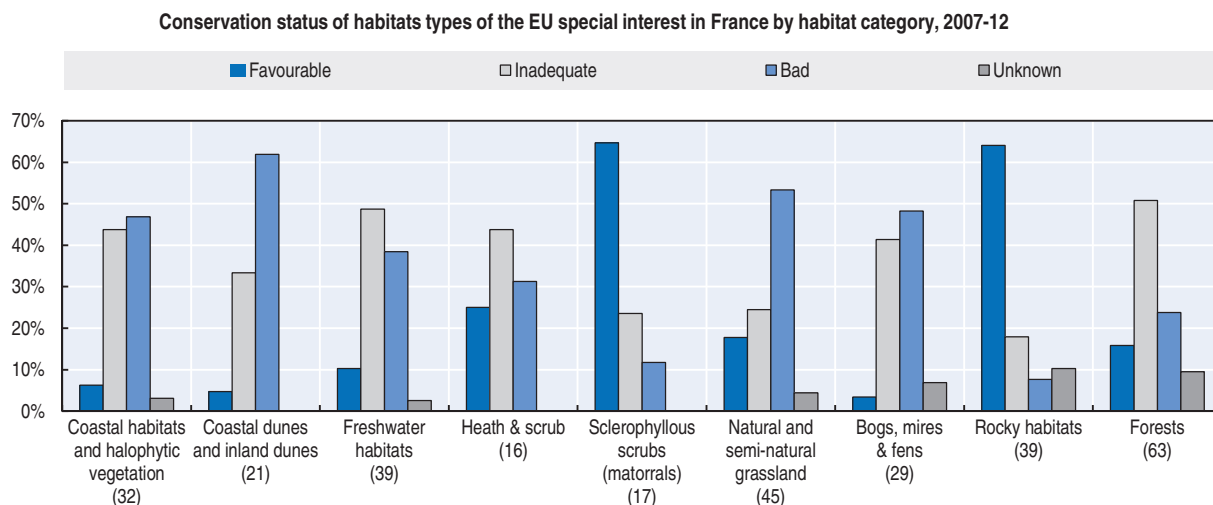
France also has significant responsibility for European biodiversity. With a territory of 549 000 km², metropolitan France is the largest EU country and benefits from a rich diversity of landscapes and natural environments, at a crossroads between several biogeographical areas. It accommodates a broad diversity of species (over 87 000) and leads Europe in terms of amphibian, bird and mammal diversity. It is also home to 40% of European flora species and 132 (61%) of the 216 habitats of Community interest in EU territory, i.e. rare habitats or habitats in danger of disappearance and recognised as such by the Habitats, Flora and Fauna Directive (92/43/EEC).

Natural environments

The situation of natural environments in metropolitan France continues to raise concerns, with three-quarters of its habitats of Community interest assessed as at an unfavourable conservation status, without notable improvement since 2007 (Figures 5.1 and 5.2). The action taken has not produced the expected results. Only 22% of natural habitats are at a favourable status, and the status of 5% of these is unknown. The status of many habitats in the Atlantic and Continental biogeographical zones in particular is unfavourable, and the status of some is poor.

The disappearance of wetlands is a global conservation challenge because of their special biodiversity, but also because of the various ecosystem services they provide, especially in terms of water cycle regulation (floods, droughts). France lost two-thirds of its wetlands between the end of the 19th century and the 1990s, and 50% in the second half of the 20th century. French wetlands cover a mere 3% of national territory. The assessment report on the 2010-13 National Action Plan for Wetlands (Lavoux et al., 2013) refers to "degradation that barely slowed down, where over half the sites deteriorated substantially or in part between 2000 and 2010, 28% of sites were considered to be stable and 14% had improved". In the

Figure 5.1. **Three-quarters of habitats of Community interest have an unfavourable conservation status**



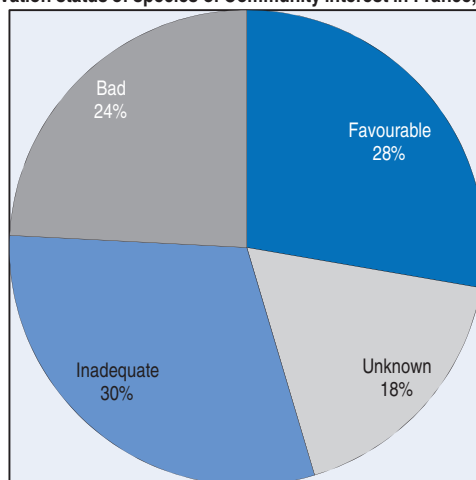
Note: Number in brackets refer to the number of evaluations carried out.

Source: ONB (2015), *Indicateurs de biodiversité en base de données* (database).

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Figure 5.2. **Over half the species of Community interest have an unfavourable conservation status**

Conservation status of species of Community interest in France, 2007-12



Source: Medde (2014), *Convention on Biological Diversity - Fifth National Report of France*.

previous survey, covering the period between 1990 and 2000, the experts were more negative: 51% of sites were considered to have deteriorated in part and 5% to have deteriorated sharply, suggesting that progress had been made. These findings are based on experts' consultations, since few aggregated data are available nationally to facilitate an assessment of the area and functionality of wetlands. Inventories were taken at departmental or municipal level (or by water agencies at water basin level), but small wetlands (less than 1 ha) are not usually inventoried, and methods of assessing functionalities are not standardised.

The ecological status of a significant proportion of continental aquatic environments other than wetlands is not good. The 2009 assessment of the ecological status of water

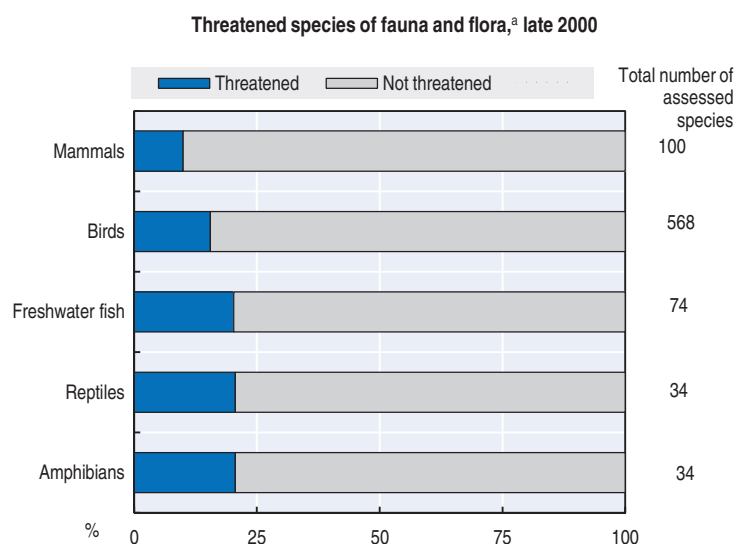
bodies shows that, out of 11 523 surface water bodies (watercourses, stretches of water, transitional waters, coastal waters), 7% were heavily modified or artificial and fewer than half (45%) had a good or very good ecological status (Vial et al., 2010). The assessment of fish populations was more positive: in metropolitan France from 1990 to 2009, the average number of species by sampling point (590 points at metropolitan level) increased in 58% of cases (and fell in 34%), while species density increased in 74% of cases (Poulet et al., 2013).

With respect to marine environments, the proportion of non-assessed habitats continues to be high: 53% for the Atlantic Ocean and 67% in the Mediterranean, where many fish stocks are heavily overexploited (MEDDE, 2014). In the overseas territories, knowledge is even poorer, but a 2008 assessment suggests that 30% to 50% of reefs are degraded on the most heavily populated coasts (Antilles, Réunion, Îles de la Société, Mayotte) (Ifrecore, 2008).


Flora and fauna

Around 10% of mammals, 15% of birds and 21% of reptiles and amphibians are threatened in metropolitan France³ (Figure 5.3). While these rates are high, they are lower than those in most OECD countries.

Figure 5.3. **One out of five species is threatened in metropolitan France**



a) IUCN categories "critically endangered", "endangered" and "vulnerable" in % of assessed species.
Source: OECD (2015), *OECD Environment Statistics* (database).

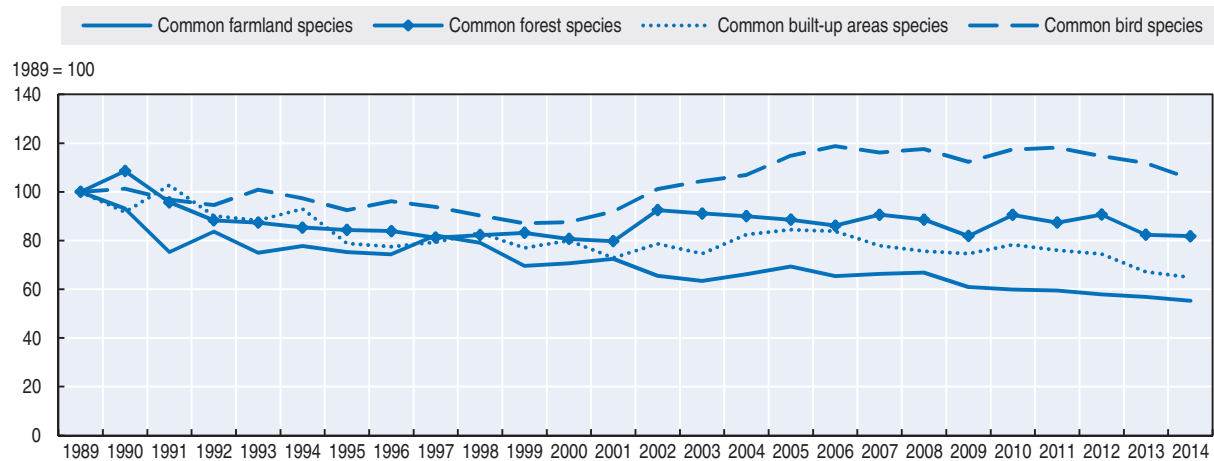
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Some of these species benefit from targeted action plans, most of which began in 2010-11, such as those for certain birds of prey (section 4.2). Many common species not covered by these plans, however, continue to decline (Figure 5.4), particularly specialised species in agricultural environments, whose abundance levels are significantly below 1989 levels (-32%) and probably well below 1970s levels compared to Europe as a whole. The current situation therefore continues to be a cause for concern. Stocks of general species, on the other hand, have been increasing significantly over the past 10 years, illustrating the phenomenon of homogenisation of biological communities, a key factor in biodiversity loss.

The situation is even more serious in the overseas territories. In Réunion and Guadeloupe, for example, over 30% of birds are threatened or have already disappeared. A

Figure 5.4. **Specialised birds in agricultural environments continue to suffer from intensive farming**

Trend in population of comun bird species in Metropolitan France, 1989-2014



Source: ONB (2015), *Indicateurs de biodiversité en base de données* (database).

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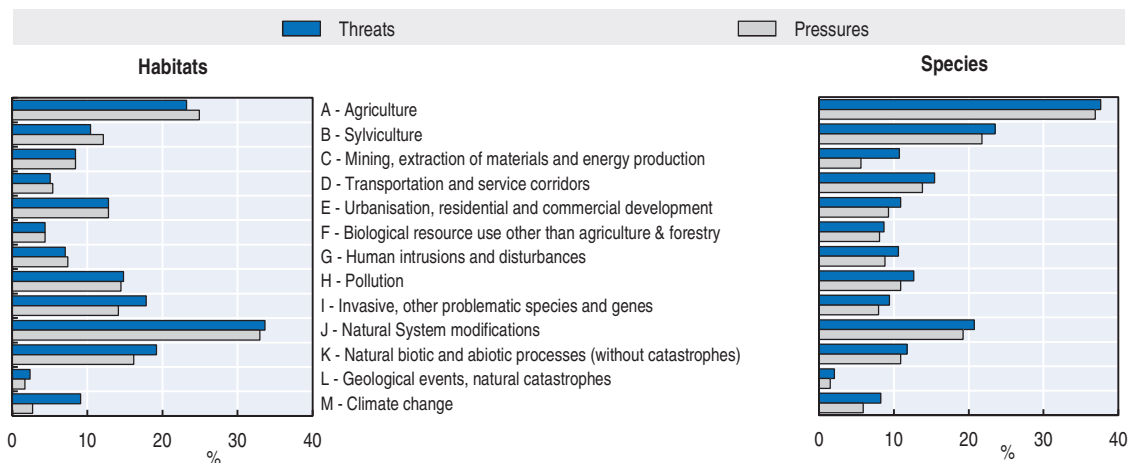
third of Réunion's native vascular plants are threatened, as are the island's three land reptiles. In New Caledonia, an area of less than 20 000 km² accommodates 3 371 species of vascular plants, 75% of which are endemic. The island hosts 7% of the planet's conifers. The rate of endemism exceeds 90% for low and medium altitude scrubland associated to heavy metal soils. These habitats have suffered most from mining activity.

1.2. Pressures on biodiversity

Intensive agriculture, habitat fragmentation and land take but also alien invasive species and climate change are the greatest threats to French biodiversity (Figure 5.5).

Figure 5.5. **Agriculture and habitat conversion and fragmentation are the principal threats to habitats and species**

Percentage frequency of pressure and threats of "high" importance



Source: EIONET (2014), National Summaries under Article 17 of the Habitat Directive, 2007-12.

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Agriculture

As in other Western European countries, agriculture is regarded as the primary anthropogenic parameter with an impact on biodiversity in France. Agricultural land (arable land and crops, grassland and pasture) occupies over half the metropolitan area, and increased agricultural output resulting from the modernisation and intensification of agricultural practices since the 1950s has led to strong homogenisation of agricultural landscapes and biodiversity depletion (Le Roux et al., 2008). Grassland declined by 8% between 2000 and 2012, and where large-scale crops are grown, deep ploughing, pesticide use, nitrogen mineral fertilisation, drainage and irrigation have brought about an overall decline in biodiversity.

Synthetic plant protection products, used repeatedly for perennial crops, are now regarded as a major cause of biodiversity decline in agricultural ecosystems in industrial countries. In 2013, France was the second-largest European consumer of pesticides by total volume, behind Spain, while in 2010 it was in eighth place at world level (Chapter 1). The presence of pesticides in watercourses and groundwater is a cause for concern. This contamination is due largely to herbicides in metropolitan France and insecticides in the overseas territories. The presence of pesticides in groundwater is relatively lower than in watercourses, but the situation has developed little since the beginning of this century.⁴

Although surplus agricultural mineral elements (nitrogen and phosphorus) have declined in France since 2000, the impact of farming is still significant, largely because of the intensification of fodder production (grassland conversion) and the eutrophication of aquatic and coastal ecosystems, particularly in intensive farming areas in western France (Chapter 1). Phosphorus inputs have fallen by 50% since 2010, due partly to the widespread availability of soil studies to rationalise fertilisation and because of variations in phosphate prices.

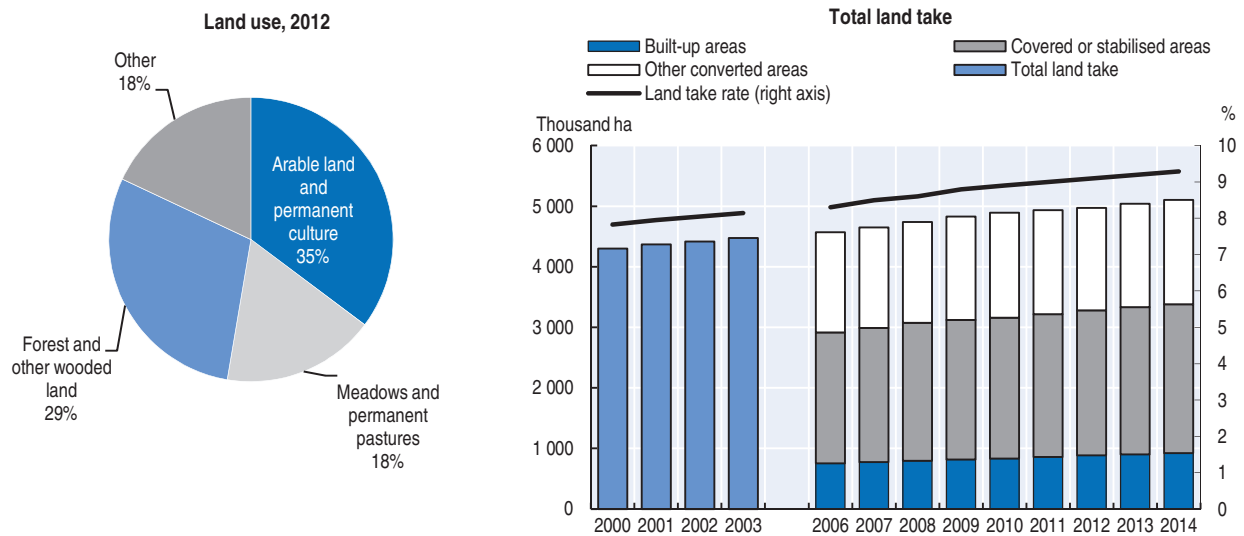
Land take and fragmentation

Land take increases twice as quickly as the population, mostly at the expense of agricultural areas and woodlands and habitats needed by fauna and flora. This consumption of space also breaks up habitats and ecosystems, giving rise to additional impacts on biodiversity (EEA, 2011).


Artificial areas represented over 9% of the land area in 2014, an increase of 19% compared to 2000, with a net acceleration since 2006 (Figure 5.6). Space is mostly given over to economic activities (waste treatment, trade and service companies), public amenities and transport infrastructure, particularly roads and motorways. The latter account for 80% of surfaced and stabilised land, the area of which increased by 14% between 2006 and 2014. Urban development has affected areas increasingly distant from the major conurbations and the coastline, particularly along transport infrastructure and borders (EEA, 2011; SOE, 2014).

Alien invasive species

Alien invasive species (AIS) are one of the main threats to biodiversity in the overseas territories because these ecosystems are so vulnerable to biological invasion. In Réunion, for example, invasive species have become the primary cause of biodiversity loss, with 133 non-native plant species and 16 non-native land vertebrate species whose voluntary or chance introduction by man threatens ecosystems, habitats and native species, with negative environmental, economic and health consequences. These species represent a threat to

Figure 5.6. **Land take is accelerating**

Source : FAO (2015), FAOSTAT (database); MAAF (2015), TerUti-Lucas Survey, 2014.

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biodiversity because biological communities have homogenised and gradually become more commonplace at world level.⁵ In metropolitan France, 2 623 species are considered to be AIS (DAISIE, 2013), and in 2010 few wetlands were immune to them (CGDD, 2013a).

AIS management costs France around EUR 19 million per year, 68% of which is spent in the overseas territories and 32% in metropolitan France (CGDD, 2015a). The (essentially health-related⁶) damage caused by these species, which persist despite management measures, has also been estimated at EUR 19 million per year.

1.3. Projections with maintenance of the status quo

A number of forecasting exercises have been carried out in the context of French and European research programmes or have been promoted by public sector stakeholders. The Ministry of Ecology, Sustainable Development and Energy (MEDDE), for example, carried out a study entitled “Biodiversity 2030” (CGDD, 2013b). The MEDDE constructed and subsequently mapped five scenarios to identify and examine major trends in and challenges facing biodiversity, including a “sheltered biodiversity” trend scenario. In this scenario, competition between socio-economic and environmental policy factors would continue despite a gradual strengthening of environmental regulations, though socio-economic aspects always prevail in preserving the environment. The resulting image in 2030 is that of “declining ordinary biodiversity because of fragmentation and artificialisation but an increase in general species which are the only ones that can resist increasing artificialisation. Noteworthy biodiversity persists in several conservation pockets”. The analysis proposed in this chapter corroborates these conclusions.

Beyond the trend scenario, the results of the study indicated that certain areas were particularly sensitive to development and land use planning trends. Coasts are particularly sensitive because of land and demographic pressure and the risks associated to climate change. In agricultural areas, particularly where large-scale crops are prevalent, the development of farming systems will be crucial. Permanent grasslands in particular are

vulnerable to technical and economic choices because they are protected and managed by short- or medium-term contractual instruments. The future of forests, the area of which is likely to stabilise, will be linked in part to the possible development of a wood-energy sector. These forecasting exercises illustrate the importance of greater respect for biodiversity in the agricultural sector and in land use planning, particularly in coastal areas.

2. Strategic and institutional framework

2.1. Biodiversity conservation objectives and legislation

France met the international commitments set out in the Convention on Biological Diversity (CBD) through its 2004-10 National Biodiversity Strategy (NBS), followed by the 2011-20 Strategy. The country's biodiversity policy is largely determined by EU legislation, particularly the birds, habitats and fauna and flora Directives, and falls within regional conventions such as the Berne Convention on the Conservation of European Wildlife and Natural Habitats, the Alpine Convention and the six Regional Sea Conventions (Mediterranean, Antarctic, Caribbean, Indian Ocean, South Pacific and North Atlantic). The policy has resulted in the formulation of copious legislation, from the Grenelle Environment laws to the current draft law on biodiversity. At the 2012 Environmental Conference, the President of the Republic set a target of ensuring that France becomes an exemplary country in biodiversity conservation.

National Biodiversity Strategy 2004-10

Pursuant to Article 6 of the CBD, the principal objective of the 2004 NBS was to halt biodiversity erosion by 2010. France, like other countries, did not achieve that objective, though the NBS did keep pace with significant developments concerning species and area protection in particular, underscored in the appraisal carried out by the Ministry of Ecology, Sustainable Development, Transport and Housing (MEDDTL, 2012). Assessments by the Government (Alexandre et al., 2010) and the French Committee of the International Union for the Conservation of Nature (IUCN, 2010) or in connection with the impact study on the draft law on biodiversity (National Assembly, 2014) are more qualified. The sectoral nature of the 10 action plans⁷ for implementing the NBS, drawn up by the Ministries concerned, led to a lack of cohesion and an erosion of the Strategy's ambitious objectives in favour of insubstantial changes to the sectoral policies. The commitment of the various Ministries in drawing up and piloting the plans was also rather mixed if not totally absent in the case of urban development (Juffé et al., 2012; Alexandre et al., 2010). Finally, certain sectors were not approached, such as education and industry, and there was a marked lack of planning for water and aquatic environments.

The lack of involvement of stakeholders was emphasised, the NBS being formulated initially largely by the former management of the Ministry's Department for Nature and Landscapes and some technical contributors (associations and scientists). The Strategy was in addition not presented well to the general public. The action plans were rekindled in 2009 to include contributions from the Grenelle Forum, thus correcting the lack of consultation to some extent. In the eyes of the public, however, the Grenelle Forum took over the NBS rather than vice versa.

The Grenelle Forum, 2007

Opening in 2007, the consultation process known as the Grenelle Forum led to major developments in terms of biodiversity (Chapter 2). The Grenelle II Law resulted, in particular,

in the reform of impact studies, the definition of national green and blue infrastructure and regional ecological consistency schemes, and the definition of a national strategy for the integrated management of the sea and coastline.⁸ Local authorities, however, particularly in the overseas territories, were not sufficiently involved in the consultations. One of the working parties set up under the Grenelle Forum focused on biodiversity and natural resource conservation. Its main proposal was to create “green infrastructure” to counter habitat fragmentation,⁹ taken up from 2008 under the responsibility of an operational committee dedicated to “trames vertes et bleues” [green and blue belt network] (TVB)¹⁰ (sections 3 and 6.2). Although representatives of the departments and regions had been invited, they never took part in the meetings (Vimal et al., 2012), which involved highly technical discussions. Despite these limitations, however, the consultation approach adopted by the Grenelle process is often held up as a model, particularly because of the place granted to civil society in drawing up proposals.

A Grenelle Forum working party sought to adopt sustainable production and consumption methods (agriculture, fisheries, agri-foodstuffs, distribution, forests, sustainable land use) by including representatives of employees and companies in its work. One of the project’s most notable successes was the increasing recognition by enterprises of their social and environmental responsibility (RSE).¹¹ The results in terms of biodiversity, however, will be difficult to assess.

National biodiversity strategy 2011-20

The momentum generated by the Grenelle Forum prompted a revision of the 2004-10 NBS, with greater stress being laid on consultation among upstream stakeholders and on voluntary commitments downstream, whereby stakeholders “adhere” voluntarily to the NBS and are thus labelled. This participatory approach addresses one of the main criticisms levelled at the previous NBS, though it did not sufficiently mobilise local authorities (Juffé et al., 2012; Le Clézio, 2010). In March 2015, over 450 organisations had adhered to the NBS and were therefore committed to its implementation, yet only 74 projects had been labelled. Over and above the value of this approach in enabling a variety of stakeholders to participate in biodiversity policy, the recourse to voluntary commitments undoubtedly leads to the labelling of projects that would have been implemented even in the absence of the NBS framework. The impact of these projects is furthermore difficult to assess in anything other than qualitative terms, since they do not have specific objectives to reduce pressure according to precise deadlines.

While the 2011-20 NBS was conceived on the basis of Aichi Targets defined in the CBD strategic plan, its targets are not quantified and do not have deadlines, which makes them difficult to assess. By way of illustration, the NBS seeks to “build a green infrastructure including a coherent network of protected areas” (Target 5) and to “preserve and restore ecosystems and their functioning” (Target 6). The corresponding Aichi Target (Target 11), meanwhile, clearly specifies the objectives to be achieved by 2020. The NBS 2004-10 targets, such as the establishment by 2020 of a coherent network of protected maritime areas for 20% of territorial waters under French jurisdiction, or the introduction of strong protection for at least 2% of the metropolitan land area before 2020, were not included in the NBS 2011-20. The NBS was nevertheless underpinned by a range of target indicators, such as the proportion of threatened species (identified under the National Strategy for the Creation of Protected Areas), for which the metropolitan network of protected areas is regarded as satisfactory or partially satisfactory in ensuring their conservation, expressed in the form of a percentage completion of the network of protected areas for endangered species. An

indicator of this kind appears to be more relevant in measuring the effectiveness of actions carried out under NBS Target 5 than a simple percentage of the country's area.

The NBS does not specify a strategy for mobilising resources, unlike the CBD. Credits for biodiversity protection and enhancement, however, are shared out among a number of tasks and programmes under the finance acts, in various ministries, making it difficult to assess their amount and their contribution to NBS implementation. Furthermore, "innovative" funding, from the private sector in particular, is not assessed, while the NBS mentions payments for ecosystem services and green offsets as levers for action. These shortcomings in the NBS in relation to the role of the State and its funding had been identified from 2011 by the Economic, Social and Environmental Council (ESEC), which correctly concluded that the issue of resources allocated to biodiversity would arise particularly acutely in coming years (Blanc, 2011). Target 9, which involves developing and perpetuating financial and human resources for biodiversity, is therefore particularly relevant.

The French State's biodiversity commitments for 2011-13 (Prime Minister, 2011) do not adhere to the framework proposed by the NBS and do not refer to its targets. Communication regarding these commitments focused on calls for projects with a view to encouraging stakeholders to commit themselves in this area too. The communication options taken concealed or minimised the importance of planned legislative or regulatory developments, making the overall coherence of state action more difficult to perceive. The legislative changes made by ministerial departments as a whole and by Parliament must be better integrated into the strategic framework of the NBS to improve the image of these changes and to ensure that the contribution of the NBS to the National Strategy for Ecological Transition towards Sustainable Development (SNTEDD) is not watered down.

The draft law on biodiversity conservation

The draft law, currently under discussion in Parliament, seeks to renew the vision of biodiversity by ensuring that it encompasses all living things and by promoting its inherent dynamism in a context in which the disappearance of biodiversity services may have an impact on human activities. Its key measure is to rationalise biodiversity governance by setting up the French Biodiversity Authority (section 2.2). The draft law also seeks to introduce a scheme providing access to genetic resources and to the sharing of advantages arising out of their use following the ratification of the Nagoya Protocol (section 5.4) and the modernising of a number of instruments for preserving species and their habitats, such as environmental offsets (section 6.2).

International commitments

France is deeply committed to development co-operation in relation to biodiversity and was one of the first OECD countries to formulate a co-operation strategy addressing this issue (Drutschinin et al., 2015; AFD, 2013). Public development aid for biodiversity has almost tripled since 2007-08, making the country the sixth largest sponsor among OECD Development Aid Committee members in 2012-13 (ONB, 2015a; OECD, 2015a). Under the CBD, France is committed to doubling financial flows for world biodiversity in 2015 (compared to the 2006-10 annual average) and maintaining them until 2020 (COP 11, Decision XI/4, 2012; COP 12, Decision XII/3, 2014).

France was a driving force in setting up the IPBES (International Science-Policy Platform on Biodiversity and Ecosystem Services)¹² (IUCN, 2010). It is also one of the two donor countries to the Critical Ecosystem Partnership Fund, which awards grants to NGOs and

the private sector to facilitate civil society engagement in protecting biodiversity hotspots. It is also one of the two countries which finance the work of the Conservation Finance Alliance on sustainable funding mechanisms for biodiversity conservation (Drutschinin and Ockenden, 2015). The French Development Agency funds pilot projects for establishing these mechanisms in a number of sub-Saharan and Pacific countries.

In 2005, France became one of the 10 IUCN framework partners. This partnership supported the strengthening of protected areas in Africa and the development (currently under way) of a biodiversity funding tool for European overseas territories. Finally, the Small-Scale Initiatives Programme (PPI), launched by the French Global Environment Facility (FFEM) in 2005 to support African NGOs in sustainable biodiversity conservation and management, was so successful that the IUCN made it a model for developing the PPI for civil society organisations in North Africa (PPI-OSCAN), funded by the FFEM and the MAVA Foundation (Switzerland) (IUCN, 2014).

2.2. Institutional framework and co-ordination mechanisms

The State

In 2007, the Ministry responsible for biodiversity became part of a ministry with broader responsibilities, covering ecology, regional development and planning and subsequently energy (MEDDE, which became the Ministry of the Environment, Energy and Marine Affairs [MEEM] in 2016). This merger brought together the competence for biodiversity held by government departments responsible for infrastructure and urban development, two areas that exert intense pressure on biodiversity, together with agriculture. It also had the effect, however, of confining certain issues that could have been addressed at inter-ministerial level (Chapter 2) to discussions within MEEM. A national independent environmental authority was set up in 2009 to avoid conflicts of interest in assessing the effects on biodiversity of policies and projects promoted by MEEM. Its opinions are public and inform both public enquiries and legal decisions in the event of cases concerning authorisations granted by the administrative authority.

Biodiversity is addressed within MEEM by the Directorate General for Planning, Housing and Nature (DGALN¹³), which oversees the Department for Water and Biodiversity (DEB). Co-ordination between the latter and other MEEM services is organised, inter alia, by the General Commission for Sustainable Development (CGDD), a cross-cutting MEEM structure. The sometimes difficult liaison between regulatory activities historically carried out by the DEB (e.g. in protecting species and areas) and partnership activities promoted by the CGDD (e.g. by the use of financial incentives) is ensured through dialogue between these two bodies.

This merging of ministries in 2007 had an impact on services devolved at regional and departmental level. Besides their role in administrative decisions, these services also ensure control over the application of these decisions, particularly through the “environment inspectors”, introduced in 2012,¹⁴ whose enforcement activity has been co-ordinated since 2008 by the Prefect with the activity of the Office National de l’Eau et des Milieux Aquatiques (ONEMA) [National Office for Water and Aquatic Environments] and the Office National de la Chasse et de la Faune Sauvage (ONCFS) [National Office for Hunting and Wildlife]. Officials of the Office National des Forêts (ONF) [National Forestry Office] and of certain protected areas also have enforcement powers.

The State generally delegates the application of regulations covering species and area protection to an administrator while retaining the respective formal responsibility (for the

content of regulations and the limits of areas to which it applies, thanks to the involvement of sworn officials). Protected area management is therefore ensured by various public institutions, local authorities or associations (but cannot now be entrusted to enterprises). The administrator then implements a management plan in the form of planning, information and education measures, or “enhancements” (parking spaces, paths, landing stages, anchorages and sometimes commercial franchises). Some of these administrators are consulted on government decisions that may have an effect on the species or areas they are responsible for, such as project authorisations.

Specialised public institutions under state supervision

A number of public institutions manage protected areas, a function that has developed since 2005 into a more partnership-based approach. The reform of national parks in 2006 increased the influence of local authorities in their decision-making bodies by creating “buffer zones” around the “core areas” of the parks, which are governed by charters which the municipalities can adhere to if they wish. While the level of protection of national park core areas has been maintained, their effectiveness now depends partly on the goodwill of the municipalities, which can sometimes be fiercely opposed to the parks, as shown by the recent setback involving Vanoise National Park. The marine natural parks and the Agency responsible for marine protected areas (MPAs) were also created at the same time (Box 5.1).

Box 5.1. The Agency for Marine Protected Areas

Since 2006, a voluntary project has been in place for marine protected areas, consisting of new tools such as marine natural park status and the creation of a specialised agency: the Agency for Marine Protected Areas. This *ad hoc* public body is overseen by MEEM, which uses performance contracts to entrust it with enforcement, expertise and incentives duties so that it can implement the respective policy, hitherto divided among different departments in different ministries with no co-ordination between them. The State’s intention can also be gauged by the substantial resources initially allocated to the Agency, though they were revised considerably downwards when greater budget austerity was called for.

The Agency is now the designated administrator of the marine parks, which were created at the same time, and is tasked with implementing the national strategy for marine protected areas. It works in partnership with local authorities (particularly in the overseas territories), supporting them and encouraging them to create protected areas. The Agency does not, in fact, have regulatory or hierarchical powers. The marine natural parks are “structures to ensure protection through the integrated management of a maritime area of particular interest for biodiversity and human activities”, and their creation is not associated to any rules restricting usage rights over the marine environment. Like the Regional Nature Parks (PNR), these areas are subject to consultation that may eventually lead to the adoption of administrative regulations (Féral, 2011). The Agency can also engage in education and research activity and can make improvements to the parks.

Despite the improved co-ordination ensured by this specialised structure, the Agency and the marine natural parks actually represent a step backwards in the regulatory approach to conservation in favour of approaches based on consultation and voluntary commitments under incentive mechanisms. These approaches allow local and decentralised control of national objectives without excluding the use of regulatory or financial tools, and have without doubt avoided a repeat of the initial failure in implementing the Natura 2000 network.

Source: www.aires-marines.fr/.

After the MPA Agency, the ONF¹⁵ is by far the public institution which manages the largest natural area: 120 000 km² of public forests, 44 000 km² of which are in metropolitan France and 76 000 km² in the overseas departments (mostly Guiana). These areas include almost 50 000 ha of reserves and 650 000 ha of Natura 2000 sites, which may also be situated in a regional national park, for example (ONF, 2012; Attali et al., 2013). The ONCFS also manages national hunting and wildlife reserves (covering over 28 000 ha), but its supervisory and enforcement tasks in relation to the environment and hunting cover national territory as a whole, giving it a key role in managing biodiversity. ONEMA also plays a part in enforcement but is not an administrator with the same status as the ONCFS or the ONF. The French Biodiversity Agency (AFB), provided for in the draft law on biodiversity, would bring these establishments together and rationalise their governance (Box 5.2).

Box 5.2. The French Biodiversity Agency

The draft law on the preservation of biodiversity, nature and landscapes provides for the creation of a French Biodiversity Agency (AFB). While the term “agency” is not a legal category in French law, it nevertheless reflects the intention to create an autonomous structure given responsibility by the State for implementing national biodiversity policy on the basis of performance targets. This proposal is a welcome response to the “historic” accumulation of structures with often overlapping thematic and geographic powers, and functioning under highly varied legal and partnership arrangements (Gervasoni, 2008; Badré and Duranthon, 2010; Michel and Chevassus-au-Louis, 2013).

The current version of the draft law provides for the AFB to bring together the powers of ONEMA, the National Parks of France (PNF), ATEN and the MPA Agency, as well as certain national botanical protection agencies. The ONF and ONCFS were left out of the draft law, as were the Nature Reserves of France (RNF). The integration process is therefore incomplete, but its structures could eventually be linked with the AFB. This is particularly advisable with respect to the ONCFS, whose role as a provider of knowledge and technical support but also as an enforcement organisation is entirely consistent with the mandate of the AFB.

The AFB clearly cannot resolve the vagueness inherent in the NBS immediately, but it could play a key role in adopting the NBS and the various commitments of the State and its stakeholders in determining the framework of its action and its performance targets. This could be facilitated by establishing a single consultative body, the National Biodiversity Committee, and a scientific body, the National Council for the Protection of Nature (reformed), as proposed in the draft law. The same model would then be followed at regional level, where scientific councils for natural heritage already exist, while converting the regional TVB committees into regional biodiversity committees. These developments should help to simplify biodiversity governance in France, thereby undoubtedly making it more effective and clarifying public action.

Source: National Assembly (2014), *Étude d'impact du projet de loi relatif à la biodiversité*.

Several administrators may be in charge of the same area, such as when a nature reserve is situated in a Natura 2000 site which is itself within the buffer zone of a national park or in a regional natural park. The draft law on biodiversity provides for the piloting of a procedure to designate a “single administrator”, a welcome move in improving the clarity and effectiveness of public action.

The proliferation of structures involved in managing natural areas is offset in part by the work of the Atelier Technique des Espaces Naturels (ATEN) [Technical Workshop for Natural Areas], whose membership increased significantly in 2010. ATEN organises technical exchange networks between administrators and develops shared management tools (e.g. for Natura 2000 and the TVB).

Regional and local authorities

The departments, which are responsible for over 200 000 ha of sensitive natural areas (ENS), are among the most important biodiversity stakeholders. The law on the modernisation of territorial policy and the cities (MAPAM), however, adopted in 2014, gave the regions a leading role in biodiversity (including the management of EU funds allocated to Natura 2000 and agri-environment measures). It was also the regions, together with the State, that drew up the regional ecological consistency schemes (green and blue infrastructure). These changes helped to clarify the decentralisation of public-sector biodiversity measures, though without depriving the departments of their capacity for initiative. Due to these overlapping responsibilities, ad hoc co-operation structures between regional and local authorities (local government boards) grew in number. Regional natural park charters came to be applied in this way (Box 5.3). Decentralisation naturally gives rise to a non-uniform application of national guidelines according to the intentions of local elected officials, though the State generally retains an important role in validating proposals put forward by the authorities, as occurred with the regional natural parks. Within certain limits, the rare exceptions are the regional nature reserves, which are the prerogative of the regions (including Corsica's nature reserves and the sites listed in Corsica), the ENS and the protected and enhanced areas of departmental peri-urban agricultural and natural areas (PAEN).

Box 5.3. Regional natural parks

The 51 regional natural parks (PNR) account for the bulk of French protected areas and reflect the country's decentralised, contractual and incentives-based approach. PNR activities are underpinned by a charter, a contractual document drawn up on the initiative of the region prior to classifying the park and defining the respective 12-year sustainable development plan for the region. The charter, which is subject to a public enquiry, establishes the objectives to be achieved and the associated measures, which must seek, in particular, to protect and manage the natural, landscape and cultural heritage and regional development. The State classifies the area, on a proposal from the region.

PNR actions are decided and implemented by a mixed park planning and management committee consisting of at least the municipalities and intermunicipal authorities with an interest in the park as an area, and the departments and regions (the principal providers of funds). A PNR charter is binding on its signatories. It therefore takes precedence over urban planning documents drawn up by the municipalities (local urban development plan [PLU]) and intermunicipal authorities (regional consistency scheme [SCOT] and intermunicipal local urban development plan [PLUi]), and must be compatible with the latter if they exist. The PNR thus offer a more effective institutional implementation framework than the purely voluntary commitments of uncoordinated stakeholders.

Source: www.parcs-naturels-regionaux.fr/.

Although they do not have dedicated instruments, the municipalities and intermunicipal authorities are involved in implementing biodiversity policies, particularly in designating protected areas or the scope of land policies (e.g. departmental ENS and PAEN), for which their opinion or agreement may be required. They are also the administrators of a significant number of nature reserves and areas owned by the Coastal Protection Agency.

Since 2015, the municipalities have been responsible for preventing floods and managing aquatic environments, and for protecting and restoring the respective sites, aquatic ecosystems, wetlands and neighbouring forest areas. The possibility of delegating this task to établissements publics territoriaux de bassin [regional water basin authorities] (EPTB, existing) or to établissements publics d'aménagement et de gestion de l'eau [planning and water management authorities] (EPAGE, to be created), operating at water basin level, retains the advantages of a water planning and management policy historically based on the water basin, through the respective Master Plans (SDAGE) and Schemes (SAGE) for Water Development and Management, with the participation of users who sit on local water committees, together with state and local authority representatives.

Box 5.4. Specific features of overseas territories

Recognising that EU provisions for preserving outstanding ecosystems do not apply in the French overseas territories, the Grenelle Forum adopted a recommendation in the Message from Réunion (2008) on the implementation of an Ecological Network in the Overseas Departments (REDOM), which is in preparation. The introduction of a French Overseas Territories Biodiversity Initiative (IFREBIOM) had also been decided at the time of the Grenelle process but has yet to come to fruition. The European Commission meanwhile financed the introduction of a platform similar to IFREBIOM covering the outermost regions and overseas countries and territories of all EU Member States (BEST 2.0 platform, managed by the IUCN). France must seize this opportunity to achieve the objectives originally assigned to IFREBIOM. This would improve co-ordination between its overseas territories' efforts and those of their neighbours to ensure that information on overseas biodiversity is shared, in line with the commitments France made in 2014 at the Guadeloupe Conference (Message from Guadeloupe, 2014).

The delays in implementing REDOM and IFREBIOM are caused by weaker technical capacity and more recent mobilisation of local stakeholders in the overseas territories with respect to biodiversity issues. The recent experience of the MPA Agency nevertheless shows that targeted technical support can ensure rapid results. France could also draw on the work of its Coral Reef Initiative (IFRECOR), the French equivalent of the International Coral Reef Initiative (ICRI). This involves a national committee and a network of eight local committees, as well as the overseas authorities, which implement local action plans and cross-cutting programmes. IFRECOR also benefits from French expertise and favours international co-operation schemes under the ICRI. This initiative should be developed and included in the future AFB if possible.

Source: <https://portals.iucn.org/best/?q=fr>; www.ifrecor.com/.

Private biodiversity stakeholders

France has a significant pool of ecology professionals employed by associations and companies that provide ecological engineering services or manage natural areas. Under the NBS 2011-20, the State undertook to promote the organisation of a more effective and

more visible ecological sector that could contribute towards “the green economy”. In 2014, this led to the creation of a federation of engineering and ecological stakeholders. In 2015, several of these stakeholders signed an undertaking for consultancy firms focusing, in particular, on the content of environmental assessments to make the technical expertise underpinning environmental decisions and therefore biodiversity more understandable. Their experience could be better harnessed to improve the interface between science and public-sector action. These structures moreover generate significant volumes of biodiversity data, the inclusion of which in the Nature and Landscapes Information System (SINP) should be promoted.

Scientific and technical expertise

French scientific biodiversity research is abundant and relatively well funded¹⁶ but not yet sufficiently mobilised to play a guiding role.¹⁷ There are no strong links between the research bodies, working together since 2008 in the Fondation pour la Recherche sur la Biodiversité [Biodiversity Research Foundation] (FRB),¹⁸ and bodies such as the Conseil National de la Protection de la Nature (CNPN) [National Council for the Protection of Nature], the Conseils Scientifiques Régionaux du Patrimoine Naturel [Regional Scientific Councils for Natural Heritage] (CSRPN), the Conseil Scientifique du Patrimoine Naturel et de la Biodiversité [Scientific Council for Natural Heritage and Biodiversity] (CSPNB) or the Office Parlementaire d’Évaluation des Choix Scientifiques et Techniques [Parliamentary Office for Evaluating Scientific and Technical Choices]. The uncoordinated proliferation of these organisations was reported on a number of occasions at the time of the successive assessments commissioned by the Ministry of Ecology, several of which addressed the reform of the CNPN, founded in 1978 (Badré and Duranthon, 2010; Le Maho and Boucher, 2011; Schmitt, 2012; Michel and Chevassus-au-Louis, 2013).

The lack of clarity of the CNPN as a scientific and technical body does not encourage researchers to invest in it for fear that it could be detrimental to their professional career. It nevertheless plays an important role in drawing up opinions on draft laws and on certain administrative decisions. Since 2007, the CNPN has been designated as an independent body exclusively responsible for protecting biodiversity interests in connection with granting exemptions from the strict protection of certain fauna and flora species. These exemptions are generally conditional upon measures to avoid, reduce and offset (in kind) the impacts of planning projects (section 6.2). Its opinions, however, are merely advisory. In the absence of an independent organisation capable of opposing authorisations,¹⁹ conflicts of interest and economic pressure will always tend to favour sectoral interests to the detriment of biodiversity preservation objectives (Mermet et al., 2005), particularly when the administrative authority authorising projects – often the Prefect of a department or region – is also responsible for ensuring the economic development of the areas concerned.

In view of the multiplicity of authorities, the draft law on biodiversity proposes to create a consultative body, the Comité National de la Biodiversité (CNB) [National Biodiversity Committee], which would bring several existing bodies together, and which the NBS national committee is a precursor of. Provision would be made to co-ordinate the CNB with other national consultative bodies addressing issues directly linked to biodiversity. The CNPN should also be given the role of a strictly scientific and technical body by merging it with the current Scientific Council for Natural Heritage and Biodiversity. The role foreseen for the CNPN, however, is not that of an independent authority, which

therefore means that certain difficulties such as the uniform application of the “avoid, reduce, offset” sequence (ARO), which is regularly challenged for its anti-biodiversity bias, will not be resolved.

At regional level, it is proposed to convert the regional TVB committees into regional biodiversity committees. The existing CSRPN would play the role of the CNPN at regional level. While these developments are welcome, in terms of mobilising researchers and experts, a distinction must be drawn between technical opinions concerning particular decisions (e.g. the conditions for granting an exemption from the protection of a particular fauna and flora species) and opinions concerning guidance of a more general nature (e.g. in connection with a draft law).

Civil society

The Grenelle Forum marked a turning point in civil society involvement in the drafting of biodiversity policies, with pride of place going to environmental protection NGOs in particular. The latter are now associated at the very highest level with national policy formulation in this area in connection with MEEM initiatives. This new role for NGOs through MEEM was consolidated by the revision of the NBS and subsequently by NGO participation in the Conseil National de la Transition Écologique (CNTE) [National Council for Environmental Transition]. Some other ministries, however, such as those responsible for agriculture or economic and financial affairs, to name but two, have not adopted the Grenelle principles and give only a minor role to biodiversity stakeholders, thereby automatically restricting the inclusion of biodiversity in their sectoral policies.

NGOs are now better able to influence legislative processes, even though they are still less well-equipped than representatives of other sectoral interests. They have, in fact, benefited from the higher media profile²⁰ of the Grenelle process and from the establishment of a parliamentary committee to monitor the implementation of its 268 commitments.

3. Information systems

National Biodiversity Observatory

The establishment of a Nature and Landscape Information System (SINP) and a National Biodiversity Observatory (ONB) was a Grenelle Forum proposal. In connection with species and habitats, the SINP was based on a clearly identified community of stakeholders, which meant that it could be put in place more quickly than its “landscape” dimension and more quickly than the ONB, the “social” dimension of which must be underscored. In 2011, the NBS gave the ONB the task of developing indicators to monitor the effects on biodiversity of the action of stakeholders as a whole. There is little information, however, on the cost-benefit ratio of these actions between the indicators adopted. Since 2012, the ONB has posted targeted up-to-date information on biodiversity and on how it is perceived by French society on a joint website with the SINP (ONB-SINP, 2015). The ONB also monitors indicators on the implementation of the CBD by France (including the overseas territories). Correspondence with Aichi indicators is signalled almost systematically on the ONB website, though many Aichi and European biodiversity strategy indicators are not calculated by the ONB.

Information on natural environments and species

The SINP²¹ has helped to improve information on the status and distribution of species and natural habitats. This is a partnership mechanism between the Ministry of

Ecology and the leading providers of species data, who are often amateurs.²² SINP scientific co-ordination is ensured by the National Museum of Natural History (MNHN) (on the taxonomic list to be used, for example), which also encompasses the INPN. The system is still in its infancy but meets strong challenges and has had a positive impact, reflected in particular in partnership with major public- and private-sector planners. The latter meet on an informal basis in the Linear Infrastructure and Biodiversity Club (CILB), which funds the capture of a significant volume of data concerning their infrastructure projects.

The SINP has sought for many years to provide decision-makers with information on diversity. Since 1982, the Inventaire des Zones Naturelles d'Intérêt Écologique, Faunistique et Floristique (ZNIEFF) [Inventory of National Areas of Ecological, Fauna and Flora Interest] has contributed to the mapping of sectors with strong biological capabilities and a good conservation status. This is a very useful adjunct to statutory zoning requirements (for protected areas) in guiding planning decisions and avoiding the artificialisation of very challenging areas. More recently, the schémas régionaux de cohérence écologique (SRCE) [regional ecological consistency schemes], which establish the TVB have provided information for biodiversity decision-makers by indicating the location of "biodiversity reservoirs" and the major regional ecological continuities. The latter generally include the ZNIEFF, but consultation on the formulation of SRCE has increased the number of people who are aware of the challenges of biodiversity at this level. It has also raised awareness of the advantages arising out of biodiversity by introducing the concept of ecosystem service.

Ecosystem service information

In 2013, France began to assess and review its ecosystems and ecosystem services and their development trends and to estimate the value of the services they produce up to 2016. This initiative, led by MEEM, falls within European biodiversity strategy and contributes to NBS Target 7 by providing a foundation for "factoring biodiversity into economic decision-making".²³ Ecosystem services have not been factored into decision-making thus far because of assessment method limitations and also because of the limited use of cost-benefit analyses in public decision-making, except to demonstrate the disproportionate nature of the cost of ensuring a good ecological status for water bodies and obtaining a (temporary or permanent) exemption from Water Framework Directive objectives.²⁴ Most of the analyses have been superficial, making use of the "transfer of profits" and seeking ex post justification for failure to invest in restoring water quality (Feuillette et al., 2015).

The use of ecosystem service assessments is an important communication lever to justify public investment in biodiversity, particularly in protected area networks (Box 5.5; Hernandez and Sainteny, 2008). At local level, some departments have begun to renew their ENS scheme by promoting the concept of ecosystem service, reflecting the intention to adopt a cross-cutting approach and to include regional challenges, but also to allow decision-makers and the population to take greater control of ENS policy.

Box 5.5. Assess ecosystem services to justify investment in national parks

National parks are often perceived by neighbouring populations and local elected officials as obstacles to economic and social development. In this context, studies carried out on the Port-Cros and Guadeloupe national parks have shown that the costs of running these protected areas are largely offset by the range of monetary and non-monetary advantages identified (PNF, 2015). These advantages, however, are known to be undervalued *a priori*: local costs and visitor satisfaction, ecosystem services, image and heritage value, etc.

Updated on a 20-year basis, EUR 1 spent out of the Guadeloupe National Park budget (EUR 6.1 million per year) generates over EUR 10.7 in benefits for the region, including EUR 0.8 annual turnover for companies, and EUR 0.2 of added value (an annual turnover of EUR 4.8 million is directly attributable to the existence of the park), the remainder corresponding to non-market earnings, including a contribution of EUR 8.7 to the welfare value of leisure activities on park sites. The study does not meanwhile provide any findings on the opportunity costs of protecting sites compared to other types of use. At Port-Cros, the results show that EUR 1 spent out of the park's budget (EUR 6.6 million per year) generates EUR 91.8 in earnings for the region, including EUR 3.1 in added value produced by local businesses (EUR 82.8 million annual turnover for local businesses is directly attributable to the existence of the park), with EUR 26.6 corresponding to the welfare value of leisure activities on park sites and EUR 62.0 attributable to the pecuniary value (legacy and existence values) of the park's natural areas.

Other studies carried out by a number of NGOs in the overseas territories have drawn similar conclusions. These studies, however, respond more to a need for institutional communication rather than the need to provide innovative mechanisms for funding the parks, based for example on entrance or residence charges indexed to the welfare value of leisure activities in the parks. At the time of writing, there is insufficient consensus on the assessment methods and results obtained to provide a basis for such decisions, but they may stimulate an interest in taking action.

Source: PNF (2015), *Éléments de valeur des parcs nationaux*.

4. Protection of areas of outstanding natural beauty

France has a number of instruments to ensure biodiversity conservation and sustainable use (Table 5.1). Over and above regulatory approaches, which are generally preferred for managing areas and species (section 4), economic instruments can finance programmes in favour of biodiversity (section 5) and can contribute with other instruments to the inclusion of biodiversity in economic sectors (section 6).

4.1. Protected areas

France has already achieved the objectives laid down in the CBD to protect at least 70% of its land area and at least 10% of the water under its jurisdiction by 2020 (Figure 5.7). In 2015, however, only 0.7% of metropolitan territory was IUCN Category I and II protected areas (the highest levels of protection), compared to an OECD average of 3%. The level of protection is substantially higher in the overseas territories, where Categories I and II represent 23% of the territory.

The extent of areas under regulatory protection increased by 45% compared to 1988 and represented 1.4% of the territory in 2015 (Figure 5.7). France is nevertheless still well below its target of 2% of metropolitan land area under regulatory protection by 2020,

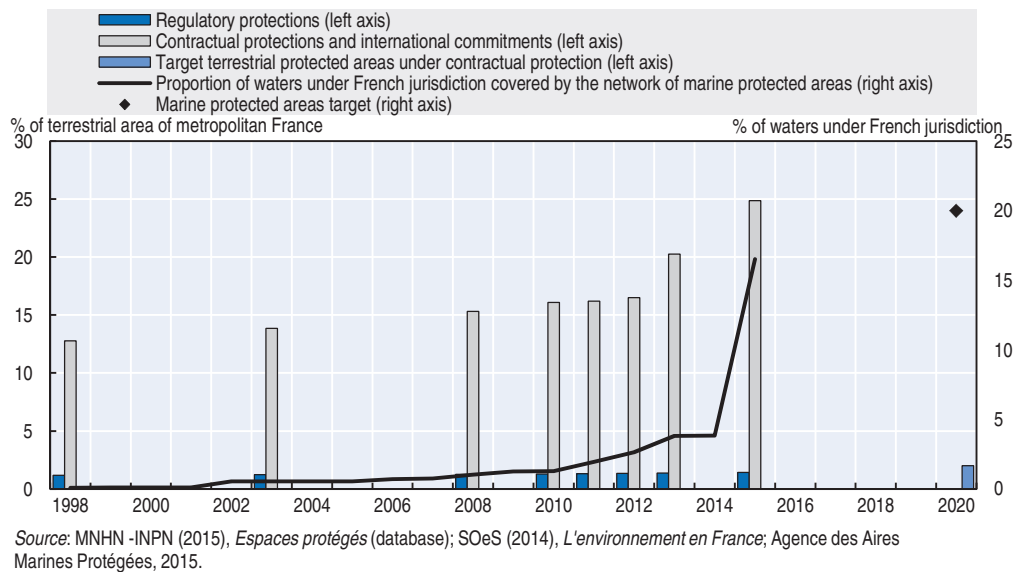
Table 5.1. **Key instruments supporting the conservation and sustainable use of biodiversity**


Regulatory approaches	Economic instruments	Information and other instruments
Restriction or prohibition of access and use <ul style="list-style-type: none"> protected areas designated at national level (national parks, national nature reserves), regional level (regional nature reserves) or local level (land acquired by natural area protection agencies and French departments) offering variable levels of protection (section 4.1) 	Price-based instruments <ul style="list-style-type: none"> rates (fees) charged by water offices (section 5, Chapter 3) planning fee, payment for under-use (section 5) annual vessel registration fee (section 5) subsidies under the Common Agricultural Policy (section 6.1) 	Zoning (sections 3, 6.2) <ul style="list-style-type: none"> natural areas of ecological, fauna and flora interest (ZNIEFF) green and blue infrastructure (TVB) under regional ecological consistency schemes (SRCE) pre-emption boundaries of sensitive natural areas (ENS) and protection and enhancement of peri-urban agricultural and natural areas (PAEN) classified forested areas and sundry zonings in local urban development plans (PLU) and regional consistency schemes (SCOT) hunting reserves
Bylaws for the conservation or reduction of certain species <ul style="list-style-type: none"> national or regional protection of certain flora and fauna species (section 4.2) designation of certain species as harmful or alien invasive species (section 4.2) 	Ecological offsets and natural asset reserves (in preparation) (section 6.2)	Eco-labelling and certification <ul style="list-style-type: none"> forestry certification environmental certification of farms organic farming labels labels on consumer products, including those from agricultural sectors with terms and conditions
Planning tools and guidelines <ul style="list-style-type: none"> environmental impact studies and environmental assessments (Chapter 2) 	Payments for ecosystem services (voluntary measures) (section 5.3)	Sharing of expertise and farmer training <ul style="list-style-type: none"> “Ambition Bio 2017” programme Écophyto plan Agri-ecological project (section 6.1)
Permits and quotas <ul style="list-style-type: none"> hunting permits and hunting plans (quotas) angling licences and quotas fishing licences (Mediterranean) 	Negotiable permits <ul style="list-style-type: none"> transferable quotas between fishing organisations (Atlantic), under the Common Fisheries Policy plant protection product saving certificates (Chapter 3) 	Voluntary commitments in natural resources management <ul style="list-style-type: none"> charter for eco-friendly angling hunting reserves public and private forest management plans
Quantitative, qualitative or design standards <ul style="list-style-type: none"> fishing technique regulations quality standards for water released into the environment 	Access and benefit-sharing by application of the Nagoya Protocol (planned) (section 5.4)	Voluntary commitments in the framework of the NBS Voluntary initiatives concerning corporate “biodiversity” compatibility (“biodiversity review”)
Establishment of responsibility instruments (Chapter 2) <ul style="list-style-type: none"> environmental responsibility law inclusion of the notion of ecological damage in the Civil Code (planned) 		Environmental criteria in public procurement and calls for projects piloted by the State or local authorities (e.g. for granting licences for public infrastructure: motorways, dams, etc.)
Restriction or prohibition of use <ul style="list-style-type: none"> prohibition of certain plant protection substances restriction on the use of certain agricultural inputs on certain land (water abstraction, etc.) 		

established by the 2009 Grenelle I Law, the implementation of which is specified in the Strategy for the creation of metropolitan protected land areas (SCAP). Over the same period (1998-2015), the size of areas under “contractual” protection almost doubled to reach 25% of the territory (INPN, 2015). The 49 PNR, covering 7 million ha, represent the majority of these areas.

In the overseas territories (i.e. the five overseas departments, Saint-Pierre-et-Miquelon, Saint-Martin, Saint-Barthélemy and the French Southern and Antarctic Lands), these proportions are more significant. The areas under regulatory and contractual protection each represent an almost identical part of the territory (35%) (INPN, 2015), due in particular to large protected areas such as the Amazon National Park in Guiana or the Nature Reserve in the French Southern Lands.

The good results of the contractual approach should not disguise the risks involved or the setback at the time of writing of the designation of sites under strong protection under the SCAP. The metropolitan network of protected areas is satisfactory for only a quarter of the selected species in the SCAP (Coste et al., 2010). Since “priority” species occupy

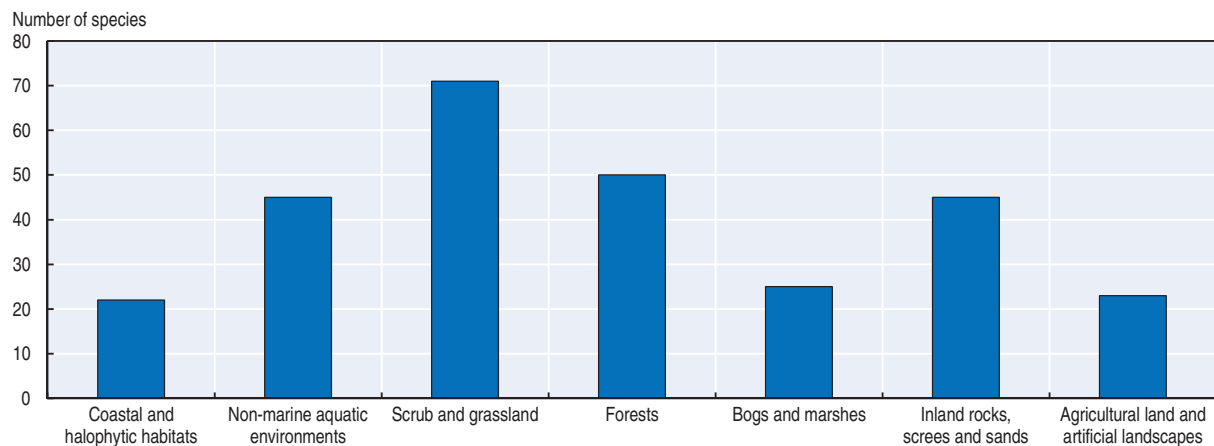
Figure 5.7. **Surface area of protected areas increases**

StatLink  <http://dx.doi.org/10.1787/888933406272>


different environments (Figure 5.8), it will not be possible to meet the SCAP objectives to designate a single important site, including the future core of the Champagne and Bourgogne national forestry park, currently in preparation.

Figure 5.8. **Expansion of the protected areas network should be prioritised for species in open environments (scrub and grassland)**

Distribution of priority species in the Strategy for the creation of metropolitan protected land areas by major habitat group



Source: Coste, S. et al. (2010), *Stratégie Nationale de Création d'Aires Protégées - Première phase d'étude - Volet Biodiversité*.

StatLink  <http://dx.doi.org/10.1787/888933406280>

With respect to the national parks, negotiations on the now voluntary participation of municipalities in their objectives²⁵ called into question certain acquired rights concerning usage restrictions in peripheral areas. Three national parks have nevertheless been created since 2005 (in Guiana, Réunion and in Marseille's calanques [rocky inlets]), for which the partnership approach played a positive role in ensuring local authority participation.

Natura 2000

In Natura 2000 network areas, EU Member States undertake to maintain or restore the most threatened natural habitats and species (listed in Directive 92/43/EEC) so that they have a favourable conservation status. EU Directives impose a performance obligation with respect to the objectives to be achieved, while leaving it to each State to decide on the (largely legal) means by which to do so (regulatory or contractual).

Local stakeholder participation in implementing the network of natural protected areas was necessary to unveil the creation of the Natura 2000 network in France, the implementation of which from 1992 to 2005 generated considerable tension among rural private-sector stakeholders. Having been penalised on three occasions for failing to implement the Habitats Directive, France finally opted for consultation to implement Natura 2000. A steering committee bringing together the principle stakeholders had to be set up for each Natura 2000 site.²⁶ The committee was tasked in particular with validating the “document d’objectifs” (DOCOB) [management plan] of the site, which is ultimately validated by the competent Prefect²⁷. France is one of the few EU Member States in which a management plan is obligatory.

This procedure proved its effectiveness. In 2013, 12.6% of the metropolitan area was classified as Natura 2000 sites, and the network was regarded as stable. On 1 January 2013, 1 277 Natura 2000 sites had a completed DOCOB (73% of sites) and DOCOBs for 280 land sites and 48 marine sites were under preparation (18%). Following legal proceedings brought by the European Commission, France met²⁸ the requirements of Article 6(3) and (4) of the Habitats Directive, which stipulate the circumstances in which projects with implications for the natural habitats and species that had justified the designation of a Natura 2000 site may be authorised.

Landowner stakeholders

The review of protected areas includes properties covered by the Coastal Protection Agency and Natural Area Protection Agencies (CEN). The CEN bring together several public and private stakeholders that manage natural sites at regional and departmental level. An approval recognising their action has been in force since 2011. In 2015, the 29 CEN managed a network of 2 921 sites covering 152 788 ha in metropolitan France and Réunion,²⁹ over 800 of which they own or rent on long-term leases (CEN, 2015a). The Protection Agencies are also involved in controlling usage, mainly by means of management agreements, and they may be involved in implementing measures to offset the impacts of planning projects (section 6.2). This raises the question of ensuring that this land is compatible with the achievement by France of its CBD commitments. Since mere ownership of the land remains a fragile means of protection in the long term, the Protection Agencies also enjoy regulatory protection³⁰ (35% of their sites have protection status), and the land can be assigned to dedicated endowment funds (CEN, 2015b) and thus made non-transferable.

The Coastal Protection Agency, meanwhile, is a state-run public administrative institution which acquires plots of land on the coast which are degraded or threatened by urban development. It holds over 160 000 ha on 700 sites, corresponding to 1 450 km of coast, i.e. 13% of the national shoreline. From 2009 to 2012, 13 426 ha of wetlands were acquired with water office support, over half of which are salt marshes in the Midi (Camargue), henceforth the property of the Coastal Protection Agency. The aim (established in 2009) was to acquire 20 000 ha of wetlands by 2019, a seemingly realistic target that in fact corresponds

to a mere 1% of the wetlands area in France, the protection and restoration of which must therefore be ensured by other means, particularly regulatory and contractual measures.

Marine protected areas

In 2015, marine protected areas (MPAs) covered almost 16.5% of waters under French jurisdiction (including the overseas territories), accounting for 1.68 million km² (Figure 5.7), representing 23% of metropolitan waters and 16% of overseas waters (MPA Agency, 2015a).

France has therefore exceeded the 10% target established by the CBD, though its own target had been 20% of French waters under protection by 2020. The surface area of marine protected areas must therefore be further extended. Since the possibilities for extension are mainly in the overseas territories, the policy set out through the MPA Agency to persuade the overseas authorities to contribute to the national effort should therefore be continued (Féral, 2011). On the basis of this co-operation, a marine natural park with an area of 1 291 000 km² was designated in 2014 in the Coral Sea, corresponding to the total maritime area of New Caledonia.³¹ This French success in establishing a significant and vast MPA network was facilitated by the far from restrictive status of marine natural park, a recent innovation in terms of the protection status available to France.³² Marine natural parks are defined by the 2006 law as “structures to ensure protection through the integrated management of a maritime area of particular interest for biodiversity and human activities”, and their creation is not associated to any rules restricting rights of usage over the marine environment. They are, in fact, areas for consultation which allow local and decentralised ownership of national objectives that may eventually lead to the adoption of administrative regulations. On 1 January 2015, half of over three-year-old French MPAs had a management plan (ONB, 2015b), though few had a complete assessment system. France developed an MPA scoreboard to assess their individual effectiveness and contribute towards the national assessment of the French network.

4.2. Species conservation

France has strengthened the protection of certain flora and fauna species by protecting their habitats in particular. Several species also benefit from action plans that seek to restore or conserve their populations. Despite some success, however, these measures are not sufficient to ensure the conservation of species affected by intensive agriculture, and the country’s capacity to conserve its major predators (wolf, lynx and bear) remains uncertain. In the overseas territories, despite initiatives targeting certain threatened and alien invasive species, species protection is still incomplete and disorganised.

Species protection schemes

The principal innovation in terms of protection was the action taken in 2007³³ to bring the exemption procedure into line with that provided for under Articles 12 and 16 of the 1992 Habitats Directive (92/43/EEC). Besides the specimens of species, some of their habitats are now protected under certain conditions,³⁴ and exemptions can be granted only if they do not lead to a decline in the conservation status of the respective species. The CNPN issues a consultative opinion on applications for exemptions, and in practice acts as an independent regulator for the developer and the environmental authority. This exemption procedure, introduced in 2007, was partly motivated by farmers’ opposition to wolves, a protected species. The 2014 law on the future of agriculture, food and forestry relaxed the circumstances in which exemptions could be granted. This decision led, in particular, to the

authorisation to cull over 10% of the wolf population, which numbered fewer than 300 individuals in 2015.³⁵ France also submitted an official application to amend the status of the species through the Berne Convention and the European Commission. Some in the agricultural sector also objected to the conservation of the brown bear in the Pyrenees.

The regulation of hunting, meanwhile, has developed little but continues to generate heated public debate, particularly on dates for opening the hunting season for migratory birds, for which the State systematically issues judgments which are then invalidated by the Conseil d'État because they authorise hunting outside the periods defined by the 1979 Birds Directive. Hunters will, in the meantime, have enjoyed an extended hunting season. This highlights the political weight of hunting in France (1.2 million licence holders) (BIPE, 2015). Hunters are nevertheless involved in managing biodiversity, firstly through hunting reserves (defined jointly by the ONCFS and the hunting federations), and subsequently through the French Wildlife Habitats Foundation. The Foundation is funded by regional hunters' federations and owns almost 5 500 ha in 60 departments, which it manages in such a way as to maintain conditions favouring prey.

Since the establishment of protected species status in 1976, administrative practice has differentiated protection measures on an area basis by drawing up "regional" lists of protected species (for flora above all). This practice is also followed in the overseas territories, where these lists replace national lists (except for marine mammals³⁶ and sea turtles,³⁷ which are protected on national territory as a whole). The provisions in place are nevertheless incomplete and sometimes inconsistent (Stahl, 2011). The forest thrush, for example, is protected in Martinique but regarded as prey in Guadeloupe. The most threatened species, particularly strictly endemic species which are not present in France, should naturally be included on the national lists.

National action plans for threatened species

The national action plans are medium-term strategies which define the specific actions and deadlines for conserving and restoring threatened species. Although the initial plans were implemented in 1996, they developed rapidly after being strengthened by the Grenelle Forum in 2007 and included in the Grenelle I and II Laws (MEDDE, 2012a). Vultures, the European otter and the Alpine ibex illustrate the real progress made due to effective action by public authorities and nature protection associations in the framework of dedicated action plans (Box 5.6).

Despite significant efforts and notable successes, however, there is no action plan for the majority of threatened species (Figure 5.9). A report drawn up in 2014 by the Conseil Général de l'Environnement et du Développement Durable [General Council for the Environment and Sustainable Development] proposes to re-establish national action plans to strengthen their operational nature in a strongly developing institutional context with increasingly limited resources (Challéat and Lavarde, 2014). One of the proposed approaches is to bring together under the same actions species which share habitats and have similar ecological requirements.

The overseas territories accommodate a large number of threatened species to which particular attention should be paid by mobilising the authorities concerned and sometimes neighbouring countries. The importance of regional co-operation in conserving overseas territory biodiversity³⁸ is illustrated by the action plans for the dugong in New Caledonia (2010-15) (MPA Agency, 2015b) and Mayotte (2012-16) (Pusineri and Caceres, 2012), under

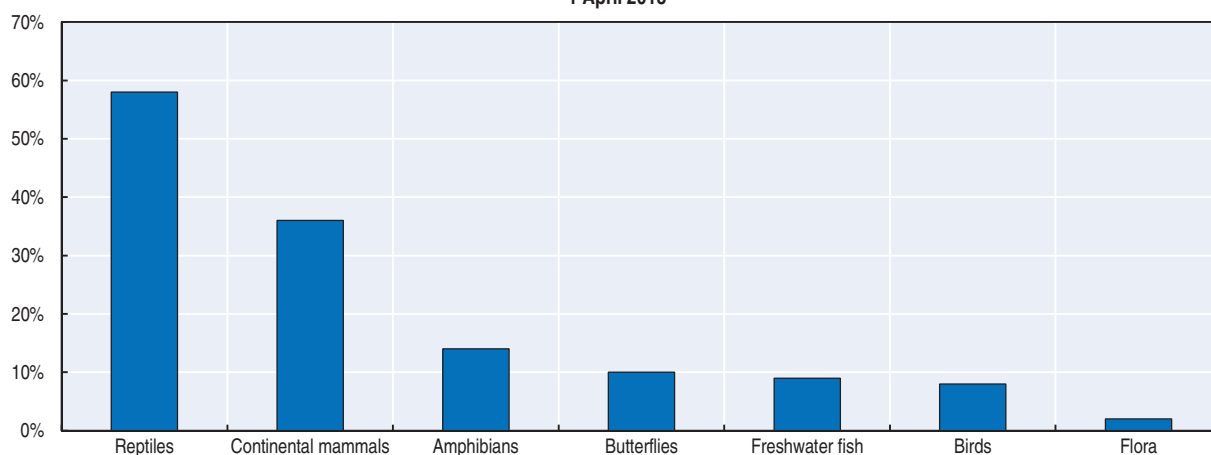
Box 5.6. The return of vultures: a continuing success

France has been investing heavily in the conservation and reintroduction of vultures for over 30 years, with very encouraging results. The Griffon vulture was reintroduced successfully in the south of the Massif Central and the Alps, and its numbers have increased from 60 to almost to 1 000 nesting pairs in 30 years. The reintroduction of the black vulture in the Grands Causses, the Baronnies and Verdon has also been successful. Bearded vulture numbers are now estimated at 45 pairs in the Pyrenees, Corsica and the French Alps, where it was reintroduced after being driven to extinction in the 1930s. The species benefits from an action plan in effect from 2010 to 2020, one objective of which is to link the populations in the Alps with those in the Pyrenees. This work is the fruit of international co-operation, and French expertise is now in demand for the global conservation of these creatures, whose numbers had plummeted since the 1990s. The Egyptian vulture is a case in point, and France is one of the few European countries (together with the Canary Islands) to accommodate a growing population. A second action plan was launched for the period from 2015 to 2024 to ensure the sustainable preservation of the species.

Source: MEDDE (2015), *Deuxième plan national d'actions en faveur du vautour percnoptère (2015-2024)*.

Figure 5.9. **There is no action plan for most threatened species**

Proportion of species according to IUCN-MNHN red lists for France covered by a national action plan (NAP) valid at 1 April 2013



Note: Consideration of valid NAPs and taxonomic groups assessed at 1 April 2013 in metropolitan France and overseas.

Source: ONB (2015), *Indicateurs de biodiversité en base de données* (database).

StatLink  <http://dx.doi.org/10.1787/888933406299>

the 2007 Memorandum of Understanding on the Conservation and Management of Dugongs and their Habitats throughout their range (States signatory to the CMS, 2007).

Alien invasive species control plans

Alien invasive species are covered by a national strategy and a dedicated 2011 NBS objective. A particular facet of the strategy is an expertise and surveillance network and the possibility since 2009 (Grenelle Law, Article 23) of developing targeted control plans.³⁹ The plans currently in place, however, concern only a few species, and their effectiveness has yet to be assessed.

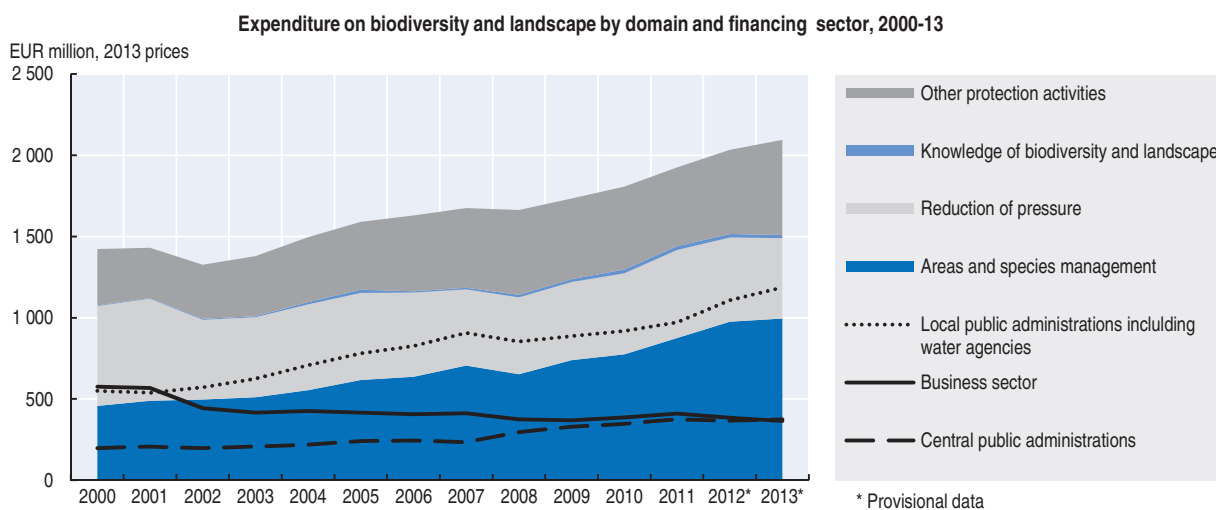
A special programme has been developed for the overseas territories, where the authorities have been brought together under an initiative fostered by the French committee of the IUCN (2005-08) (Soubeyran et al., 2015). Réunion, a partner in this approach, now has its own strategy (Parc National de la Réunion, 2010). These initiatives must be continued and, if necessary, put on a federal basis and co-ordinated at regional level, particularly under the European BEST 2.0 programme (Box 5.4).

5. Financing biodiversity


5.1. General trends

Expenditure on protecting biodiversity and landscapes in 2003 was estimated at EUR 2.1 billion (CGDD, 2015b), a figure that has increased by almost 50% since 2000 due to enhanced state support (Figure 5.10). Expenditure on managing areas and species represents over half the total spending and mainly covers aquatic environment maintenance and restoration by water offices and local authorities in implementing the Water Framework Directive. It also includes national park and nature reserve management as well as nature conservation association expenditure. Measures to reduce pressure on biodiversity by manufacturing activities, such as industry, agriculture (agri-environment measures) and road transport (wildlife underpasses), account for half the total expenditure. A further quarter is devoted to other biodiversity and landscape conservation measures taken by regional authorities (mainly departments and municipalities), the application of which cannot be determined. Public-sector stakeholders therefore finance three-quarters of biodiversity protection expenditure, compared to half in 2000.

Figure 5.10. **Expenditure on biodiversity and landscape protection has increased significantly**



Source: CGDD (2015), *Les comptes de l'environnement en 2013, Rapport de la Commission des comptes et de l'économie de l'environnement*. Édition 2015.

StatLink  <http://dx.doi.org/10.1787/888933406306>

In addition to ministerial appropriations for public agencies and institutions, biodiversity protection is principally funded by allocated resources. These are firstly taxes levied by the water offices (Chapter 3), but also: the departmental tax on sensitive natural areas (TDENS), included since 2012 in the development tax, which finances the establishment and management of protected areas by departments; the annual vessel registration fee,

which finances the Coastal Protection Agency and allows it to purchase and manage land; angling and hunting licences which fund ONEMA and the ONCFS; and the tax on sea passengers travelling to natural protected areas, paid to the managing body of the respective site (CGDD, 2013c).

While the need to increase resources devoted to biodiversity is recognised by all stakeholders, the overall annual need remains to be specified (Pelosse et al., 2012). In 2013, the additional means to be applied by public-sector operators by 2020 were estimated at some EUR 400 million per year, an increase of over 25% in public expenditure on biodiversity (Michel and Chevassus-au-Louis, 2013). These resources could fund the green and blue infrastructure and the Natura 2000 network and could develop marine environment protection policy.

5.2. Public subsidies harmful to biodiversity

The reform of taxation in relation to natural heritage began with the Grenelle Forum. From 2009, the Grenelle I Law provided for the State to report on tax measures harmful to biodiversity and to propose new tools to adapt taxation to environmental challenges. It also ordered a review of taxation and financial incentives to limit the spread of man-made development and counter urban sprawl. In response to this requirement, in 2012 the Centre d'Analyse Stratégique (CAS) [Centre for Strategic Analysis] drew up an inventory of public subsidies harmful to biodiversity (grants, tax expenditure, non-internalisation of costs) (Box 5.7). The inventory highlighted a failure to take sufficient account of the impact of public policies on biodiversity. In a context of budgetary austerity, the inventory suggests redirecting existing support towards eco-efficient behaviour rather than increasing public expenditure. The 2012 and 2013 environmental conferences were invited to study the taxation of commercial and manufacturing uses of land and marine environment biodiversity in terms of damage caused.

Box 5.7. Public subsidies harmful to biodiversity

Public subsidies leading to natural habitat destruction and degradation:

- Contributing to urban sprawl: non-targeted subsidies for purchasing and building on new property according to location (urban/peri-urban); reduced local business tax rates [*contribution économique territoriale*] (formerly the *taxe professionnelle*) established by peri-urban municipalities, leading to overuse of space.
- Leading to practices that reduce the natural functions of agricultural habitats: incentives to intensify or maintain intensive crops (subsidies influencing the price of factors of production) and to simplify landscapes (subsidies fostering the maintenance or otherwise of semi-natural elements such as hedges, copses and ponds, and the choice of crops).
- Public funding of road, rail and inland waterway transport, or undercharging for their use, contributing to habitat fragmentation.
- Charges for services and for the use of the public domain that do not sufficiently factor in biodiversity costs.

Public subsidies leading to overexploitation of renewable natural resources:

- Contributing to changes in land use (converting grassland back to annual crops, making agricultural areas impervious) by influencing certain activities that use land, such as the extending of artificially surfaced areas (housing, recreational areas), transport infrastructure and other community amenities, or by promoting agrofuel development.

Box 5.7. Public subsidies harmful to biodiversity (cont.)

- Contributing to the intensification or maintenance of intensive practices which thereby diminish the carbon content of land (indirect measures encouraging production, mechanisation, use of inputs).
- Contributing to increased overexploitation of the sea and fish stocks: commercial fishing benefits from a number of subsidies, including exemption from domestic consumption tax (TIC) on petrol-based fuels.
- Likelihood of increasing the overexploitation of water and affecting the biodiversity of certain water systems: pricing scheme encouraging private-sector operators to use more; industrial uses exempt from usage charge; lack of spatial differentiation of the water use charge; grants or fiscal expenditure for hydroelectric production; non-incentive or non-internalising tax rates for agricultural uses.

Public subsidies leading to pollution:

- Insufficiently internalised taxes that provide little in the way of incentives in the areas of fossil energy and biomass use, industry and transport.
- Undercharging of water pollution: clear failure to internalise pollution by nitrates of agricultural origin.

Public subsidies leading to the introduction and spread of alien invasive species:

- External costs arising from invasions are not generally internalised, particularly in transport prices.

Source: CAS (2012), *Les aides publiques dommageables à la biodiversité*.

The reform of development taxation, introduced in 2010, partly included the challenges linked to land artificialisation by allowing better coverage of community amenity costs in development and construction projects (CAS, 2012). This initiative introduced two taxes: the development tax, to finance public amenities accompanying urban development (the municipalities could differentiate the taxes by local urban development plan sector); and the tax on low density development, allowing municipalities to introduce a minimum density threshold below which a payment is owed by building permit holders, thereby combating urban sprawl. A considerable number of exemptions were allowed by the development tax, however, particularly for public amenities, which take up large areas. In addition, only 34 municipalities had established a tax on low density development by 2013, while many initiatives facilitating access to ownership unduly favour new building over renovations (OECD, 2015b). The Environmental Taxation Committee recommended a systematic alteration of the development tax according to area used and broader application of the tax on low density development. It also suggested an extension of the development tax to major linear infrastructure (CFE, 2014).

A certain number of biodiversity-friendly tax provisions exist, such as exemptions from property tax on land in favour of Natura 2000 plots or wetlands, but few of these are used, and they were called into question in the 2016 Finance Act. This tax expenditure amounted to EUR 23 million in 2013 and mainly benefited organic farming.

The system of water charges does not reflect the pressure on this resource and is not very effective in reducing diffuse source pollution (particularly from agriculture) and restoring ecological continuity in aquatic environments (Levrant et al., 2013; Chapter 3). The charge for diffuse source pollution does not cover the health and environmental costs arising

due to water pollution by pesticides and nitrates. The revenue collected (EUR 41 million),⁴⁰ which funds the programme for reducing the use of plant protection products (Écophyto), is not very significant compared to the EUR 9 billion of Common Agricultural Policy (CAP) aid, highlighting the necessary greening of the latter (section 6.1) (Potier, 2014). Beyond water policy, the use of plant protection products must be reduced in view of their effects on human health but also on the environment, biodiversity and the ecosystem services which depend on them, e.g. pollinators.

There is no tax mechanism to internalise the environmental costs deriving from impacts on marine biodiversity (Charpin et al., 2013). Many activities use coastal and marine resources, yet the taxes and charges levied on these activities remain weak compared to the benefits obtained by the economic sectors concerned (fishing, shellfish production, sailing and scuba diving in particular). Beyond the 12 nautical mile limit the development of industrial activities in the exclusive economic zone (EEZ) or on the continental shelf is not subject to any tax provisions (except for oil-related resources and fishing activities). Prospects for making better use of charges in the public maritime domain nevertheless abound, and the respective principles could be extended to the EEZ as a whole. The potential resources for the State of such a change are estimated at EUR 150 million per year by 2020 (Miquel, 2014). They would allow France to respond better to its commitments to sustainable marine water management (Marine Strategy Framework Directive) and to finance the marine dimension of the future AFB.

5.3. Payments for ecosystem services

Payments for ecosystem services (PES) are voluntary transactions under which users or beneficiaries of an ecosystem service make a direct payment to offset the additional costs imposed for providing such services to individuals or communities whose land use or resource management decisions have an impact on ecosystem service provision (OECD, 2010). PES are marked by the fact that they are additional (they are additional to the legal obligations of providers and seek a benefit that would not have been forthcoming without them), conditional (performance obligation) and voluntary. Certain state support systems such as agri-environment measures or water office funding are similar to PES but are managed by a state intermediary, with poor traceability of the effectiveness of the system in relation to beneficiaries-payers. PES without intermediaries between ecosystem service beneficiaries and producers in France are few and far between. Vittel is one of the cases most often cited in the literature on the subject (Box 5.8). The regulatory and institutional framework facilitates the development of this type of instrument (CEV, 2015). Similar arrangements are used to implement compensation measures between developers and owners or managers of natural areas, though in this case they are linked to biodiversity degradation arising elsewhere. It is therefore problematic to regard them as PES.

5.4. Access to genetic resources and sharing of advantages

France is one of the few countries to be affected by biodiversity access and benefit sharing as a user (because of its agri-food, cosmetics and perfume industries) and holder of genetic resources (particularly in the overseas territories). The sharing of benefits deriving from biodiversity is a cornerstone of the CBD and was put forward as an innovative way to fund biodiversity.⁴¹ France signed the 2010 Nagoya Protocol in 2011. In the framework of the CBD, this Protocol defines procedures for accessing and sharing the benefits of biodiversity. As yet, however, it has not ratified the Protocol. Since the EU adopted its own regulation on access and benefit sharing in 2014, France must now comply with the latter.

Box 5.8. The experience of Vittel, an example of payment for ecosystem services

The measures established to protect the quality of Vittel water is one of the rare cases of genuinely voluntary PES introduced in France. After identifying the risk posed by excess fertilisation in the spring water basin in 1988, the bottler introduced an innovative system whereby farmers in the water basin are remunerated for abandoning artificial pesticides and fertilisers in favour of mandatory compost-based fertilisation techniques (Perrot-Maitre, 2006). Farmers were encouraged to take part by offering to loan them, free of charge, land previously bought by the manufacturer, entitling them to additional milk quotas, income support to offset the consequences of abandoning previous practices, equipment grants and free technical support. The success of the system was due, in particular, to the limited number of farms initially involved (40 then subsequently 37 farmers involving 3 500 ha), with which Vittel was able to negotiate individually rather than collectively, and to a relatively clear legal framework in terms of rights of ownership and use. Vittel's experience inspired similar systems to protect other springs in France and abroad. This model could also be adopted to favour biodiversity in connection with environmental compensation sought from certain developers because of the impacts of their projects.

Source: Perrot-Maitre, D. (2006), *The Vittel Payments for Ecosystem Services: A "Perfect" PES Case?*

The draft law on biodiversity preservation, currently being debated in Parliament, provides for reporting procedures – or authorisation procedures in the case of commercial objectives – for the use of genetic resources and the associated traditional knowledge, in line with the key principles of the Nagoya Protocol and the EU Regulation (Burelli, 2014). The challenge of the project proposed will be to resolve the problematic issue of the holders of the rights to the genetic material and to the traditional knowledge (“providers”). France does not recognise the particular status of “indigenous and local communities”, as defined in the CBD. Instead, regional or departmental assemblies would be designated as signatories to the benefit-sharing contracts. The draft law, however, does not address their ability to grant effective access to resources on the ground, unlike the mechanism used in New Caledonia, according to which public or private-sector or “customary” owners of land have a well-defined role. The applicability of the system thus remains uncertain, particularly in the overseas territories where systems already exist. Some coherence in applying access and benefit sharing in the various overseas territories must be ensured (Burelli, 2013).

6. Integrating biodiversity into economic sectors

6.1. Integrating biodiversity into agricultural

Agriculture occupies over half the metropolitan land area and exerts great pressure on biodiversity (Chapter 1). Despite growing awareness of its impact, the instruments put in place to develop agricultural practices remain insufficient. Although these instruments are largely negotiated at European level, France has substantial room for manoeuvre that could be used to the benefit of biodiversity.

Biodiversity in the Common Agricultural Policy

Biodiversity-friendly agricultural policies principally arise from the “further greening” of the CAP by means of agri-environment measures (AEMs) and the environmental conditionality of subsidies. Biodiversity has been gradually integrated into the CAP in France

since 2004 through direct or contractual aid for the voluntary implementation of AEMs, which allow farmers to receive subsidies in exchange for certain environmentally-friendly agricultural practices, some of which focus directly on biodiversity. Farmers must adhere to one or more measures for at least five years, their remuneration for doing so being dependent on the degree of constraint of the practices. In its agricultural programming for 2007-13, France introduced “regionalised” AEMs which allowed resources to be focused on areas with priority challenges, including biodiversity, notably in Natura 2000 sites.

Between 2007 and 2012, around 21 000 regionalised AEM contracts were signed, covering some 65 500 ha of agricultural land. The agri-environment payments, however, including those linked to Natura 2000, accounted for less than 5% of CAP expenditure in France from 2007 to 2014 (Agreste, 2015). Total public subsidies devoted to AEMs for 2014 to 2020 will be doubled compared to 2007-13. The AEM mechanism was also strengthened in the French agri-environmental project “Produisons autrement” [Produce differently].

“Conditionalities” have been imposed on direct aid since 2003. The most recent CAP reform, operative since 2015, provides for making around 30% of subsidies (EUR 2.2 billion per year) conditional upon three environmental criteria: maintenance at regional level of the ratio between permanent grassland and agricultural areas; diversity of crop rotation, with three annual crops as a general rule; and maintenance of “areas of environmental interest” on holdings. These may be topographic features (trees, hedges, ponds) or areas (buffer zones, or nitrogen-fixing crops such as vegetables). They are often refuge habitats for cultivated landscape biodiversity.

The green payment, in effect since 2015, also seeks to maintain permanent grassland by controlling the ratio between the latter and usable agricultural area (UAE) at regional level. If the regional ratio declines by more than 5%, the Government may ask certain farmers to replant new grassland. Some grasslands are classified as “sensitive” because of the presence of heritage species identified by the MNHN and cannot be reconverted. The scheme for “areas subject to environmental constraints”, provided for in the draft law on biodiversity, must ensure the legal means for imposing these objectives.

Organic farming and the ecological intensification of agriculture

Organic farming brings together a range of practices that exclude the use of synthetic chemical inputs (fertilisers, pesticides). Despite their potential consumer health benefits, these practices have less impact on biodiversity. Organic farming still constitutes a very small minority in France, covering less than 5% of the agricultural area, though it is currently expanding after stagnating from 2003 to 2007 (Agence Bio, 2015). Demand has developed more rapidly than supply, which means that 30% of the organic produce consumed has to be imported (Quelin, 2010).

The Grenelle I Law sought to expand the area devoted to organic farming from 2% of the UAE in 2004 to 6% in 2012 and 20% in 2020. In 2013, the area given over to organic farming represented a mere 4% of the UAE, suggesting that the target for 2020 is out of reach. According to a survey in 2010, farmers cited economic difficulties, the administrative burden of the aid, lack of technical expertise, problems in organising product lines and poor acceptance by neighbouring producers as barriers to setting up in organic farming (Quelin, 2010).

The “Ambition Bio 2017” programme seeks to overcome these barriers and to double the proportion of areas under organic farming between 2013 and 2017 (Minagri, 2014).

Funded by the second pillar of the CAP up to an average of EUR 160 million per year (European and ministerial credits) from 2014 to 2020 (compared to EUR 90 million in 2012), the programme provides aid for converting to and maintaining organic farming, in combination with product line organisation, marketing, R&D promotion, training and regulatory adjustments.

Measures to promote organic farming fall within the 2012 French agri-environmental project (Minagri, 2012). The aim of this project, reflected in the 2014 law on the future of agriculture, food and forestry, is to reconcile the economic and environmental performance of agriculture by 2025 on the basis of a variety of action plans, including: the teaching of links between agronomic sciences and ecology, the development of a farmer support service bringing together economic, environmental and social performance factors (Box 5.9), and financial support for farmers moving towards agri-environmental practices by increasing start-up and investment aid (Minagri, 2015).

Box 5.9. DEPHY: reducing the use of pesticides by spreading good practices

Since 2009, the DEPHY network of demonstration farms (DEPHY Ferme) and test farms (DEPHY Expe) verifies, develops and rolls out agricultural techniques and systems for reducing the use of crop protection products. At the end of 2014, 1 900 farms were voluntary members of the DEPHY Ferme network, and 41 DEPHY Expe projects had been conducted on 200 test sites.

All the sectors in the DEPHY network have managed to reduce their use of crop protection products while maintaining very good productivity levels. Between 2012 and 2014, the average number of treatments fell by 10% for field crops and mixed crop-livestock farming, by 12% for orchards and vineyards, by 15% for vegetable crops, by 38% for horticulture and by 22% for sugar cane.

The 2015 Ecophyto II Plan aims to increase the number of farms in the DEPHY network to 3 000 and to share their practices by supporting 30 000 farms in their transition to systems with little reliance on plant protection products.

Source: MAAF (2016), *Écophyto, Note de suivi 2015, Tendances du recours aux produits phytopharmaceutiques de 2009 à 2014*, Ministry of Agriculture, Agrifood and Forestry.

6.2. Integrating biodiversity into land use planning, infrastructure and urban development

France has a complex range of planning documents which endeavour to limit land take and the fragmentation of natural environments. Awareness of biodiversity challenges in the regions continues to be very mixed, as shown by the limited success of attempts to ensure the voluntary participation of local elected officials in relation to wetlands or municipal biodiversity atlases (Box 5.10). Conversely, the establishment of TVB, piloted jointly by the State and local authorities, has raised these officials' awareness of urban development projects and documents, as has the application of the "avoid, reduce, offset" (ARO) sequence, reinforced with respect to offsets in particular on conclusion of the Grenelle Forum.

Urban planning documents

Since 2013, the various plans and programmes, particularly urban planning documents, have been subject to the ARO sequence,⁴² yet the treatment of biodiversity continues to be mixed. The regional consistency schemes (SCOT, intermunicipal strategic planning tools

Box 5.10. Factoring wetlands into land use planning

The case of wetlands clearly illustrates the difficulty of factoring biodiversity into regional planning. Since 2004, urban planning documents (SCOT, PLU, municipal charters) have had to be compatible with water planning and management schemes (SAGE), though in June 2014 the latter covered only 51% of French territory (including the overseas territories) (Couraud et al., 2014). The possibility that the State would define “wetlands of particular environmental interest”, which may include “strategic areas for water management”, was barely raised, except for a small number of SAGE. The assessment of the national wetlands plan (2010-13) suggested that they should be abandoned to ensure simplification, while not forgetting that each SAGE had to identify its priority wetlands (Lavoux et al., 2013).

These disappointing results show that, despite legislative progress, factoring wetlands into land use planning depends largely on how the general interest is defined at local level, according to commitments validated and disseminated by the dominant political stakeholders in the regions concerned (Barone, 2012). Consequently, outside protected areas with a designated manager, wetlands conservation is generally factored in only by default in connection with planning project assessments. The requirement to apply the ARO sequence to projects that have an impact on wetlands, established in many water planning and management master plans (SDAGE), could raise elected officials’ awareness of the value of better anticipation and planning of wetlands management at their regional level. The updating of the SDAGE has preserved that objective. The 2014 MAPAM law, meanwhile, provided for the management of aquatic environments, including the respective wetlands and neighbouring woodlands, to be gradually entrusted to intermunicipal authorities, dedicated public institutions [EPTB] and public water planning and management institutions [EPAGE]).

Source: Lavoux, T. et al. (2013), *Évaluation du Plan national d’action pour les zones humides 2010-2013*.

introduced in 2000) include a sustainable planning and development project that may encompass biodiversity in the event of a challenge identified by local elected officials. Failing this (still the majority of cases), biodiversity continues to be addressed at project level, particularly with respect to wetlands or protected species.

Mirroring the poor mobilisation with respect to wetlands, the programme to develop local biodiversity atlases, launched in 2010, did not significantly raise local elected officials’ awareness of the subject⁴³ (MEDDE, 2015). The preparation of SRCE, on the other hand, which government services (DREAL) contributed to with the regions, did raise their awareness of biodiversity challenges thanks to the TVB, which all urban planning documents must factor in⁴⁴. The drafting of TVB thus corrected the lack of involvement of local elected officials and authorities in the Grenelle Forum. This positive outcome has, at times, been achieved to the detriment of the relevance and accuracy of the proposed environmental mapping, but the principal criticism of SRCE is that they are “non-binding”. Many regions already have an SRCE, and all regions should have one by the end of 2015.

The “avoid, reduce, offset” (ARO) sequence

The ARO sequence, a feature of French environmental law since 1976, seeks to ensure that land use planning and infrastructure projects do not entail net losses in environmental quality. The sequence requires developers to avoid and reduce the negative impacts of projects before offsetting their residual impacts. Offset measures should be long-lasting and implemented close to the affected site and should maintain or improve

the environmental quality of the natural environments concerned at the relevant regional scale (MEDDE, 2012b). Offsetting also includes a biodiversity funding mechanism which mobilises private-sector funds.

Despite the long history of the ARO sequence in France, offsets have been overlooked or poorly applied for some time. Since the reform of exemptions from the strict protection of certain protected species in 2007 and the reform of the impact study in 2012, monitoring requirements and the effective implementation of the sequence have been strengthened (Quétier et al., 2014). In this context, the French Government published further information on the ARO sequence in the form of a legal principle (MEDDE, 2012b) and guidelines (MEDDE, 2013).

The requirements of these documents are consistent with good international practices, such as those in the Business and Biodiversity Offsets Programme, and are underpinned by an international comparison carried out by the MEDDE (Morandeau and Vilaysack, 2012). The “no net loss” objective also mirrors the EU objective set out in its 2011 biodiversity strategy, which involves halting biodiversity loss and ecosystem service degradation by 2020 and restoring them as far as feasible.⁴⁵

In practice, the ARO scheme is still beset by significant weaknesses (Quétier et al., 2015; de Billy et al., 2015): the ability to achieve the objective of no net loss of biodiversity is often poorly assessed, and the legal and financial arrangements for putting compensation into effect are often weak. It is frequently criticised for lack of transparency, and applications for exemptions for protected species have been available for public consultation only since September 2013. A committee to monitor the implementation of the sequence was established in updating the law on the environment (2013-14). Its findings feed debate in Parliament on the draft law on biodiversity.

Besides technical issues, the institutional framework still does not allow offsets to be implemented effectively. Offsets must help to minimise the impacts of development on biodiversity and must fund sustainable environmental restoration action. At the moment, the performance standards and criteria according to which measures are conceived and followed up remain very mixed, and the residual impacts of projects are addressed on a case-by-case basis. The draft law on biodiversity now outlines a number of solutions (Pirard et al., 2014), such as the creation of “natural asset reserves” (a forecasting and pooling mechanism drawing on American or German clearing “banks”), an offset trader status and real environmental obligations (a legal mechanism to protect the environmental value of land). These developments are underpinned by the piloting of “on demand” offsets, available since 2008 (Box 5.11).

**Box 5.11. The piloting of “on demand” compensation:
The Cossure natural asset reserve**

The coinciding of private initiatives and political thinking gave rise in 2008 to the first French natural asset reserve (NAR) (Calvet et al., 2015). The project, realised in Cossure in the Crau plain (south-east France), is run by CDC Biodiversité, a subsidiary of Caisse des Dépôts et Consignations (CDC) [public financial institution].

After acquiring a bankrupt industrial orchard, the undertaking took measures to rehabilitate 357 ha of dry open grasslands providing habitats for La Crau steppe birds and enhancing environmental links between protected areas through the Coussouls de Crau

**Box 5.11. The piloting of “on demand” compensation:
The Cossure natural asset reserve (cont.)**

national nature reserve. Offsets in connection with this project have the advantage of being foreseen in advance and therefore implemented before the impacts arise, and the action taken has a strong additionality. The project also allowed certain developers to implement offset schemes that had been suspended because appropriate measures had not been identified. With regard to the no net loss objective proposed by the 2012 national legal principle, however, the environmental outcome is more debatable. The NAR was, in fact, used to offset impacts on species that had not been targeted at the outset by ecological restoration actions.⁴⁶ The use to be made of the land restored, moreover, beyond the commitment of CDC Biodiversité to protect it for 30 years, remains unresolved at the time of writing.

The operation has been monitored from the outset by MEEM, and exchanges between CDC Biodiversité and developers with offset obligations are connected to the authorisations issued to them by the administration. The latter ensures respect for the requirements of the national legal principle relating to the ARO sequence. Several other operations of this kind have been initiated recently and are also monitored by MEEM.

Source: Calvet, C. et al. (2015), “La réserve d’actifs naturels. Une nouvelle forme d’organisation pour la préservation de la biodiversité en France?”, in *Restaurer la nature pour atténuer les impacts du développement. Analyse des mesures compensatoires pour la biodiversité*.

Recommendations on biodiversity

- Review and update the National Biodiversity Strategy, insuring that it incorporates:
 - ❖ quantitative targets and indicators for the government and its partners;
 - ❖ prospects in terms of regulation, funding and governance.
- Rationalise biodiversity governance and management by bringing together all relevant bodies, including the National Hunting and Wildlife Commission, and setting up a single national consultative body; reform the National Nature Protection Council to concentrate scientific expertise there; roll out the model at regional level.
- Improve the effectiveness of instruments integrating biodiversity into land use planning policies (e.g. the green- and blue-belt network, agri-environment measures, the mitigation hierarchy) through results-based indicators and strengthened governance inspired, for example, by the national action plans for endangered species.
- Gradually eliminate support measures which are harmful to biodiversity and redirect tax instruments towards behaviour which favours the conservation and sustainable use of biodiversity; in particular:
 - ❖ eliminate exemptions from the development tax for public infrastructure, which encourage land take, and adapt the rate according to location;
 - ❖ encourage municipalities to use the low-density tax;
 - ❖ reform the system of charges for using the maritime public domain to better internalise the cost of impacts on marine biodiversity.
- Promote agroecology as a solution to environmental challenges (circular economy, reduction of inputs, renewable energy production, biomaterials, carbon storage); pursue the implementation of support measures (information, training, research and funding) to facilitate the transition to sustainable methods of production; ensure linkage between the various agroecology initiatives and promote synergies between them.

Recommendations on biodiversity (cont.)

- Improve the effectiveness of the mitigation hierarchy by promoting the use of ecological outcome indicators in the design and evaluation of solutions proposed by developers and by centralising and circulating feedback on the rollout of offsetting measures; strengthen the role of the mitigation hierarchy in the development of planning tools; create a framework for extending the application of biobanking, clarifying the requirements of ecological equivalence (in its qualitative and quantitative dimensions), commitment periods and expected guarantees concerning the financing and ecological vocation of land set aside for offsetting. In socio-economic assessments, effectively integrate the costs of the mitigation hierarchy into project expenditure.
- Promote a culture of economic efficiency for biodiversity policies, for example by developing *ex post* economic evaluation indicators shared between actors; continue the French Assessment of Ecosystems and Ecosystem Services and foster the use of valuation methods.
- Ratify the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the CBD.

Notes

1. To be classified as megadiverse, a country must have at least 1% (3 000) of the world's endemic vascular plant species. New Caledonia is largely responsible for the inclusion of France among these countries.
2. "Hotspots" are the most vulnerable biodiversity-rich places on the planet: they are eco-regions containing at least 1 500 endemic vascular plant species which have lost at least 70% of their original habitat. The overseas territories and Mediterranean regions account for the importance of France in this respect.
3. Considering the non-native species assessed.
4. The 2014 *Écophyto* Report did not allay doubts regarding the definitive nature of declared sales, and therefore of the representativity of data provided at the time of writing compared to real uses and their development.
5. As a signatory to the 1979 Berne Convention, France has undertaken to strictly control the introduction of non-native species (Article 11.2.b of the Berne Convention).
6. The species concerned include the tiger mosquito and ragweed.
7. The NBS comprises 10 sectoral action plans: agriculture, international co-operation, transport infrastructure, the sea, natural heritage, urban development (2005), forests, research (2006), tourism (2009) and overseas territories (introduced between 2005 and 2009; the scheme consists of a cross-cutting action plan and 10 local action plans, i.e. one per department or overseas community).
8. Decree No. 2012-219 of 16 February 2012 on national marine and coastal strategy and strategic seaboard documents.
9. It will be noted that the wording "green and blue infrastructure" has replaced the initial proposal, "ecological network", which was deemed to be too close to the "Natura 2000 network", the introduction of which was strongly contested. Source: Vimal, Mathevet and Michel (2012).
10. Other operational committees have worked on pollinisers (bees and bee keeping), forests, overseas territories, etc.
11. In addition, mechanisms favouring the inclusion of sustainable development and environmental protection, as well as the social responsibility of public-sector purchasers, have gradually been included in French public procurement law, particularly in applying Directive 2004/18/EC on the co-ordination of procedures for the award of public works contracts, public supply contracts and public service contracts. Criteria specifically focusing on biodiversity, however, are more often than not absent from the criteria for awarding public contracts or subsidies.

12. The IPBES, established in 2012, is an independent intergovernmental group which assesses the situation of the planet's biodiversity, ecosystems and services. It is equivalent to the Intergovernmental Panel on Climate Change (IPCC).
13. The DGALN comes under the dual supervision of the Ministries responsible for the Ministry of Ecology and Housing.
14. Order of 11 January 2012.
15. In terms of EPIC [*établissement public à caractère industriel et commercial* – state-funded industrial and commercial undertakings], autonomous ports and the major maritime ports are also managers – by delegation – of natural environments of special interest, particularly in the estuaries and coastal wetlands (Seine estuary, Golfe de Fos, etc.). State-funded property management undertakings are tasked with supporting local authorities in their planning projects by establishing land reserves to foster biodiversity preservation, among other things.
16. In particular by the *Agence Nationale de la Recherche* [National Research Agency] and by EU programming, in a context of a net reduction in MEDDE and state-funded research expenditure.
17. Collective scientific expertise on relationships between agriculture and biodiversity, finalised in 2008 under the NBS 2004-10 action plan for agriculture, is an example of the successful mobilisation of research. The latter, however, benefited from strong links between the INRA, which co-ordinated the expertise, and the Ministry of Agriculture, which piloted the action plan, though some participants were frustrated by the failure to fulfil the results of the expertise in practice.
18. Besides the role of organising biodiversity research, the FRB also assists the Secretariat of the French committee of the IPBES, in support of the Ministry of Foreign Affairs.
19. Like US trustees, or even the US Environmental Protection Agency, which can apply a right of veto to certain authorisations given by other agencies, such as USACE (United States Army Corps of Engineers), concerning the destruction of wetlands.
20. Between 2007 and 2010, over 25 000 articles focused on one of the facets of the Grenelle process. In June 2010, almost two million Internet pages citing the Grenelle Forum were consulted. A total of 128 reports were also produced. This proliferation of written matter may sometimes appear to be redundant, but it helps to inform the largest number of people and contributes to the development of opinions. Source: Boy, D. et al. (2012). *Le Grenelle de l'environnement: acteurs, discours, effets*. Armand Colin. See also: http://concertation-environnement.fr/documents/cs/rf/RF_Grenelle.pdf.
21. SINP data are forwarded to the *Global Biodiversity Information Facility* (and vice versa) where relevant.
22. Many administrative regions have set up their own SINP, which contributes to the national SINP, to manage relations with stakeholders in connection with the proper use of their data.
23. The MEDDE seeks to propose methods to integrate ecosystems into national compatibility (in line with Eurostat expectations under the EU Biodiversity Strategy).
24. Decree 2005-475, together with Circular DCE 2006/17 on the formulation, content and scope of programmes of measures.
25. Law of 14 April 2006 on national parks, natural marine parks and natural regional parks.
26. Law of 23 February 2005 on regional development.
27. Since Order No 2001-321 of 11 April 2001, the designation and management of Natura 2000 sites has been covered by Articles L. 414.1 to L. 414.7 of the Environmental Code. An Order of 19 April 2007 subsequently amended the list of birds that could justify the designation of special protection areas (SPAs).
28. Law 2008-757 of 1 August 2008.
29. After a long gestation period beginning in 2000, a CEN was created in New Caledonia in the form of a public interest group (GIP) bringing together the State, local authorities and national institutions (New Caledonia, the three provinces and the Customary Senate), the MPA Agency, NGOs such as the WWF and Conservation International, the two mayors' associations and the "*Ensemble pour la Planète*" environmental association.
30. Outside any regulatory prerogative, the sites managed by Natural Area Protection Agencies correspond to IUCN Categories IV and V.
31. In 2008, France also registered 16 000 km² of reefs, herbaria, mangrove swamps, algae colonies and sandy or muddy seabeds in New Caledonia's lagoon as world heritage (UNESCO).

32. Article L 334-1 of the Environmental Code specifies that marine protected areas comprise: “national parks with a marine section (Article L. 331-1); natural reserves with a marine section (Article L. 332-1); biotope protection orders with a marine section (Article L. 411-1); marine natural parks (Article L. 334-3); Natura 2000 sites with a marine section (Article L. 414-1); maritime areas covered by the Coastal and Lake Shore Protection Agency”.
33. Article 86 of Law 2006-11 of 5 January 2006, Implementing Decrees of 19 February 2007 and Administrative Decision of 29 October 2009.
34. Many species which are protected under French law are not listed in Annex IV of the Habitats Directive. For the latter, only the specimens are protected, not their habitats.
35. Despite a public consultation in which a majority opposed wolf culling, an Administrative Decision taken in July 2015 authorised the culling of 36 animals.
36. Administrative Decision of 27 July 1995, as amended, establishing the list of marine mammals protected on national territory.
37. Administrative Decision of 14 October 2005 establishing the list of marine turtles protected on national territory and the means for their protection.
38. In this context, reference will also be made to the creation in 2012 of the Agoa sanctuary for marine mammals in the French Antilles, recognised by virtue of the Cartagena Convention in 2012.
39. In 2005, the French regulatory framework thus foresaw the requirements of EU Regulation No. 1143/2014, which came into force in 2015.
40. The 2012 Finance Act set a ceiling of EUR 41 million per year for the part of the payment for diffuse pollution to finance measures under the Écophyto 2018 Plan. Broadening the base of the payment to all active substances classified as category 2 carcinogenic, mutagenic and reprotoxic by Decree of 6 October 2014 expands the Plan’s financial envelope from EUR 41 million to around EUR 70 million per year from 2016.
41. Access and benefit sharing, however, has not been retained in the OECD study on *Scaling-up Finance Mechanisms for Biodiversity* (2013).
42. Decrees 2012-616 and 2012-995.
43. Only 300 municipalities had signed up at the time of writing.
44. In addition to not very binding factoring-in, case-law distinguishes between much more demanding compliance and compatibility, which assumes that the provisions of a document are no obstacle to the application of provisions in a higher-ranking document.
45. In this context, the European Commission announced an initiative corresponding to Objective 2 of the strategy: “ensure there is no net loss of ecosystems and their services (e.g. through compensation or offsetting schemes)” (COM/2011/0244 final).
46. In the USA, the difficulties of developing NAR focusing on species (conservation banks), compared to those focusing on wetlands (mitigation banks) corroborate this analysis: species need to develop equivalence systems as much as species systems, while wetland banks can be supported by more general methods adapted to large ecosystem categories.

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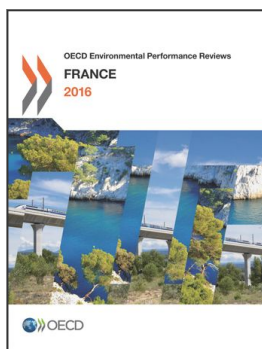
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