Chapter 5. Biodiversity

Latvia's forests, grasslands, wetlands, and Baltic marine and coastal areas are biodiversity-rich and provide home to numerous species of international significance. However, the conservation status of most habitats and species continues to decline and biodiversity considerations are not sufficiently integrated into sectoral policies. This chapter reviews pressures influencing the status and trends of biodiversity; the legal, strategic and institutional framework; policy instruments and financing established to promote biodiversity conservation and sustainable use; and the degree to which biodiversity considerations have been mainstreamed into sectoral policies.

5.1. Introduction

Latvia lies on the shores of the Baltic Sea and is home to abundant biodiversity and diverse ecosystems, such as forests, grasslands, coastal areas, and bogs, including peatlands. With more than half the territory covered in forests, Latvia has one of the highest shares among OECD countries. Forests are also an important economic asset, used, among other purposes, to produce biomass for energy.

Latvia has an established tradition of nature conservation dating back to the early 20th century. It surpasses the 2020 Aichi targets for terrestrial and marine protected areas; it ranks 25th on the world Environmental Performance Index biodiversity and habitat indicator, and 15th in the OECD, after Estonia and Lithuania. Nevertheless, the majority of habitats and species are in an unfavourable state, which is due to land-use change, fragmentation, intensive resource use, pollution and agricultural expansion. Insufficient management plans in protected areas, as well as limited options to conserve biodiversity outside protected areas and promote mainstreaming into other sectors, are among the reasons why the status and trends of ecosystems and species are not improving. Latvia is one of the few OECD countries that, despite being party to the Convention on Biological Diversity (CBD), have not yet developed a national biodiversity strategy.

Given the past decade of consistently strong economic growth, which is expected to persist and relies heavily on natural resources, further efforts are needed to reduce pressures on biodiversity and thus balance economic development and environmental protection. Nature conservation should be considered a government priority, together with better mainstreaming of biodiversity objectives into agriculture and forestry policies. This would improve the well-being of the population and sustainable resource use. Completing ecosystems mapping and developing a national biodiversity strategy would represent important opportunities to establish a coherent policy framework for biodiversity, increase awareness among policy makers and the public, and mobilise resources to achieve Latvia's biodiversity objectives.

5.2. State, pressures and trends

5.2.1. State and trends in biodiversity

Forests cover 54% of Latvia's land area (excluding inland and coastal waters). Arable land and cropland account for nearly 21% of land area and meadows and pastures for 10% (FAO, 2018). Of the multiple rivers flowing into the Baltic, the largest are the Daugava, Gauja, Lielupe and Venta. Box 5.1 describes the main Latvian ecosystem types and pressures.

Forests are mostly natural, with only 18% being plantation forests. They are very diverse and provide multiple ecosystem services, including habitat provision, carbon sequestration, water regulation and erosion prevention. There are three main tree species in Latvian forests: Scots pine (29%), silver and downy birch (28%) and Norway spruce (17%).

Box 5.1. Major ecosystem types and related pressures

Grasslands

Semi-natural grasslands (meadows and pastures) are among the most diverse and richest habitats, yet at the same time increasingly threatened. Grasslands host 520 plant species (one-third of Latvia's flora), including 40% of all protected plant species. Numerous bird species breed in semi-natural grasslands or use them as nesting and feeding grounds. Many grassland flora and fauna species are decreasing while habitat loss and degradation increase. Grasslands' coverage has significantly declined since the mid-20th century, when they represented around 13% of the territory. As a result of agricultural land expansion, natural grasslands have shrunk to around 0.3% of the land area.

Forests

Forests are an important source of biodiversity, with old stands especially providing valuable habitats for animal and plant species. The largest forests are in the northwest, on the Kurzeme Peninsula; along the banks of the Daugava; and in the northeast, where conifers (pine and spruce) predominate. Birch, aspen and alder are the main deciduous species. The typical representatives of Latvian forest fauna are game animals. Protected species are brown bear (~20 individuals), dormouse and northern birch mouse. There is large diversity of bird species: out of 330 wild bird species, more than 100 can be found in forests. Latvian forests are nesting areas for 5% of the world population of black stork. Intensive forest management has replaced old forests with younger ones, with negative effects on biodiversity.

Wetlands, bogs and peatlands

Bogs are a type of wetland, which refers to land that is covered or saturated by water for all or part of the year. Peatlands are wetlands drained for peat extraction. There are 8 protected bog habitats and more than 50 protected plant species – mostly orchids and sedges. Storks and herons are usually found in marshes and meadows. Bogs are organic carbon sinks. The large majority of bogs (70%) are in pristine condition, while the remainder are affected by peat extraction and drainage.

Inland waters

Latvia's 12 400 rivers and over 2 000 lakes host 2 680 algae, 1 614 invertebrate, 40 fish and 3 lamprey species. Salmon and trout are examples of specially protected species, and 27 habitats are protected. More than half of inland waters originate in neighbouring countries, which leaves them exposed to transboundary pollution and accidents (EEA, 2015), hazards to which freshwater species are particularly vulnerable. Other threats to biodiversity are eutrophication, hydroelectric power stations and poaching.

Coastal and marine areas

Coasts offer wide diversity of habitats and species. Seven marine and more than 40 coastal areas are Natura 2000 sites. The greatest biodiversity is found in coastal areas where benthic algae grow. The main threats to biodiversity in coastal areas are habitat degradation (due to tourism and recreational activities), habitat loss (due to housing development), expansion of invasive species and low environmental awareness. In marine areas, eutrophication and invasive species are the biggest challenges.

Source: MEPRD (2014); EEA (2015); UNFCCC (2017).

Natural habitats

The condition of natural environments is poor and continues to decline (Figure 5.1). The 2013 report on habitat conservation status, issued pursuant to the EU Habitats Directive (92/43/EEC), says a majority of habitats (51%) are unfavourable/bad and around one-third (35%) are unfavourable/inadequate, compared to EU averages of 30% and 47%, respectively. Only 10.5% of all habitats have favourable conservation status (the EU average is 16%). Forest, grassland and peatland habitats' status are among the worst. Between 2007 and 2013, forest habitats significantly deteriorated, mostly due to increased pressures from forestry and agricultural activities (EC, 2017a).

Peatlands' conservation status is unfavourable. Peat is among the most economically significant resources in Latvia. It is estimated that peat deposits cover 10.4% of the terrestrial territory. They are located in bogs, but also in some forest types, along with drained mires (MEPRD, 2014).

Figure 5.1. The conservation status of habitats and species is poor and declining
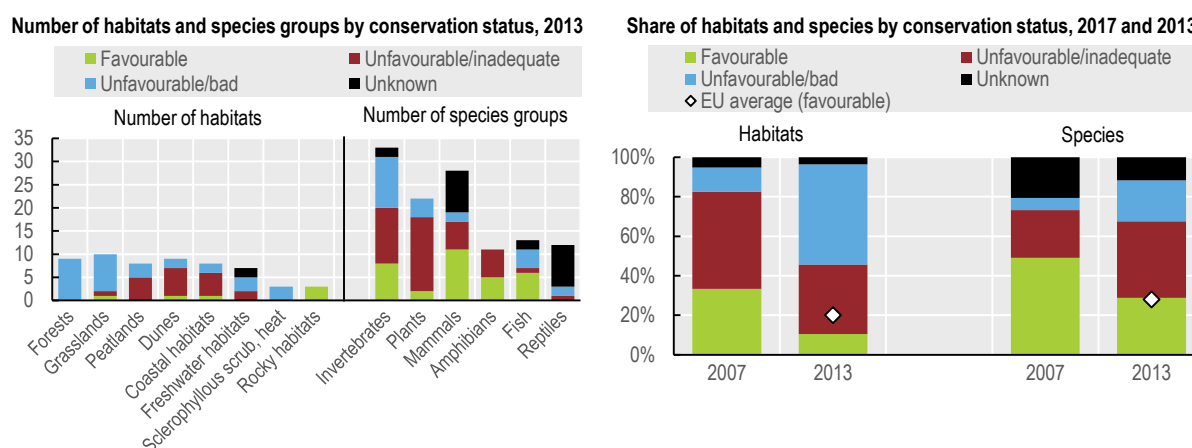
Source: EEA (2019), *Habitats of European Interest* (database); Eionet (2019), *Reporting under Article 17 of the Habitats Directive*.

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Flora and fauna

The conservation status of species raises concerns (Figure 5.1). There are 27 443 species known in Latvia (18 047 animals, including mammals and birds; 5 396 plants; and about 4 000 fungi). Common mammal species are squirrel, fox, hare, lynx and badger.

Protected species account for 2.6% of total known species; 22 animal and plant species are on the list of specially protected species with exploitation limits (MEPRD, 2014). Threatened species account for 2% of total known species, with amphibians and reptiles being the most vulnerable.

The latest EU assessment shows that most species have an unfavourable status: 39% unfavourable/inadequate and 21% unfavourable/bad. These trends are in line with the respective EU averages of 42% and 18%. Only around one-third of species have a favourable status (Figure 5.1) (EC, 2017a).

The bird population includes nightingale, oriole, blackbird, woodpecker, owl, grouse, partridge, finch, quail and lark. With regard to birds' conservation status, the first report

under the Birds Directive (2009/147/EC), in 2013, showed that 22% of breeding species' population and 59% of wintering species' population were stable, with 19% and 8% increasing, respectively. A significant knowledge gap exists for breeding species (Figure 5.2). The farmland bird population is among the highest in the OECD (Section 5.7.3).

Latvia is home to 223 nesting bird species, 70 of which are protected. In addition, it hosts about 5% of the world's and 8% of Europe's population of black storks, 20% of the world's and 24% of Europe's population of lesser spotted eagle and 25% of Europe's corncrake population (MEPRD, 2014).

Figure 5.2. The population trend of breeding and wintering bird species is stable

Population trends of breeding and wintering bird species, 2008-12
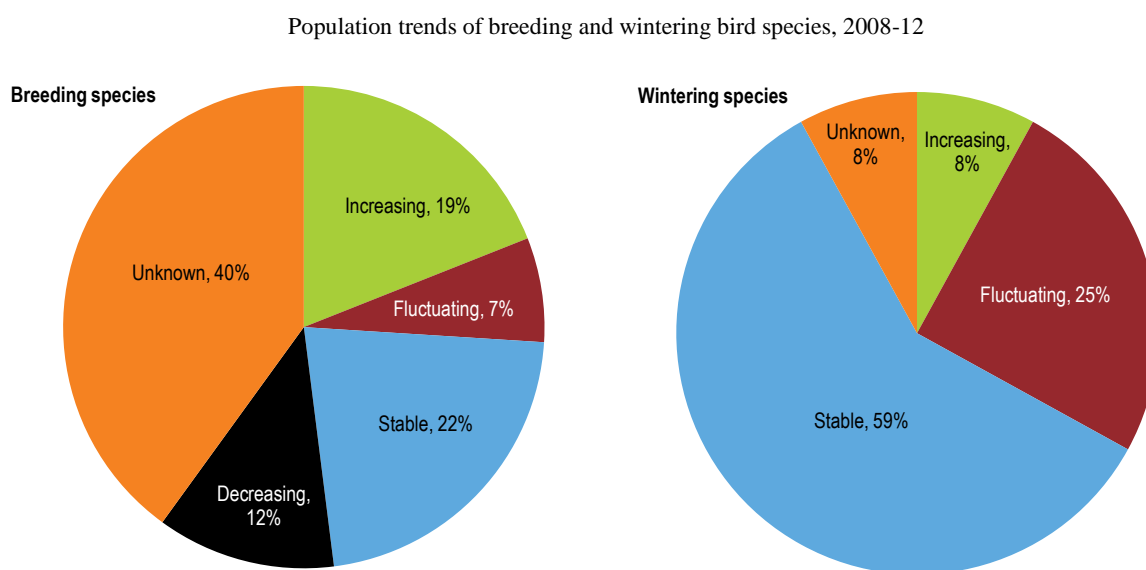
Source: EC (2017a), *The EU Environmental Implementation Review Country Report: Latvia*, European Commission, Brussels.

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Pressures on biodiversity

Biodiversity loss can have a costly impact on human well-being and economic growth. In Latvia, the main pressures on habitats and species are natural system modifications, which entail fragmentation and degradation of ecosystems as a result of human activity, including dam construction, changes of hydrological regime and land reclamation. Other threats are resource use (e.g. intensive forestry), pollution, agricultural expansion, urban development and climate change.

Pollution in the Baltic Sea

National marine waters – territorial plus the exclusive economic zone (EEZ) – constitute 7.7% of the total Baltic Sea area. The latest environmental assessment of the sea, conducted in 2018, concluded that more than 95% was affected by eutrophication, i.e. excess nutrients resulting in intense plant growth. Nitrogen and phosphorus pollution is mostly from agricultural run-off, municipal wastewater and transboundary sources. The 2016-21 river basin management plans for the four Latvian river basins include measures to reduce diffuse and point-source water pollution. Implementing those would help reduce

eutrophication of marine waters. Hazardous substance contamination is also cause for concern, but has shown some improvement.

Another source of pollution in the Baltic is waste (Chapter 4). Plastic represents around 70% of it and the figure is expected to increase, posing a significant threat to marine biodiversity. Some 80% of waste comes from land-based sources, while 20% is sea-based. Coastal waters are also affected by waste. Latvia uses a methodology developed by the UN Environment Programme to monitor marine litter on beaches. According to the 2018 environmental assessment of the sea, 51% of marine litter collected on beaches is plastic, 12% paper/cardboard, 10% metals and 9% glass/ceramics. The country has the largest number of monitored beaches in the region (GoL, 2018).

Land use change and fragmentation

Even though land cover has significantly changed over time, Latvia is one of the least urbanised OECD countries. The annual land take rate (growth of artificial areas) was 0.38% over 2006-12, below the EU average of 0.41%. It was mainly driven by housing, services and recreation, as well as industrial and commercial activities (EC, 2017a).

Recent urbanisation trends are increasing the fragmentation of natural environments, especially in the Pierīga region. This is mainly due to building and transport infrastructure development. Future development of road infrastructure should be weighed against the risk of increased landscape fragmentation, a leading cause of the decrease in wildlife population throughout Europe (EEA, 2011). To address this risk, the Sustainable Development Strategy to 2030 promotes the analysis, preservation and management of landscapes, as well as cultural and historical heritage territories. The strategy supports implementation of the European Landscape Convention to ensure integration of landscape planning and nature protection issues in sectoral policies.

Invasive species

As Latvia has not systematically monitored invasive species, information on them is incomplete. The 36 invasive species and 12 potentially invasive species reported represent a threat to indigenous flora and fauna.

The most problematic invasive species is hogweed. Introduced in 1950s as cattle feed, it expanded beyond control in the 1980s and '90s, spreading to the whole territory and now covering some 120 km^2. Giant hogweed in particular is problematic for the environment and human health, as it easily spreads to neighbouring land and toxic components in its leaves, stems, roots, flowers and seeds can cause severe skin burns. Aquatic species (including crustaceans, worms and algae) are the second most significant category of invasive species (NOBANIS, 2019).

Climate change

The 2017 draft National Climate Change Adaptation Plan to 2030 identifies biodiversity and ecosystem services as being among the most vulnerable sectors (Chapter 1). Key impacts on biodiversity relate to changing distribution patterns of species and habitats, including the emergence of new species and pests, increased water temperature and altered water composition, a risk of the spread of pathogens and infections uncharacteristic for Latvia, and increased floods and storms in coastal areas. A shift in conditions favouring rare or new pests could have repercussions for agriculture and forestry (UNFCCC, 2017).

Climate change effects on marine waters are twofold. Expected warmer winters will increase river run-off, which in turn will cause nutrients to be leached from unfrozen topsoil; and warmer sea temperatures will keep favouring the blooming of algae, thus contributing to eutrophication (GoL, 2018).

At present, it is difficult to fully assess the impact of climate change on biodiversity in Latvia due to a lack of data (UNFCCC, 2017). Filling this gap is fundamental to reduce climate change impacts on biodiversity and ecosystems, including species loss and extinction, which projections indicate would be lower at 1.5°C of global warming than at 2°C (IPCC, 2018).

5.3. Legal and institutional framework

5.3.1. Legal framework

Latvia's legislation related to biodiversity is relatively comprehensive, covering fisheries, forests, agriculture and protected areas, among other issues (Table 5.1). Biodiversity policy is mostly determined by EU legislation. A major gap is the absence of a national biodiversity strategy, which significantly weakens the potential to achieve biodiversity objectives.

The 2004 EU accession shifted Latvian priorities towards a European-centred approach to nature conservation. Major changes were made to legislation to transpose EU directives. The establishment of Natura 2000 sites increased the profile of biodiversity conservation, which was also strengthened by specific requirements on environmental impact assessment (EIA) (Section 5.5.1). Implementing the EU acquis has brought Latvia closer to fulfilling its commitments under some international conventions, such as the CBD, since the EU acquis requirements largely overlap the CBD goals (MEPRD, 2014).

Legal framework

As in other areas, Latvian biodiversity policy is mostly governed by EU legislation, particularly the Habitats and Birds directives. Table 5.1 presents key national environmental laws.

Table 5.1. Main biodiversity-related laws

Title	Year	Aim
Environmental Protection Law	2006, last amended in 2013	Secure conservation and restoration of environmental quality and provide sustainable use of natural resources.
Fishery Law	1995, last amended in 2014	Govern the use of fish resources in inland waters, territorial marine waters and waters of the EEZ.
Law on Conservation of the Species and Biotopes	2000, last amended in 2017	Transpose the EU Habitats and Birds directives.
Law on Forests	2000, last amended in 2006	Regulate forest management.
Law on Agriculture and Rural Development	2004, last amended in 2007	Administer sustainable agricultural and rural development, in accordance with EU agricultural policy.
Law on Specially Protected Nature Territories	1993, last amended in 2013	Define procedures to manage a wide range of types of protected areas.
Marine Environment Protection and Management Law	2010, last amended in 2014	Ensure protection and management of the marine environment.

Source: Ministry of Environmental Protection and Regional Development of Latvia.

In 2016, Latvia adopted a Programme of Measures for Achieving Good Marine Environmental Status to 2020, as required by the Marine Strategy Framework Directive (2008/56/EC).[1] The measures are meant to enhance coastal areas' recreational value and improve the population's health and well-being (GoL, 2018). However, the results of a risk analysis indicate that existing and planned measures would not provide significant improvement in marine status. A major gap in Latvia's strategy is a lack of definitions regarding key biodiversity pressures (e.g. contaminants, marine litter). Latvia therefore proposed new measures focusing on marine pollution reduction, risk mitigation and recovery, maritime spatial planning, public participation and outreach activities. There are also two new measures for biodiversity, mostly aiming at improving knowledge and information on seabed habitats and on certain bird and fish species (Milieu, 2018).

National strategies and plans

Latvia is one of the few OECD countries without a national biodiversity strategy and action plan (NBSAP), which is an Aichi target for 2020. Key national strategies and plans include biodiversity-related objectives, though they do not result in a coherent framework. In 2000, Latvia approved a national programme on biodiversity and a related action plan, but did not finish implementing it due to the start of the EU accession process, which became the political priority and absorbed most administrative and financial resources. The Environmental Policy Strategy 2014-20 covers biodiversity protection issues linked to implementation of CBD goals and objectives, and the government considers it equivalent to an NBSAP.

The 2014-20 Environmental Policy Strategy sets the main biodiversity goals, primarily aiming at fulfilling EU requirements. Some could be better defined; for example, the 7 000 ha habitat restoration target does not include a breakdown of habitat type (forest, grassland, etc.). As the baseline of targets shows a modest starting point of biodiversity conservation activities, the established objectives can be considered relatively far-reaching. Efforts should be scaled up in a long-term biodiversity strategy; in particular, the target for management plans for species and habitats could be more ambitious and should include an assessment of which protected areas need a management plan (Table 5.2).

Additional biodiversity goals to 2020 are set in the 2014-20 national development plan, which has a chapter on "Sustainable Management of Natural and Cultural Capital". It essentially considers natural capital a resource, the aim being to increase the volume of ecosystem services. The plan includes rather unambitious targets to 2020, some of which are only slightly higher than the baseline (Table 5.2).

Similarly, the 2010 Sustainable Development Strategy to 2030 has a chapter on "Sustainable Management of Natural Values and Services". Its objectives include integrating natural capital considerations into economic, spatial and regional development policies, estimating national natural capital and ecosystem services, and establishing a nature conservation plan. The strategy's chapter on spatial development also covers biodiversity-related objectives, including landscape planning, awareness raising and further development of rural tourism, aquaculture and fishing. The strategy is not accompanied by action plan. Table 5.2 shows the few specific targets and indicators related to biodiversity.

Table 5.2. Latvia's biodiversity objectives to 2020 and 2030

Environmental Policy Strategy	Baseline (year)	2020 target	
Share of protected areas that have begun implementing management plans (%)	37.5% (2019)	55%	
Number of species and habitat management plans being implemented	13 (2013)	20	
Share of species and habitats of EU importance for which conservation objectives have been set (%)	None (2013)	100%	
Habitat restoration in accordance with Natura 2000 priorities (ha)	None (2013)	7 000	
Share of species and habitats of EU importance for which maps are available (%)	10% (2013)	100%	
Fine-tuning of Natura 2000 area borders taking into account latest scientific and monitoring data as well as results of species and habitat mapping (%)	None (2013)	100%	
Amount of annual funding for management of Natura 2000 sites (ha)	EUR 14/ha/ year (2013)	EUR 50/ ha/year	
Compensation for restrictions on economic activity in protected areas (% of restrictions compensated)	47% (2013)	100%	
National Development Plan (2020) and Sustainable Development Strategy (2030)	Baseline (year)	2020 target	2030 target
Share of organic farming (% of agricultural land)	8.7 (2009)	10	>15
Index of farmland birds (1999 = 100)	115 (2011)	115	>120
Index of forest birds	100 (2005)	95	-
Forest cover (% of total land)	50 (2008)	52.7	55
Protected areas (% of total land)	12 (2017)		18

Source: Environmental Policy Strategy 2014-20; National Development Plan 2014-20; Sustainable Development Strategy 2010-30.

The Latvian Bioeconomy Strategy 2030 (LIBRA) is the long-term national strategy to enable a knowledge-intensive bioeconomy. Developed by the Ministry of Agriculture, LIBRA contains references to environmental quality, including biodiversity and climate change mitigation and adaptation.

In 2015, the government approved the Forest and Related Sectors Development Strategy to 2020, which set the goals of managing forests sustainably and improving education and skills related to the forestry industry. The strategy, however, highlights the lack of biodiversity data and monitoring in commercial forests, the absence of requirements for forest habitats and the need for targets on the share of forests to be included in protected areas. The next policy strategy for the sector beyond 2020 should ideally fill these gaps.

The 2014 Rural Development Programme to 2020 is another sectoral strategy that includes a biodiversity dimension, but biodiversity and nature conservation are not directly reflected in policy documents regarding transport, education or science.

As an active international player, Latvia is a party to several conventions and international agreements related to biodiversity, including the CBD and Sustainable Development Goals (SDGs). Stronger efforts would be required to fully integrate CBD targets into national objectives (Table 5.3). Relative to OECD averages, Latvia is performing well on SDGs 14 (oceans) and 15 (biodiversity) (OECD, 2018a).

Table 5.3. Limited progress towards 2020 Aichi Biodiversity Targets and contributions to the relevant Sustainable Development Goals

	Targets	Progress
Aichi target 1	People are aware of the values of biodiversity	B - there are no specific national targets and indicators
Aichi target 2	Biodiversity values have been integrated into national and local development and poverty reduction strategies	B - there are no specific national targets and indicators
Aichi target 3	Subsidies harmful to biodiversity are eliminated, phased out or reformed	B - there are no specific national targets and indicators
Aichi target 4	Steps are taken to achieve or implement plans for sustainable production and consumption	B - there are no specific national targets and indicators
Aichi target 5	The rate of loss of natural habitats, including forests, is at least halved	A
Aichi target 6	All fish and invertebrate stocks and aquatic plants are managed and harvested sustainably	B - there needs to be an additional evaluation
Aichi target 7	Areas under agriculture, aquaculture and forestry are managed sustainably	B - assessment of inter-relations between these policy sectors needs to be developed
Aichi target 8	Pollution, including from excess nutrients, is brought to levels that are not detrimental to ecosystem function and biodiversity	B - EU legislation on waste, air, soil, water policy is largely implemented
Aichi target 9	Invasive alien species and pathways are identified and prioritised	B - target will be approached according to new EU regulation
Aichi target 10	Anthropogenic pressures on coral reefs and other vulnerable ecosystems impacted by climate change or ocean acidification are minimised	N/A
Aichi target 11	At least 17% of terrestrial and inland water, and 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes	B - not achieved for terrestrial areas; achieved for marine ones
Aichi target 12	The extinction of known threatened species is prevented and their conservation status improved	B - see target 5
Aichi target 13	The genetic diversity of cultivated plants and farmed and domesticated animals is maintained	B
Aichi target 14	Ecosystems that provide essential services, including services related to water, are restored	B
Aichi target 15	Ecosystem resilience and the contribution of biodiversity to carbon stocks are enhanced	B - see target 10
Aichi target 16	The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational	B - Nagoya Protocol will be implemented
Aichi target 17	Each party has developed a national biodiversity strategy and action plan	B - refer to national strategies
Aichi target 18	Indigenous and local communities and their customary use of biological resources are respected	B - see target 1
Aichi target 19	The science base and technologies relating to biodiversity are improved	B - refer to national strategies
Aichi target 20	The mobilisation of financial resources increases	B - refer to national strategies

Note: Assessment of the rate of progress in reaching the Aichi targets is expressed as A/B/C: A likely achieved; B positive, but insufficient progress; C no progress. Progress reflects self-assessment in the fifth national report to the CBD.
Source: MEPRD (2014).

Other international commitments are under the UN Convention on the Law of the Sea, the International Convention for the Prevention of Pollution from Ships and its Protocol (MARPOL), the Ramsar Convention on wetlands and the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Latvia is also a party to the Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area and a member of its governing body, the Baltic Marine Environment Protection Commission (HELCOM). The convention provides the basis for co-operation among Baltic coastal states for the prevention of marine pollution. The related action plan sets out objectives to restore good ecological status to the Baltic marine environment. It was adopted by all coastal states in 2007, reflecting up-to-date scientific knowledge and management strategies. The action plan is revised every few years at the HELCOM ministerial meeting.

Latvia, Estonia, Finland and Sweden initiated the Good Environmental Status through Regional Co-ordination and Development (GES-REG) project, funded by the EU Central Baltic INTERREG programme, to implement requirements of the Marine Strategy Framework Directive. Countries exchange information and best practices on marine water use, develop scenarios and assess degradation costs. It has been estimated that the Latvian population may be willing to pay more than EUR 3.8 million extra annually to reach good environmental status in relation to marine biodiversity, water quality and invasive species, compared to a business-as-usual scenario. Willingness to pay can be considered recognition of the benefits gained from improvement in marine waters (SEI, 2014).

In addition, Latvia co-operates bilaterally with countries in the region. Since 2010 it has had an agreement with Finland on sharing experiences on protected areas management and awareness-raising initiatives. Latvia's Nature Conservation Agency (NCA) co-operates with the Estonian Environmental Board, and there are joint management plans for the Ramsar transboundary wetland complex of the Nigula Nature Reserve and Northern Bogs in Limbazi and Valmiera regions, the latter part of a UNESCO Biosphere Reserve. Another agreement is in place with Belarus on the management of transboundary protected areas.

5.3.2. Institutional framework

National level

Latvia has a centralised governance system relating to the environment and biodiversity, which has remained stable over the past decade. The Ministry of Environmental Protection and Regional Development (MEPRD) is responsible for the design and implementation of biodiversity policy. Within the ministry, the Nature Protection Department oversees work on species, habitats and protected areas. The ministry is also responsible for water management, pollution prevention, waste policy and climate change.

As is common in OECD countries, other ministries share competences related to biodiversity policy. Forestry, fisheries and agriculture are within the purview of the Ministry of Agriculture. Stronger co-ordination between it and the MEPRD would provide an opportunity to better mainstream biodiversity and reconcile sometimes conflicting priorities.

Institutions with biodiversity-related competences that work under the auspices of the MEPRD and the Ministry of Agriculture are:

- NCA, the implementation agency for biodiversity policy. It is responsible for management and control of protected areas, biodiversity monitoring and administration of certain compensation. It is also the competent authority for the control of international trade in endangered species.

- State Environmental Service, the enforcement authority (Chapter 2). It comprises a central office in Riga and eight regional offices. It is responsible for monitoring compliance with fishery legislation in inland waters and the sea.

- Environment State Bureau, which co-ordinates EIA and strategic environmental assessment (SEA), as well as EIA in transboundary contexts (Chapter 2). EIA and SEA are conducted on all projects and plans with expected environmental impact.

- Latvian Environmental Protection Fund (LEPF). It supervises and administers the national funding for environmental protection projects.

- State Forest Service, under the Ministry of Agriculture, establishes and oversees micro-reserves in forests.

- Rural Support Service, under the Ministry of Agriculture, administers part of the EU payments for protected areas, mostly Natura 2000.

5.4. Biodiversity monitoring and information

Latvia lacks a comprehensive national approach to mapping and assessing ecosystems and their services. An ongoing project to map terrestrial ecosystems (see below) and other ad hoc projects help address data gaps and improve biodiversity knowledge. Acquiring solid biodiversity information is a key prerequisite for effective and efficient policy making, e.g. on identifying forests' biodiversity value and required protection levels. It would also allow for the establishment of business-as-usual baselines and the quantification of benefits and targets. Policy makers should make effective use of this information to plan future work and to determine monetary values for ecosystem services.

A 2017 European Commission report indicates there are significant gaps in the knowledge base required for implementation of the Habitats and Birds directives. Designations done in 2004 have not been updated, which undermines science-based assessment of the state of habitats and species (EC, 2017a).

Latvia has undertaken an assessment of its marine ecosystems, and is currently mapping terrestrial ones. It carried out a Mapping and Assessment of Ecosystems and their Services (MAES)[2] for its marine waters in 2016, in the framework of the Maritime Spatial Plan[3] (Section 5.5.1). The assessment mapped areas of high ecological value, focusing on sea bottom (benthic) habitats but also considering pelagic habitats. The mapping has some limitations, in that data for part of the coastal waters were available on distribution of benthic habitats, algae, birds and fish species, while for most of EEZ data were available only for fish distribution. Marine ecosystem services were also studied, including filtration of nutrients, carbon storage, provision of food for fish, and cultural services.

The project provided valuable information to maintain essential services of marine ecosystems, as well as related benefits to people and the environment. Policy makers should use the marine MAES to evaluate scenarios for activities having an impact on marine waters and identify appropriate solutions for ecosystem conservation. In addition, the results should be used in SEAs and information campaigns (BISE, 2016).

In 2016 Latvia started a project to map terrestrial ecosystems with the support of the EU Cohesion Fund. The key objective is to gain information on the extent and quality of habitats of EU importance.

Additional projects are funded by the EU LIFE programme, which supports Natura 2000 sites and other projects on forests, grasslands and marine ecosystems (Box 5.2). In addition,

there are specific programmes for certain bird species, some carried out in co-operation with other Baltic states. The NCA is primarily responsible for biodiversity monitoring, with a dedicated budget of around EUR 400 000 per year. It maintains the Ozols (Oak) online information system, which includes information on protected areas, micro-reserves, protected species and habitats, and management activities.

The LEPF is implementing an overarching project on environmental monitoring, which mostly focuses on improving monitoring equipment to be able to monitor inland and marine waters, hogweed regions, and birds and bat migration routes. Not all project activities are strictly related to biodiversity monitoring. Its overall cost is estimated at EUR 7 million, 84% of it from the EU Cohesion Fund, 12% from the national budget and 4% self-financed (LEPF, 2018).

Box 5.2. Kemeri National Park

Kemeri National Park, established in 1997, is the third-largest national park in Latvia, covering over 380 km². The park comprises around 30 habitats of EU priority, such as mire woods, black alder swamps, raised bogs and rich fens, and is home to several species of birds and wildlife, with a varied landscape that makes it a popular attraction. The main threats include degradation of bog habitats caused by drainage, river straightening, overgrowing of meadow areas and blocking of watercourses by dams.

Over half the park is forested. One-quarter is bogs, which are the main tourist attraction, while 10% is occupied by lakes, rivers and sulphur springs. Lake Kaņieris is designated as an internationally important wetland under the Ramsar Convention and is an important site for migratory and nesting bird species.

HYDROPLAN is the most recent LIFE project, running from 2011 to 2019. The key objectives are to restore natural or semi-natural hydrological conditions in three wetland ecosystems affected by drainage, carry out research and build a system for long-term monitoring of activities. The hydrological restoration of the Zalais Purvs bog entailed filling up 68 km of ditches with peat and stopping the water flow by building around 500 dams. As a result, the hydrological regime was restored in a total area of 550 ha. Additional hydrological restoration was conducted in Skudrupīte meadows, where a riverbed was re-meandered, increasing the river length. Now, during floods, the water spreads over a larger area, thereby providing the natural hydrological regime for floodplains on 85 ha. Stones were added to the river for water purification and to provide habitats for animals.

Source: Ķuze et al. (2007); LIFE (2018).

5.5. Policy instruments for biodiversity conservation and sustainable use

As in most OECD countries, conservation measures in the form of protected areas have traditionally been Latvia's focus for safeguarding biodiversity, while less attention has been devoted to sustainable use of resources. To strike a balance between these two concepts and increase opportunities to conserve biodiversity, approaches complementary to protected areas could be sought to enhance the capacity of rural activities (forestry, fishing and agriculture) for maintaining high biological and physical diversity in their managed areas. Expanding the use of voluntary and economic instruments could help balance trade-offs between biodiversity objectives and economic activities.

5.5.1. Regulatory instruments

Regulatory (command-and-control) approaches for biodiversity conservation and sustainable use are common in most OECD countries, and protected areas are a key instrument. In Latvia, the protection of species and habitats is ensured through specially protected nature territories (SPNTs) and micro-reserves. Within SPNTs and micro-reserves, 333 sites are part of the Natura 2000 network. Micro-reserves provide conservation of protected species and habitats outside the SPNT system or in areas within them requiring additional protection (Pierhuroviča and Grantiņš, 2017).

Other regulatory instruments applied to conserve wild fauna and flora range from prohibition of exploitation of certain species, hunting and fishing restrictions, and measures to control artificial propagation of certain plants. The NCA compiles information on measures chosen and assesses their impact (Pierhuroviča and Grantiņš, 2017).

Latvia's six sites designated as wetlands of international importance (Ramsar sites) have a total surface area of 1 503 km^2. Most are nesting areas for internationally significant bird species (such as *Ciconia nigra, Aquila pomarina, Crex crex*) and some are recreation and tourism destinations (Ramsar, 2014).

Latvia currently lacks a national strategy for green infrastructure.[4] A 1998 plan to establish one was never implemented. The 2020 national development plan and the 2030 Sustainable Development Strategy include green infrastructure targets such as increasing the organic farming area, expanding forest coverage and developing green corridors. There have been some green infrastructure initiatives, including LIFE projects and cross-border co-operation initiatives with Lithuania. However, further efforts are needed to increase connectivity between habitats and collect information about green infrastructure. Latvia would benefit from a strategic national policy framework for green infrastructure development, stronger know-how and awareness among decision makers (especially at the local level), broader public participation and mechanisms for cross-sectoral co-ordination (EC, 2018; EC, 2019).
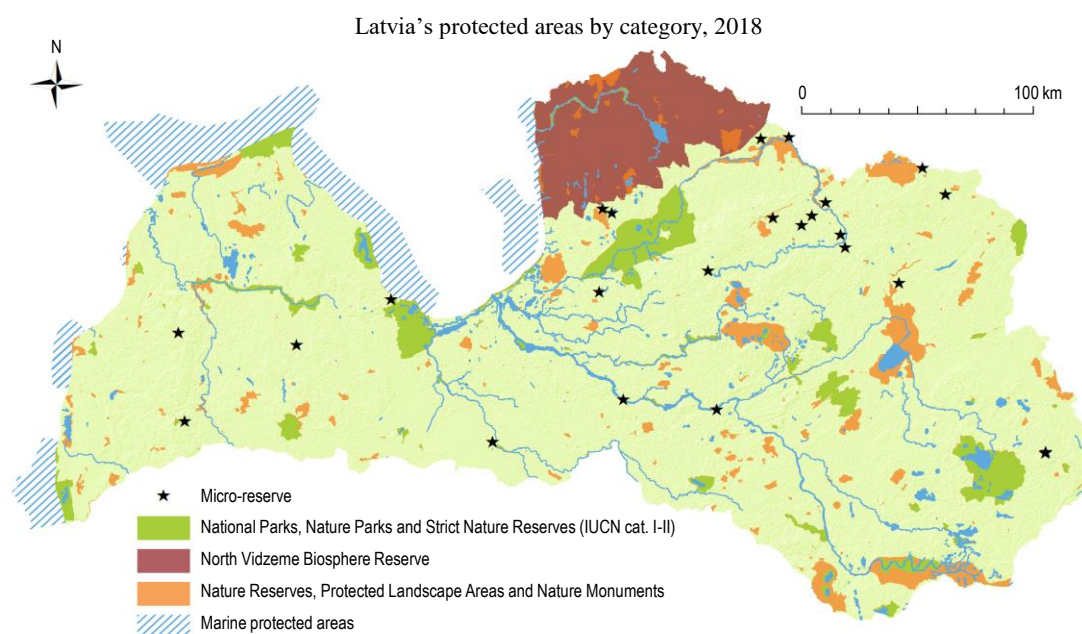
Protected areas

SPNTs are geographically defined areas categorised as nature monuments, protected landscapes, national parks, nature parks, strict nature reserves, biosphere reserves, nature reserves and protected sea territories. They can also be divided into functional zones with different protection levels (Pierhuroviča and Grantiņš, 2017).

The latest EU assessments show insufficient designation of terrestrial Sites of Community Importance (SCIs)[5] under the Habitats Directive, although Latvia is in line with the EU average. There are 333 Special Areas of Conservation (SACs) under the Habitats Directive, covering an area of 12 241 km^2 (7 877 km^2 terrestrial and 4 364 km^2 marine). There are 102 Special Protection Areas (SPAs) under the Birds Directive covering 6 610 km^2 (6 184 km^2 terrestrial and 426 km^2 marine) (EC, 2017a). There are significant overlaps between SACs and SPAs. The latest nature reserve for inclusion into the Natura 2000 network was designed in 2013.

In 2004, when the Natura 2000 network was established, Latvia designated a majority of SPNTs as Natura 2000 sites, except for the North Vidzeme Biosphere Reserve and many nature monuments. Natura 2000 areas now cover about 12% of the land area (the EU average is around 18%) and total SPNTs 18.2% (Figure 5.3).

Seven marine protected territories were established in early 2010 (MEPRD, 2014). In total, marine protected areas amount to 16.4% of the EEZ.

Figure 5.3. Natura 2000 is the key instrument to protect biodiversity

Latvia's protected areas by category, 2018

Note: With the exception of the North Vidzeme Biosphere Reserve and several nature monuments, nationally designated protected areas in Latvia are also designated protected areas under Natura 2000 (e.g. SACs and SPAs).
Source: IUCN and UNEP-WCMC (2018), *The World Database on Protected Areas*.

Latvia achieved 2020 Aichi target 11 on marine and terrestrial areas (Figure 5.4). The target calls for reaching at least 17% of terrestrial and inland water and 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, conserved through effective and equitable measures. Latvia achieved the marine target in 2010 by establishing new marine protected areas, though these are mainly located in territorial waters while areas in the EEZ could be investigated more (MEPRD, 2018).

Nature management plans have been developed for the management of Natura 2000 sites with the support of EU funds and the LEPF. Protection and management regimes can vary from minor restrictions to absolute prohibition of any activity. In many nature reserves, economic activities, such as farming, mowing, grazing and forest management, are allowed (Pierhuroviča and Grantiņš, 2017). Less than 40% of protected areas have management plans. The Environmental Policy Strategy aims at reaching 55% of protected areas with management plans by 2020. Additional targets related to Natura 2000 include mapping and setting conservation objectives for all species and habitats of EU importance and increasing the available annual funding. For most indicators the baseline data show that a significant effort is needed to reach the 2020 objectives (Section 5.3.1).

Figure 5.4. Latvia achieved the Aichi targets for terrestrial and marine protected areas

Terrestrial, % of land area, 2018   Marine, % of EEZ area, 2018
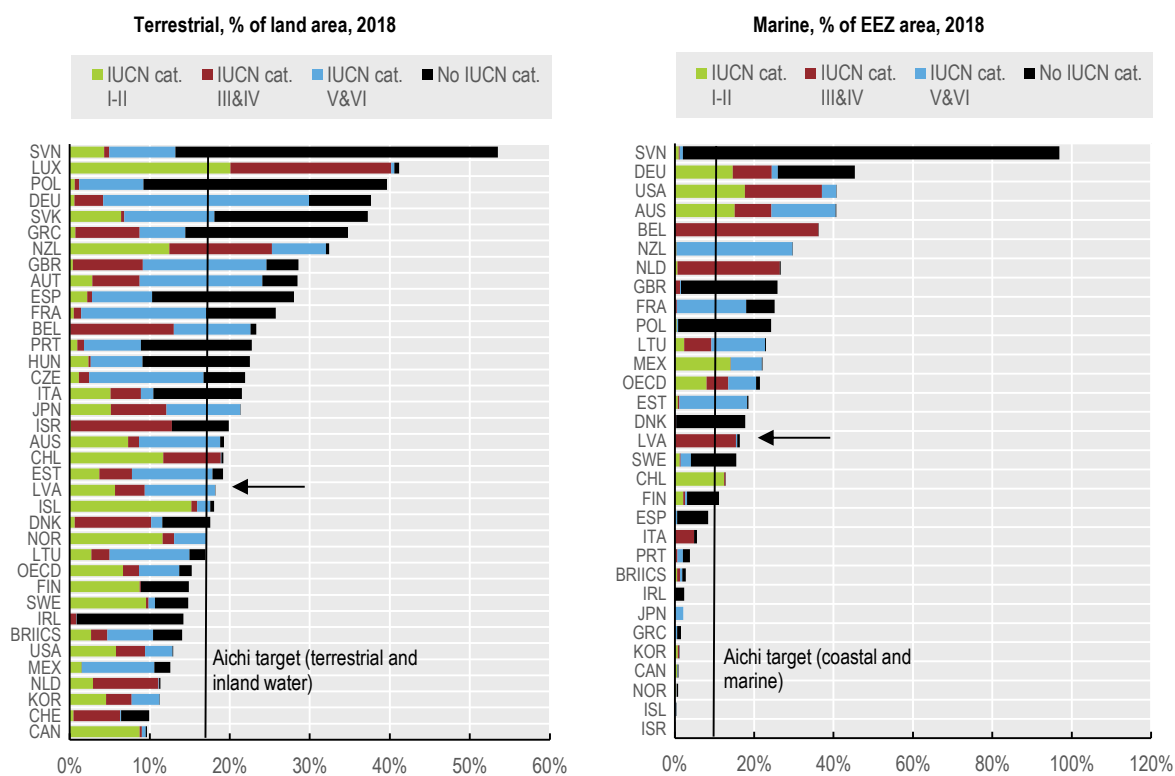
Note: IUCN categories reflect management objectives. Categories I and II refer to strict nature reserves, wilderness areas and national parks. Categories III and IV refer to natural monuments and habitat/species management areas. Categories V and VI refer to protected landscapes/seascapes and areas with sustainable use of natural resources. Other nationally designated areas with no IUCN category are grouped with regionally and internationally designated areas. Data refer to metropolitan or mainland countries, not including overseas territories. TUR: data not available (according to official national sources about 9% of the territory is protected). EEZ = exclusive economic zone.
Source: OECD (2018), "Biodiverisity: Protected areas", *OECD Environment Statistics* (database).

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The Environmental Policy Strategy has a target on elaboration and implementation of management plans for species and habitats, which is also mandated by the Law on Conservation of the Species and Biotopes. Suggestions about protection of species and habitats can be submitted by any person or organisation. There are management plans covering 18 animal species, but half need updating. Five plans under development will cover 17 further species: woodpeckers (7 species), owls (6), seals (2) and bats (2).

The NCA sets yearly priorities for species and habitats in need of management plans. Similarly, it determines the priority order for setting management plans for Natura 2000 sites. Implementation is a challenge due to human and financial resource constraints.

In accordance with Article 6 of the Habitats Directive,[6] there is a special EIA procedure for planned projects in Natura 2000 sites. It is governed by a 2011 regulation establishing consultations with the NCA during the EIA procedure: once after the initial screening and again when the study is prepared, following public consultations. During the assessment, all available information (e.g. from the Ozols information system) is taken into account. In case of information gaps, a certified expert may be engaged to research additional information. EIAs for Natura 2000 sites have recently decreased, from 31 assessments in 2015 to 25 in 2017.

Spatial planning

Biodiversity-related considerations are included at different levels of spatial planning, but it is unclear how biodiversity objectives are weighted against competing priorities. SEA is performed for all planning documents with expected significant impact, including on land use (Chapter 2).

Spatial planning at the national level is governed by the Sustainable Development Strategy to 2030, the National Development Plan to 2020 and the Maritime Spatial Plan. According to the Sustainable Development Strategy, the government should introduce a plan for the preservation and restoration of natural capital, which would also include spatial planning of nature preservation and restoration. In order to do so, the strategy calls for estimating and mapping natural capital and developing target indicators.

The Maritime Spatial Plan, approved in 2019, is a long-term spatial development planning document that defines the use of the sea. Marine protected areas (part of Natura 2000) are established under the plan to protect habitats and species and ensure feeding and wintering grounds of water birds.

Regional strategies cover planning of natural areas, including the SPNT network, culturally and historically significant territories and valuable territories such as scenic landscapes. Local plans define functional zones, including building, industrial, transport, nature, forest and agriculture (Pierhuroviča and Grantiņš, 2017).

5.5.2. Economic instruments

Latvia complies with the OECD acquis on biodiversity, which recommends the use of economic instruments in the conservation and sustainable use of biodiversity.[7] Environmentally related taxes, charges and fees are some of the more commonly used economic instruments for managing biodiversity across OECD countries. Payments for ecosystem services and environmentally motivated subsidies are also commonly used (OECD, 2012). Latvia applies some subsidies, taxes, charges and fees linked to biodiversity, but there is scope to expand the use of economic instruments.

The main instrument is the compensation to private owners for restrictions on economic activities in SPNTs, which can be considered a form of payment for ecosystem services (PES). Established in 2006, it has had a positive impact in fostering nature conservation. At the time, landowners could choose between one-off compensation or annual payments, the latter becoming the standard system after the 2008-09 economic crisis. Latvia needs to ensure that compensation is adequate to actually serve its PES purpose, especially in light of the ongoing habitat mapping project which may result in the designation of additional protected areas.

In 2013, the government adopted the Law of Compensation for Restriction on Economic Activities in Protected Areas. Compensation is co-financed by the European Agricultural Fund for Rural Development (EAFRD), which covers Natura 2000 payments on agricultural and forest lands. In addition, there are payments for maintaining biodiversity in biological grasslands and preservation of genetic resources of farming animals (MEPRD, 2014). Compensation in areas outside Natura 2000 is supported through the national budget and managed by the NCA. There are also tax exemptions for landowners in protected areas with full or partial restriction of economic activities (Pierhuroviča and Grantiņš, 2017).

The Law of Natural Resource Tax (2005, last amended in 2018) established a comprehensive tax levied on resources used for commercial activities (Chapter 3). The tax

aims at encouraging sustainable use of natural resources, reducing pollution and securing revenue for environmental protection measures. It is applied to, among other activities, extraction of peat, soil, construction materials, mud and thermal water. Rates have progressively increased, but the impact on biodiversity has so far not been assessed.

Other economic instruments are licence fees for fishing and hunting, deforestation and non-compliance fees related to forestry use, fishing and hunting permits, and liability charges for biodiversity damage. Latvia's liability regulation establishes a system for calculating environmental damage (when it is impossible to remediate) based on fixed rates, instead of attempting to reflect real damage (Chapter 2).

5.6. Financing biodiversity management

The national budget for nature conservation activities (including compensation) almost doubled over 2014-17. Between 2008 and 2018, public support was the main source of funding for biodiversity conservation and sustainable use. Project-based funding is provided by national funds, such as the Forestry Development Fund, the LEPF and the Fishery Fund , the latter two having seen their resources increase since 2008 (despite facing some cuts during the economic crisis of 2008-09). Since 2004, the funds have not earmarked resources and all tax revenue has gone into the central budget. The LEPF's budget is decided annually. Examples of projects related to biodiversity include elaboration and implementation of management plans, restoration of habitats and spawning grounds, replenishment of fish stocks and monitoring of species.

The Environmental Policy Strategy includes a target for resource mobilisation per hectare of Natura 2000 area: EUR 50/ha annually by 2020, starting from a baseline of EUR 14 in 2013 (Table 5.2). Funding comprises all available sources, including national funds and the EU.

Latvia has participated in the EU LIFE programme since 2000, receiving more than EUR 26.5 million. The programme has supported around 30 projects in the field of nature and biodiversity conservation. Eight are currently under implementation, including the protection of coastal habitats in the Piejūra nature park and the restoration of degraded bogs in the Northern European Lowland (UNFCCC, 2017).

As an EU member, Latvia benefits from structural funds, including on rural development (the EAFRD), as well as direct payments under the Common Agricultural Policy (CAP). The EAFRD is administered by the Ministry of Agriculture. More than 40% of the EAFRD is allocated to environmental and climate related measures aimed at improving agricultural activities and rural practices by incorporating environmental protection elements. These measures include the promotion of organic farming, which accounts for 13% of the fund (Section 5.7.3). As in all EU countries, Latvia allocates 30% of direct payments under the CAP to greening the sector, which entails three main obligations: crop diversification, maintenance of permanent grassland, and ecological focus areas.

In accordance with the Law on Scientific Activity (2005), every four years the government approves priorities for financing research. Environment-related research (including biodiversity and ecosystems) has always been among the priorities. In 2018, out of 397 project proposals, 73 (18%) were in the fields of climate change and nature protection, and 76 (19%) in the field of sustainable use of local natural resources.

For more effective financing of biodiversity management, Latvia would need to augment public financing with private-sector finance. For example, in the Netherlands, the

government provides financial facilitation and tax reduction to private investors that support green projects such as nature restoration (OECD, 2012).

5.7. Mainstreaming biodiversity into economic sectors

Latvia needs to better mainstream biodiversity into national objectives of other economic sectors. Many pressures on biodiversity stem from policies outside the purview of the MEPRD, such as forestry, fisheries and agriculture. Policies need to be aligned to harness synergies and minimise potential trade-offs. Mainstreaming can be interpreted in various ways. It can entail processes, outcomes or both, and can focus on sectors or be carried out at the national level. A recent term, "reciprocal mainstreaming", emphasises that biodiversity considerations should be integrated into all other policy agendas, and vice versa. Figure 5.5 presents a framework for developing an integrated approach to biodiversity management and mainstreaming (OECD, 2018b).

Figure 5.5. Assessment framework for biodiversity management and mainstreaming
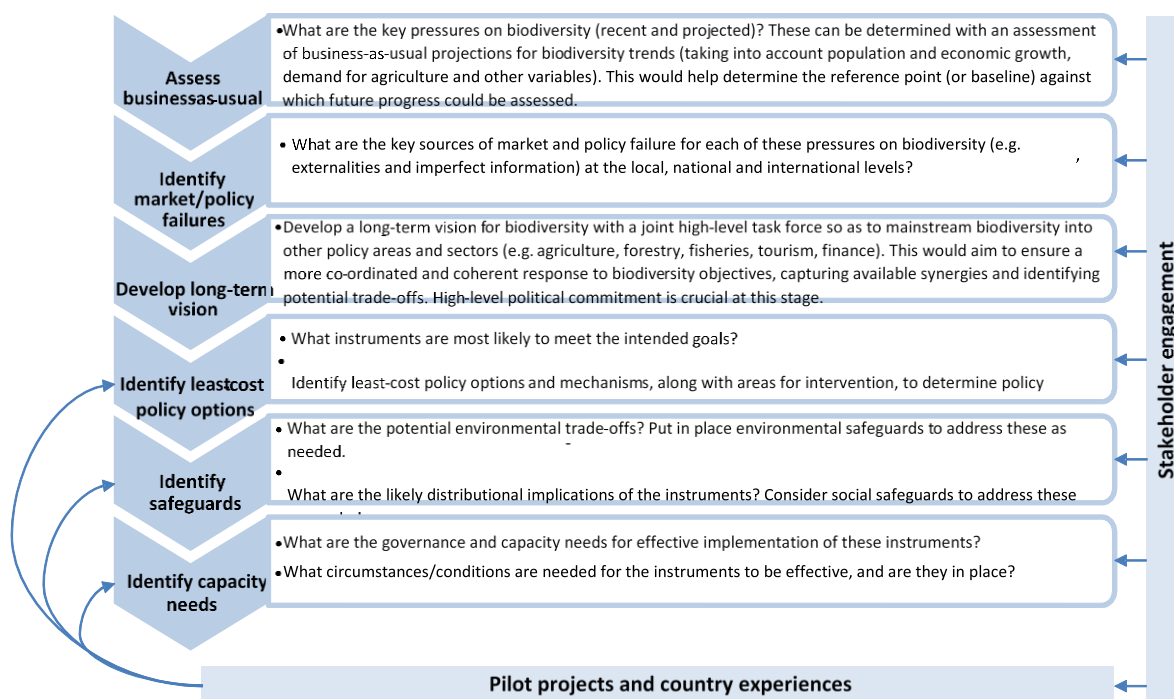
Source: OECD (2018b), *Mainstreaming Biodiversity for Sustainable Development*.

Mainstreaming can also be achieved through specific policy instruments for the conservation and sustainable use of biodiversity outside protected areas. Some measures are described in the sectoral sections below, while additional options are listed in Box 5.3.

Box 5.3. Conservation and sustainable use of biodiversity outside protected areas

Biodiversity offsetting

Biodiversity offsets are measures that compensate for the residual impact of a development activity, ensuring that development activities yield no net loss, and preferably, a net gain on biodiversity. They are based on the polluter-pays approach in that developers incur an extra cost to mitigate the adverse residual impacts of their activities.

Several features must be considered in the design and implementation of biodiversity offsets in order for them to be effective. These include taking into account the mitigation hierarchy. Offsetting should be a last resort and should be employed only after appropriate measures have been taken to avoid, minimise and rehabilitate biodiversity on-site. It is also acknowledged that there are limits to what can be offset, referring to cases of irreplaceable or highly vulnerable biodiversity.

Biodiversity offsets can be applied in a variety of sectors, from the extractive industries to agriculture. Examples in the context of forestry are the Environmental Compensation for Land-Use Changes in Forested Areas Programme in Mexico and the offset programme under the Forest Code in Brazil.

Performance-based agri-environmental payments

These are payments that relate to the achievement of a defined environmental result or management requirement, and the farmer or land manager is allowed to choose the most appropriate way to achieve that result. Support considered potentially the most beneficial includes decoupled support payments based on non-commodity criteria (i.e. per hectare of agricultural land rather than per animal head), and support for farming practices beneficial to biodiversity.

Targeted quantitative restrictions on the use of agrochemicals (pesticides and fertilisers)

Regulatory approaches can be used to control input, sale and use. The Law on Environmental Protection (2014) in Viet Nam, for example, established that producers, distributors and users of pesticides must be registered and assessed for meeting legal standards. Absolute bans on certain agrochemicals (or other inputs) may be required in case of expected drastic, irreversible impacts.

Source: OECD, 2018b.

5.7.1. *Forestry*

Integration of biodiversity goals in forestry policy is a relatively long tradition. It became a common practice in Latvia and other countries in the Baltic region in the mid-1990s, when the "woodland key habitat" concept became an essential instrument for biodiversity conservation in forests (Timonen et al., 2010).[8] However, Latvia would benefit from developing a policy vision for the forestry sector to 2050. This policy vision should fully integrate biodiversity-related objectives and be support by sufficient resources.

Conservation measures and economic restrictions are in place only in small shares of forests. Expanding these tools to include other economic and voluntary instruments outside

protected areas could help balance the trade-offs between biodiversity conservation and sustainable use of forest resources.

Protected forests represent 17.5% of total forests (MEPRD, 2014). Current forest management largely entails restrictions on economic activities in around 14% of forests (including outside protected areas), with around 3% of forest under strict protection (no economic or forestry activity allowed). Latvia is among EU countries providing compensation to a large area of forest in Natura 2000 areas (around 34 000 ha), but less than Hungary (115 000 ha) and Estonia (73 000 ha). Latvia exceeded its targets for supporting forest holdings over 2007-15, meaning it compensated more forest owners than intended (Sarvašová et al., 2019).

Outside protected areas, nature protection is ensured by sustainable management certification. About half of forests are certified by the Forest Stewardship Council (FSC), which certifies environmentally sound, socially beneficial and economically prosperous forests, and the Programme for the Endorsement of Forest Certification. The relevant indicator is not very high when compared with other OECD countries with intensive use of forest resources, such as Finland, which has more than 90% of forests under sustainable management certification. Estonia and Lithuania are at about the same level as Latvia (OECD, 2017) (Figure 5.6). The majority of forests are public property and all state-owned commercial forests are certified according to the Latvian National FSC Standard, which includes woodland key habitat inventories (Timonen et al., 2010).

Figure 5.6. Half of forests are under sustainable management certification

Percentage of forests under sustainable management certification, 2010
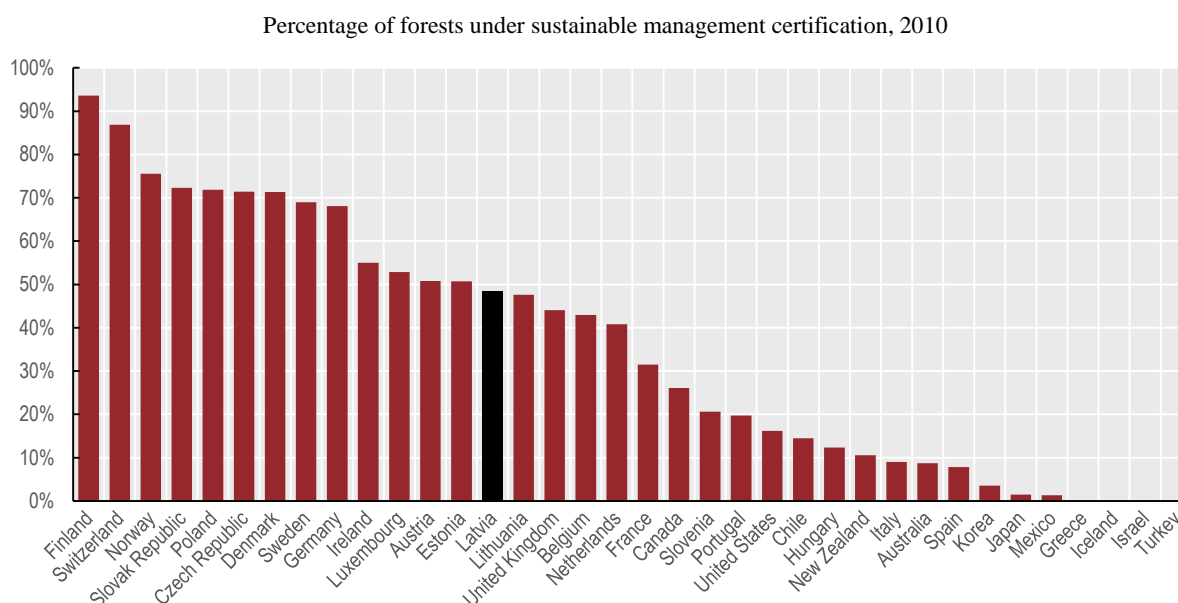
Source: FAO (2015), *Global Forest Resources Assessment 2015: Country Report – Latvia*.

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Nature protection non-government organisations and the NCA stress that existing forest protection is not adequate at all sites, and no effective instrument exists to protect

high-priority forest habitats outside Natura 2000. Establishing micro-reserves would help, but thus far only a few have been designated for forest habitats.

The Law on Forests regulates economically, ecologically and socially sustainable forest management, including provisions for nature protection. It establishes that regulation will set specific provisions on genetic diversity, protection of wetlands and restriction of economic activities. The majority of state-owned forests are the responsibility of the Ministry of Agriculture and managed by a state company, Latvian State Forests. The NCA manages state-owned forests in strict nature reserves and national parks. It monitors compliance in SPNTs and approves forest management plans for forest territories within national parks. Official forestry statistics are produced by the State Forest Service, National Forest Inventory, State Land Service and Central Statistical Bureau. Since 2008, the National Forest Inventory has been the main source of data (FAO, 2015).

From 1990, Latvian forest cover rose steadily, increasing by about 16% to 2008, and remaining stable since. The proportion of primary forests in Latvia (i.e. forests of native species, with no indication of human activity) has been stable in the past decade, albeit very small (around 0.5% of total forest area) and limited to nature reserves and national parks with the strictest level of protection. Compared with other European countries, such as the United Kingdom, Germany and Spain, where primary forests have disappeared, Latvia's effort to preserve them is commendable. Still, its share is significantly lower than those of countries like Canada, Korea and Mexico, which have more than 50% of primary forests. Estonia (3%) and Lithuania (1%) perform slightly better than Latvia. The majority of forests are naturally regenerated, while 18% are a result of planting and deliberate seeding. Planted forests do not necessarily represent a reduction or reversal in biodiversity loss, as plantation forests are often monocultures, thus supporting less biodiversity than natural ones. They may also replace more biodiverse types of habitat, such as grasslands (OECD, 2012).

Afforestation, which refers to the process of establishing a forest on land not previously forested (or not forested for a long time), more than doubled between 2008 and 2012. Most afforestation is done on abandoned agricultural land (Ruskule, 2012). Reforestation, referring to natural regeneration or re-establishment of a forest on land with recent tree cover, slightly increased between 2005 and 2015, by 5%.

Deforestation has significantly decreased (by 27%), as the trend was offset by the rise in afforestation. In 2012, deforestation amounted to around 3 km^2 per year (FAO, 2015). It is mostly driven by infrastructure development. It requires a permit and payment of a fee to cover potentially negative effects. The government establishes the amount of and criteria for the fee according to a formula that takes into consideration reduction of CO_2 sequestration, decrease in biodiversity and cost of replantation (Pierhuroviča and Grantiņš, 2017). In 2017, the State Forest Service received 1 070 deforestation applications, a 50% increase from 2016, with corresponding fees growing more slowly (by 18%).

The global economic crisis weakened the forest administration system in terms of staff and financial resources. The State Forest Service went from a budget of USD 37.3 million and almost 2 000 employees in 2008 to USD 16.9 million and 700 employees in 2013. Moreover, restrictions on performance of economic activity have decreased in recent years (Pierhuroviča and Grantiņš, 2017). Inspections of protection requirements of habitats and species remained stable between 2011 and 2017, while inspections for compliance in SPAs decreased by 30%. This is probably due to lack of resources in the NCA, which inspects compliance with protection regimes and detects violations such as illegal logging or fishing, and tree cutting in protected areas.

Fisheries and aquaculture

Latvia has a strong fishery tradition, which reflects its geographical position. The sector comprises fishing, aquaculture and fish processing. The Baltic Sea and Gulf of Riga are the main fishing grounds and marine catches represent an important natural resource. The main pressures on marine biodiversity relate to intensive fishing, bycatch and invasive alien species (EC, 2017a).

Fish stocks in the Baltic Sea are subject to national quotas set by the EU. Latvian quotas have declined over the last decade and they have been used in full. Quotas are not tradable, although there is a system to transfer or exchange them among companies. For inland waters there are total catch limits or limits per fish species in each water body. Commercial fishing in inland waters accounts for a small fraction of catches compared to fishing in the Baltic Sea (500 t/year vs 6 000 t/year), with bream and lamprey being the dominant species and angling being widespread. Latvia is above the OECD average in fish catches per capita. The fishing industry may have to undergo transformation in the future to move towards a more sustainable use of fish resources (GoL, 2018).

The Fishery Law regulates the conservation, monitoring and use of fish resources. It determines types of fishing and restrictions based on areas, gear and methods. The Ministry of Agriculture issues licences for commercial fishing in the Baltic Sea, while municipalities do so for inland waters. Licences are granted for five years, with fees of EUR 71.14 for fishing in international waters, EUR 35.57 for the Baltic Sea deeper than 20 meters and EUR 14.23 for coastal waters or inland waters. Additional licences are required for angling.

Inter-ministerial co-operation is essential to bring relevant stakeholders together to develop strategies and plans that take various dimensions of sustainable fisheries into account. The Fishery Advisory Council brings together government representatives with fishery organisations, and the Advisory Council for the Sustainable Use and Management of Latvia's Internal and Marine Coastal Waters Resources, which promotes the co-operation between associations and the state administration, including local governments to work on the sustainable use and management of inland and marine water resources.

Latvia approved the Multiannual Framework for Aquaculture Development 2014-20, in line with the EU Common Fisheries Policy. In the framework, aquaculture activities are considered an alternative source of fish for consumption that could help lower the pressure on natural resources. Aquaculture can in fact have both positive and negative impacts on biodiversity. While it is positive to reduce overexploitation and promote species diversity, there are risks related to water pollution, escape of non-native species (which can become invasive) and disease transmission to wild fish.

There are 160 aquaculture farms registered with the Food and Veterinary Service. Five are state farms involved in replenishing fish stocking in natural water bodies, while the rest are private. Since 2008, aquaculture production has steadily increased (by 35%), but Latvia has the second lowest level of production among OECD countries. The main species produced are carp, trout, goldfish, pike, catfish and sturgeon.

The European Maritime and Fisheries Fund (EMFF) has allocated EUR 34.7 million over 2014-20 for further intensification of aquaculture (43% of pond fish farming activities located in Natura 2000 areas) (EC, 2017a). It is supported by an operational programme setting biodiversity-related measures and relevant targets, with a focus on aquaculture. Other priorities include promoting environmentally sustainable, resource efficient, innovative, competitive and knowledge-based fisheries.

The Latvian Fishermen's Producers Organisation meets the Marine Stewardship Council standard for sprat fishery in the central Baltic Sea. Latvia is the first Baltic state to obtain sprat certification. Some Latvian companies have undergone certification for pelagic trawl.

5.7.2. Agriculture

Agricultural production both depends on biodiversity and has an impact on it. Agriculture is a priority sector for biodiversity mainstreaming in many countries around the world. Latvia is not fully integrating biodiversity considerations into the agricultural sector. As with all sectors, a clearer understanding of the key pressures on biodiversity is needed so as to prioritise the mainstreaming efforts accordingly. India and Uganda, for example, monitor biodiversity conservation in agriculture through their sectoral policies. France's latest Biodiversity Law includes agricultural elements, such as a ban on certain pesticides and authorisation of free vegetable seed exchanges between farmers to preserve agricultural biodiversity (OECD, 2018b).

The Farmland Bird Index, a barometer of change for biodiversity on agricultural land, shows that Latvia is among the top three OECD countries in terms of farmland bird population, signalling that agricultural land is more favourable to birds and to biodiversity in general than in many other countries (Figure 5.7). An evaluation of the Rural Development Programme for 2007-13 showed that farmland bird population improved in territories that received payments from the second CAP axis (related to agri-environmental programmes, Natura 2000, afforestation and other biodiversity protection payments). However, some other indicators of biodiversity quality, such as botanical quality of grassland habitats, have deteriorated (OECD, 2019). Natural and managed grasslands are biologically the most important, but cover only 0.3% of the territory. Traditionally, grasslands were managed by grazing and mowing, which have been significantly reduced (MEPRD, 2014).

The Law on Agriculture and Rural Development mentions maintenance of landscapes and the biological diversity of the environment, with no additional specifications. The 2014-20 Rural Development Programme, under the CAP, aims at restoring, preserving and enhancing ecosystems related to agriculture and forestry. The target is to manage 14% of the agricultural area in a more environment-friendly manner by 2020, which entails restoring, preserving and enhancing ecosystems related to agriculture (EC, 2018).

One goal of Latvia's Sustainable Development Strategy until 2030 is to increase the share of land in organic farming to above 15% of total agricultural land by 2030. The share rose from 6.8% in 2005 to 13.5% in 2017, and in 2016 was the sixth highest in the EU (Figure 5.8). Organic farming can benefit biodiversity by reducing the use of chemical fertilisers and pesticides and limiting livestock density. However, additional use of manure needs to be managed carefully to prevent increased ammonia emissions and nitrate leaching.

Figure 5.7. The farmland bird population in Latvia is among the highest in the OECD

Farmland bird index, selected OECD countries, 2005 and 2017
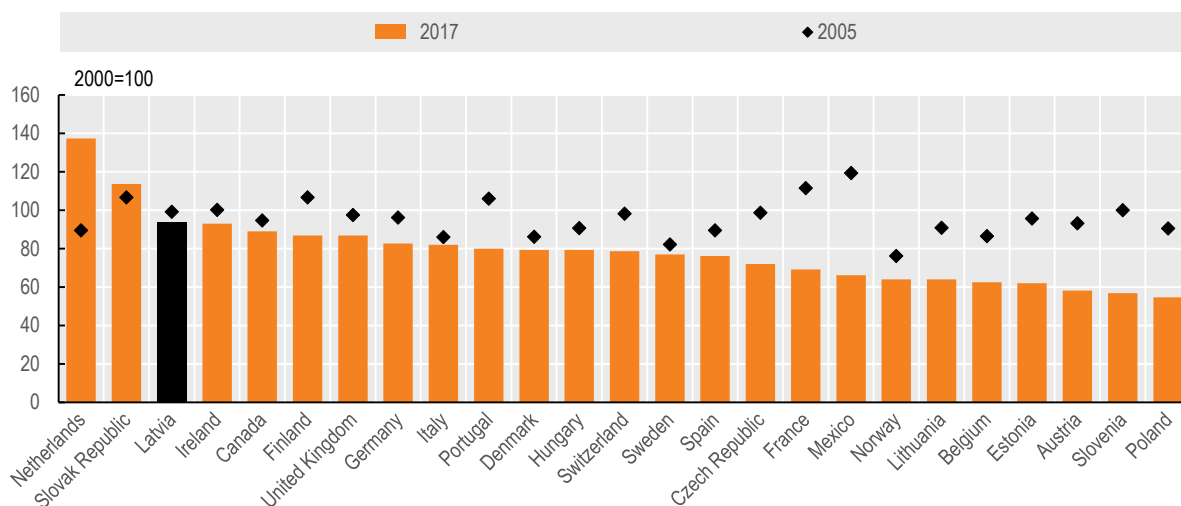
Note: 2017 or latest year available; 2005 or closest year available.
Source: OECD (2019), "Environmental performance of agriculture - indicators", *OECD Agriculture Statistics* (database).

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Figure 5.8. Organic farming is growing

Organically farmed area as a percentage of total agricultural area, OECD countries, 2005 and 2016
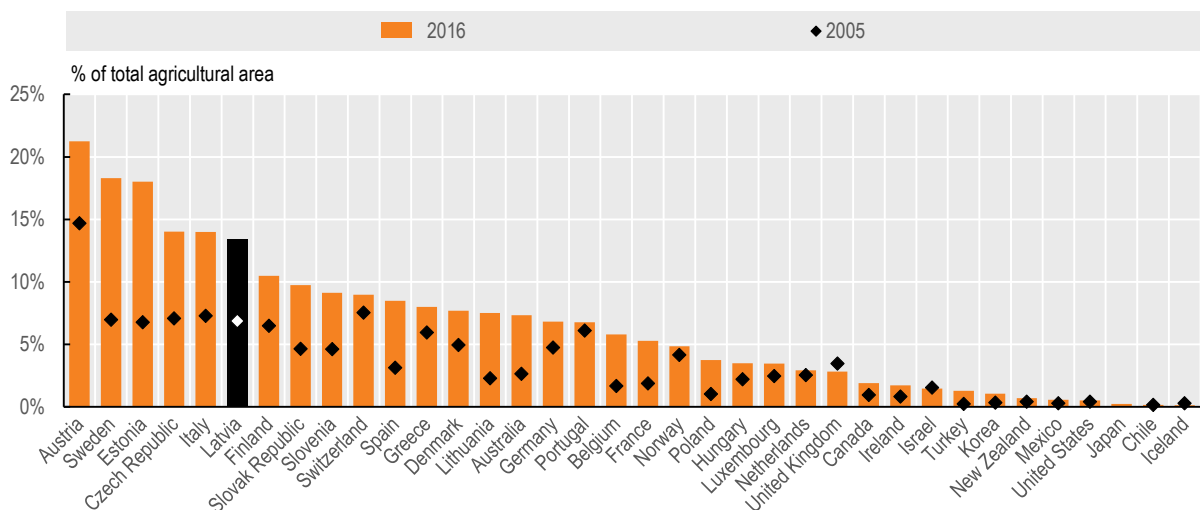
Note: 2016 or latest available year.
Source: OECD (2019), "Environmental performance of agriculture - indicators", *OECD Agriculture Statistics* (database).

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Latvia subsidises producers through credit subsides and relief on the diesel fuel excise tax. Some support to farmers is also based on animal numbers and production volumes, thus

negatively affecting the environment by favouring more intensive practices. Subsidy programmes should be carefully assessed, monitored and time-bound. Payments per hectare of grass rather than per animal head could be a first step towards greening the sector (OECD, 2019).

Subsidies are provided through the EAFRD and CAP (Section 5.6). Farmers are supposed to show compliance with the three obligations that are good for the environment (soil and biodiversity in particular) and for climate. They are allowed to meet the requirements though alternative practices, including other agri-environment-climate measures or certification programmes, which grant a similar level of benefit for the climate and the environment (EC, 2017b).

The majority of farmers have limited financial resources. In 2013 the country had a high share of semi-subsistence farms (56.5%) with direct payments provided by the CAP (EC, 2018). CAP subsidies have not been used in Latvia to invest in innovation. Financial support and policy incentives are mostly used to purchase machinery, upgrade farms with technology and invest in buildings (OECD, 2019). Credit subsidies could be used for investments towards more sustainable and environmentally friendly production methods.

Box 5.4. Increasing tourism initiatives related to biodiversity

In Pape Lake, situated in the Pape Nature Reserve, close to the Lithuanian border, the local government has invested in cane-cutting machines to increase fish resources and thus contribute to fishery development, while at the same time providing an ecotourism attraction. The EMFF contributed around EUR 12 000 for this initiative.

Green Routes without Obstacles was launched to facilitate cross-border ecotourism for people with mobility issues. The accessibility of several places was improved in Latvia (Rāzna National Park, Ezernieki), Lithuania (Grazute Regional Park) and Belarus (Zaboriye).

The objective was to contribute to equal opportunities in nature tourism by adapting infrastructure and educating tourism service providers. Information leaflets were developed and distributed to relevant organisations. To test the infrastructure, a 300-km cross-border marathon for people in motorised wheelchairs was organised. The NCA received EU support of around EUR 150 000 for this project.

Source: EC (2014); ENPI (2015).

5.7.3. Tourism

More efforts to better integrate biodiversity and tourism policies are needed. Setting fees for tourist operators in protected areas and fostering opportunities for ecotourism could help integrate biodiversity goals and provide additional resources to the sector.

The number of tourists visiting Latvia grows every year; it more than doubled between 2009 and 2017 (CSB, 2018). Baltic landscapes are of great importance in terms of both cultural and natural heritage, and the coastline is one of Latvia's preferred tourism destinations. While Latvia does not systematically collect tourism data related to biodiversity and protected areas, surveys conducted in 2014 and 2015 indicate that a majority of tourists chose natural areas, including water bodies and the seashore, with 14%

of respondents indicating they visited protected areas. This suggests that nature-based tourism is economically important.

Increased tourism however, if not well-managed, can have a negative impact on biodiversity from ecosystem degradation, habitat fragmentation, pollution and disturbance of endangered species. Tourism is mostly seasonal in Latvia, peaking in the summer. Climate change may affect the sector, in terms of both risks and potential benefits, the latter including longer summers and increase in related activities (UNFCCC, 2017).

Tourism and leisure impacts (such as excessive trampling), as well as expansion of built-up areas, are among the main threats to coastal habitats. Although SEA is required for planning documents related to tourism, among other sectors, additional action is needed to prevent loss of habitats and species.

The Concept of Latvian Tourism Development (2014-20) indicates sustainability is a key element of successful tourism development. In 2016 the government adopted the National Long-term Thematic Plan for Public Infrastructure Development of the Coastal Area through 2030, which focuses on tourism and recreation. While the plan recognises that protection of habitats and species is a key challenge, it includes no biodiversity-related objectives or indicators (GoL, 2018). The Latvian Association of Rural Tourism awards green certificates to sustainable guest houses (Chapter 2). There are ad hoc initiatives aimed at fostering ecotourism (Box 5.4).

Recommendations on biodiversity conservation and sustainable use

Strengthening the policy framework

- Develop a national biodiversity strategy and related implementation plan, with measurable targets, clear indicators and adequate human and financial resources for implementation.

Improving biodiversity knowledge

- Complete the comprehensive mapping of terrestrial ecosystems.

- Define research priorities and identify key data gaps and biodiversity pressures on marine and terrestrial ecosystems; assess the economic value of biodiversity and ecosystem services, and the cost associated with their loss, to better support policy implementation.

- Strengthen dissemination of biodiversity-relevant information to improve awareness among policy makers and the public.

Implementing effective policy instruments and financing mechanisms

- Update and complete the designation of protected areas; ensure that all ecologically important areas have management plans; develop additional management plans to meet the national target and allocate sufficient human and financial resources for implementation.

- Extend the use of economic instruments for biodiversity management; explore opportunities to increase payments for ecosystem services for forest conservation.

- Develop a comprehensive financing strategy to encourage private sector investment and reduce reliance on project-specific EU support.

- Systematically integrate biodiversity conservation objectives into land-use planning; ensure that biodiversity is effectively considered in SEA.

- Develop a strategic policy framework for green infrastructure and improve wildlife corridors to reduce fragmentation of habitats.

Mainstreaming biodiversity in forestry, agriculture and tourism

- Ensure that the next forestry policy strategy includes a long-term vision for sustainable management, with biodiversity-related objectives and sufficient resources, and is developed with wide participation by all relevant stakeholders; implement additional economic and voluntary instruments to ensure the sustainable use of forests outside protected areas and to improve the status of forest habitats (e.g. voluntary offset programmes, sustainable forest/timber certification, green public procurement for timber).

- Strengthen the link between agricultural support and environmental performance by, for example, decoupling payments to farmers from production requirements; efficiently use agricultural inputs; promote organic farming to achieve the national 2030 target.

- Collect information related to tourism in natural areas; pursue measures to mitigate the impact of tourism on biodiversity; identify areas with high tourism potential and develop eco-tourism in protected areas; consider introducing fees for tourism operators in protected areas.

Notes

[1] This directive, which aims to achieve good environmental status of EU marine waters by 2020, requires countries to prepare an initial assessment, including economic and social analyses, of their marine waters; to develop and implement a marine strategy; and to co-operate with other EU countries to ensure strategy coherence (EC, 2017a).

[2] MAES was established at the EU level to reach an objective of the EU Biodiversity Strategy to 2020. Countries are required to map and assess the state of national ecosystems and their services, assess the economic value of such services and promote the integration of this information into accounting and reporting systems at the EU and national levels by 2020.

[3] Developed in accordance with the Maritime Spatial Planning Directive (2014/89/EU).

[4] Green infrastructure is a strategically planned network of natural and semi-natural areas with environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas.

[5] SCIs are established under the Habitats Directive and Special Protection Areas (SPAs) under the Birds Directive. Once SCIs are approved, countries must designate them as Special Areas of Conservation (SACs) as soon as possible, within six years at the most. Adequate designation of protected sites as SACs and SPAs is a key milestone towards meeting the directives' objectives. SACs and SPAs generally correspond to Natura 2000 sites.

[6] Article 6 is one of the most important articles in the directive, as it defines how Natura 2000 sites are managed and protected. Paragraphs 6(3) and 6(4) lay down the procedure to follow when planning new developments that might affect a Natura 2000 site. Any plan or project likely to have a significant effect on a Natura 2000 area, either individually or in combination with other plans or projects, must undergo an appropriate assessment to determine its implications for the site.

[7] OECD Council Recommendation C(2004)81 – Recommendation of the Council on the Use of Economic Instruments in Promoting the Conservation and Sustainable Use of Biodiversity.

[8] Identification of key woodland habitats takes into consideration specific criteria, including minimum diameters of tree species, presence of old living trees, snags and logs, as well as animal and plant species (Timonen et al., 2010).

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