

## » Environment at a Glance Indicators



# Biological resources and biodiversity

## Context

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### Issues at stake

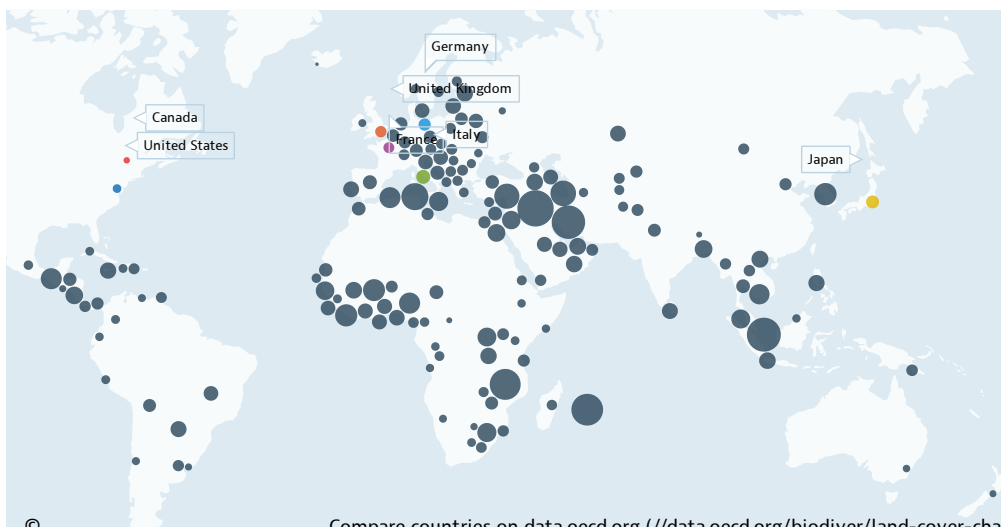
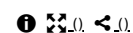
**Biodiversity and ecosystem services** are integral elements of natural capital. Biodiversity, which encompasses species, ecosystems, and genetic diversity, provides invaluable ecosystem services (including raw materials for many sectors of the economy) and plays an essential role in maintaining life-support systems and quality of life.

**The loss of biodiversity** is a key concern nationally and globally. Pressures on biodiversity include changes in land cover and sea use, over-exploitation of natural resources, pollution, climate change and invasive alien species.

### Policy challenges

The main challenge is to ensure **effective conservation and sustainable use** of biodiversity. This implies strengthening the degree of protection of species, habitats and terrestrial, marine and other aquatic ecosystems. Strategies include eliminating illegal exploitation and trade of endangered species, putting in place ambitious policies (covering regulatory approaches, economic instruments, and other information and voluntary approaches); and integrating biodiversity concerns into economic and sectoral policies. Biodiversity protection also requires reforming and removing environmentally harmful subsidies and strengthening the role of biodiversity-relevant taxes, fees and charges, as well as other economic instruments such as payments for ecosystem services, biodiversity offsets and tradable permits (such as transferable quotas for fisheries).

Land cover change ([//data.oecd.org/biodiver/land-cover-change.htm](https://data.oecd.org/biodiver/land-cover-change.htm)) Vegetation loss since 1992, Percentage, 2015 or latest available



## Measuring progress and performance

Environmental performance can be assessed against domestic objectives and international goals and commitments. The main international agreement on biodiversity is the 1992 Convention on Biological Diversity. **Biodiversity** is also an integral part of the 2030 Agenda for Sustainable Development adopted in September 2015 under *Goal 15 “Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss”* and *Goal 14 “Conserve and sustainably use the oceans, seas and marine resources for sustainable development”*.

Other international agreements relevant to biodiversity are: the 1979 Convention on the Conservation of Migratory Species of Wild Animals, the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora, the 1971 Convention on Wetlands of International Importance and the 1979 Convention on the Conservation of European Wildlife and Natural Habitats.

## Indicator groups

- Land cover: land cover by type, built-up areas, loss and gain of natural and semi-natural vegetated land.
- Forest resources: forest area and intensity of use of forest resources.
- Threatened species and protected areas: percentage of threatened mammals, vascular plants, freshwater fish, birds and amphibians, and protected areas by management categories.

## Land cover

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### Key messages

- **Built-up areas** have increased by 15% in the OECD area since 2000 now making up 1.1% of total area. OECD Europe, is the region which has the highest built-up rate (2.9% of total area). Built-up areas represent about 290 km<sup>2</sup> per inhabitant in OECD countries, 3 times the world average.
- **Tree cover** makes up about one third of OECD area, the largest share.
- Within the OECD, while **natural and semi-natural areas** had decreased by 1.4% since 1992, they have remained at a constant level since 2004. Most natural and semi-natural land is converted to cropland. Gains of (semi-)natural land are unlikely to compensate for losses.

### Main trends and recent developments

**Built-up areas** have increased by 15% in the OECD area since 2000 now making up 1.1% of all area. They represent about 290 km<sup>2</sup> per inhabitant in OECD countries, 3 times the world average. This figure is driven by OECD Europe, the region that has the highest built-up rate (3% of its area) whereas OECD America and OECD Asia-Oceania have rates below 1%. Worldwide, built-up areas have risen by 23% since 2000, mostly driven by developing countries in Africa and South East Asia.

**Tree cover** makes up about one-third of the OECD area as a whole. However, the distribution is heterogeneous across countries. For instance, cropland makes up the majority of many countries' territory (Hungary, Denmark, Belgium, Turkey, Italy and France) whereas it represents less than 6% of Iceland, Norway, New-Zealand and Canada territories.

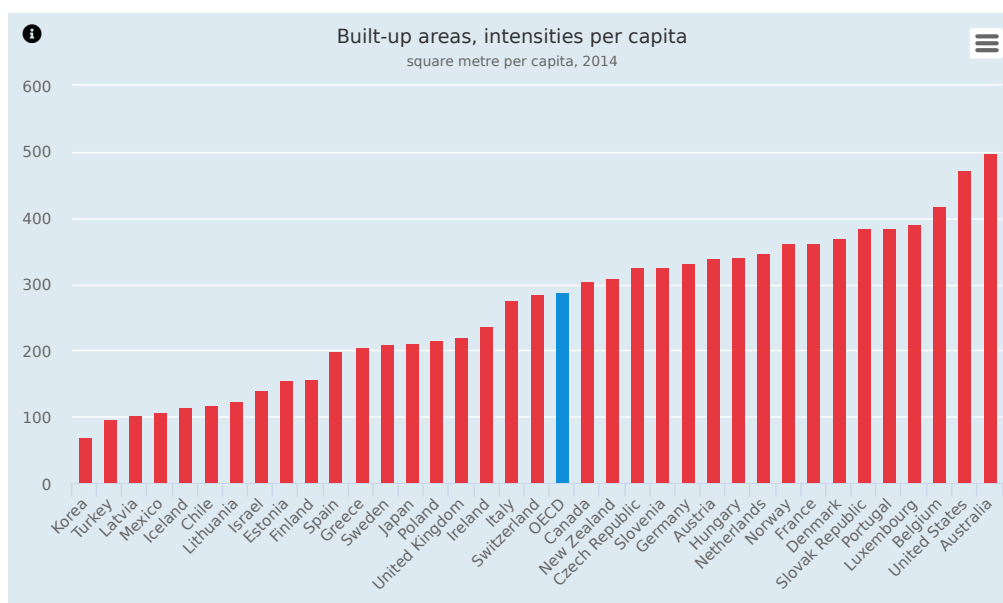
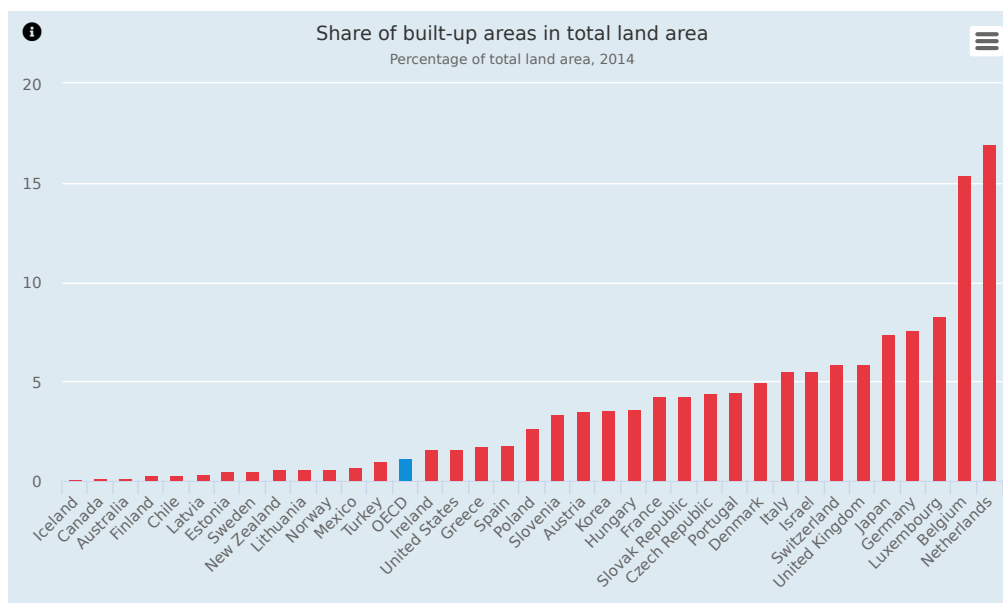
The **natural and semi-natural areas** in the OECD zone has remained broadly stable in recent decades. This is in contrast with some other regions of the world where natural and semi-natural areas have come under intense pressure from agriculture, urbanisation, resource extraction and infrastructure. Among OECD countries, from 1992 to 2015, the most intense losses of (semi-)natural land have occurred in Korea and Israel. Most natural and semi-natural land is converted to cropland. In most countries, new cropland is converted primarily from tree-covered areas but conversions from grassland and shrubland are important in some countries. In some cases the change may be due to re-cultivation of previously abandoned agricultural land. **Most new artificial surfaces are built on cropland**, with the exception of a handful of countries where development mostly takes place on tree-covered areas, grasslands or shrubland

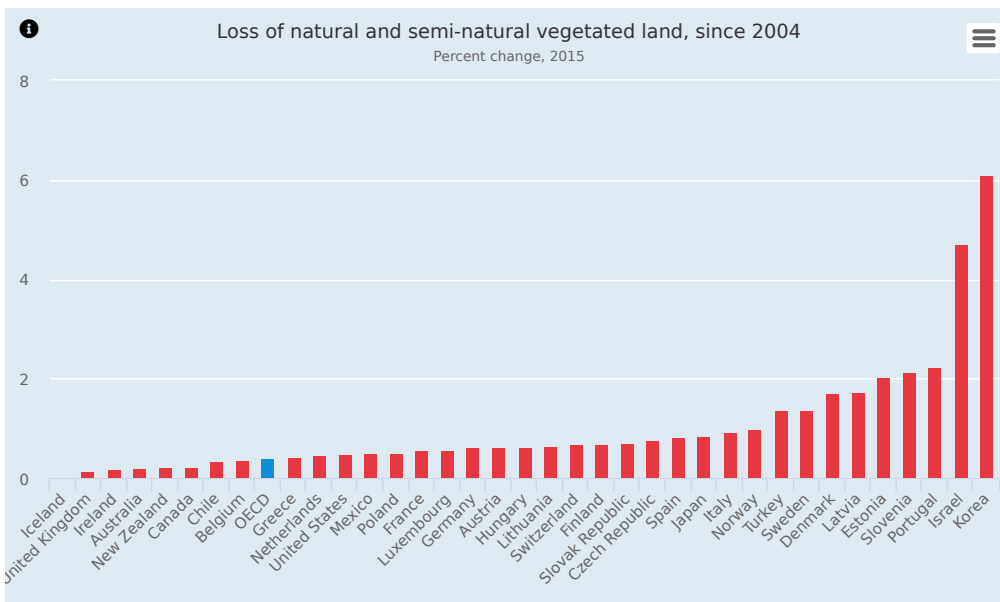
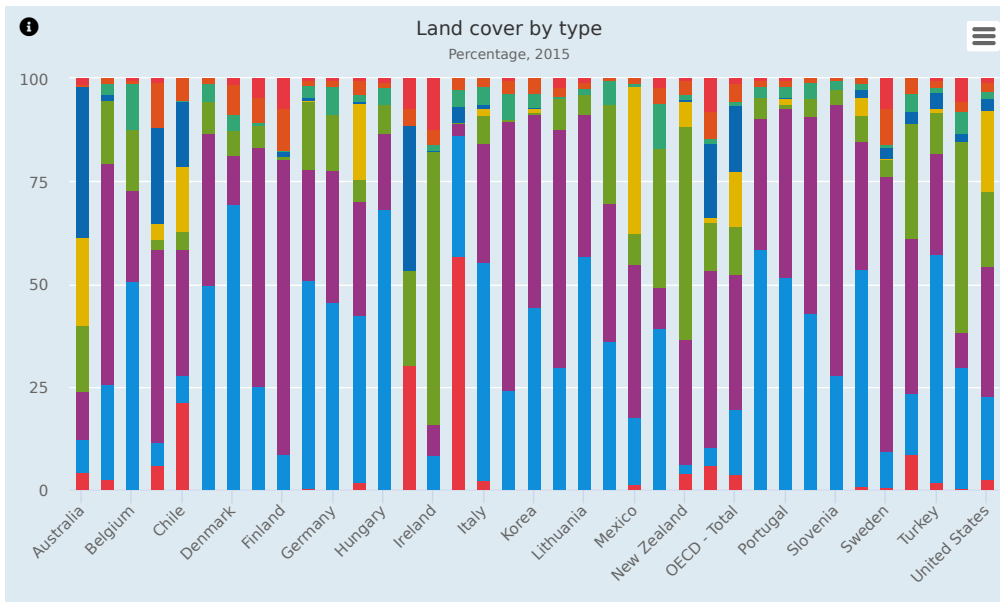
**Worldwide**, 2.7% of (semi-)natural vegetated land has been lost to other land cover types since 1992. This represents an area twice the size of Spain. OECD and G20 countries account for over half of this loss, which occurs primarily in Brazil, the People's

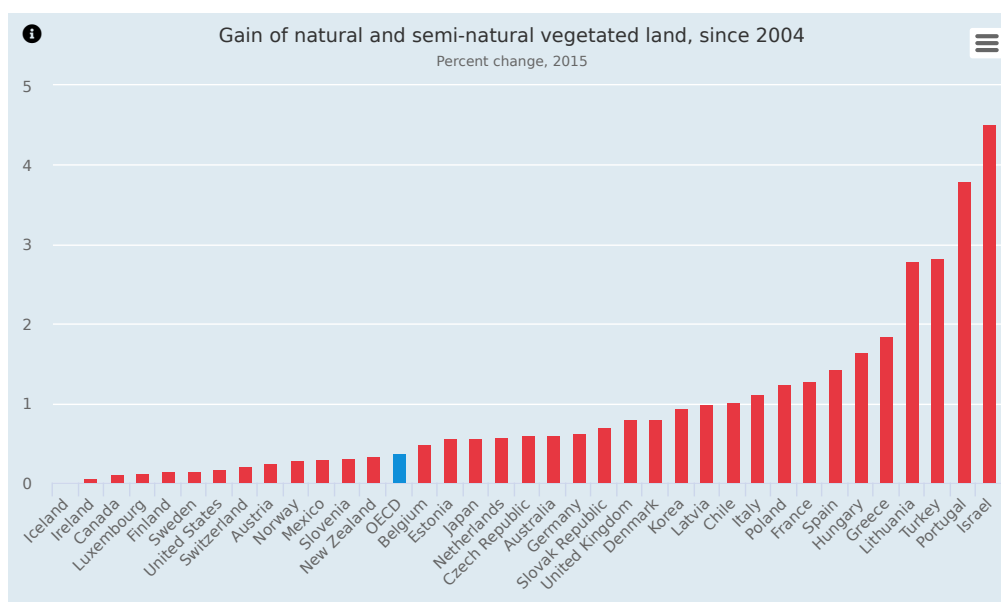
Republic of China, the Russian Federation, the United States and Indonesia. Globally, an area the size of the United Kingdom (244 000 km<sup>2</sup>) has been converted to built-up areas since 1990.

**Gains of (semi-)natural land** are unlikely to compensate for losses, as for example, the costs of the loss of old-growth forest are not comparable to the benefits provided by equally sized new forest plantation.

## Indicators







## Comparability and interpretation

Changes in the biophysical characteristics of natural habitats – that can be measured with data on land cover – are a relatively good proxy to monitor pressures on ecosystems and biodiversity.

For further details see the metadata in the source databases listed under *Sources* below.

## Forest resources

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### Key messages

- Many **forests** are threatened by degradation, fragmentation and conversion to other land types. Demand for wood to reach renewable energy targets plays an important role in the commercial exploitation of forests.
- Forests are unevenly distributed. A handful of the most forest-rich countries account for the bulk of the world's forest resources. OECD countries account for about 27% of the world's **forest area**.
- At national level, most OECD countries show a **sustainable use** of their forest resources. In forests available for wood supply, most do not over-harvest their resources, maintaining the use intensity below 100%.

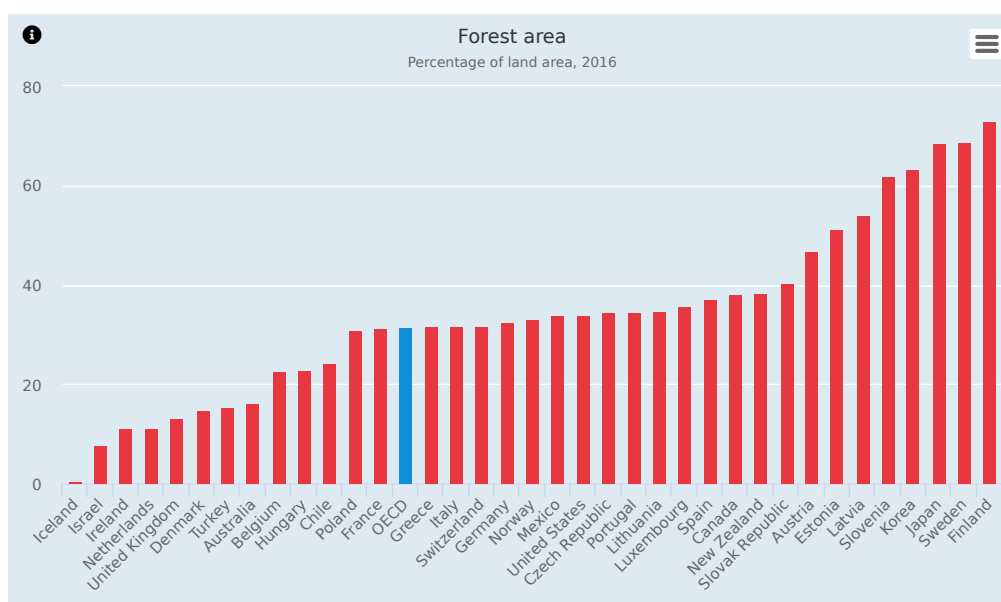
## Main trends and recent developments

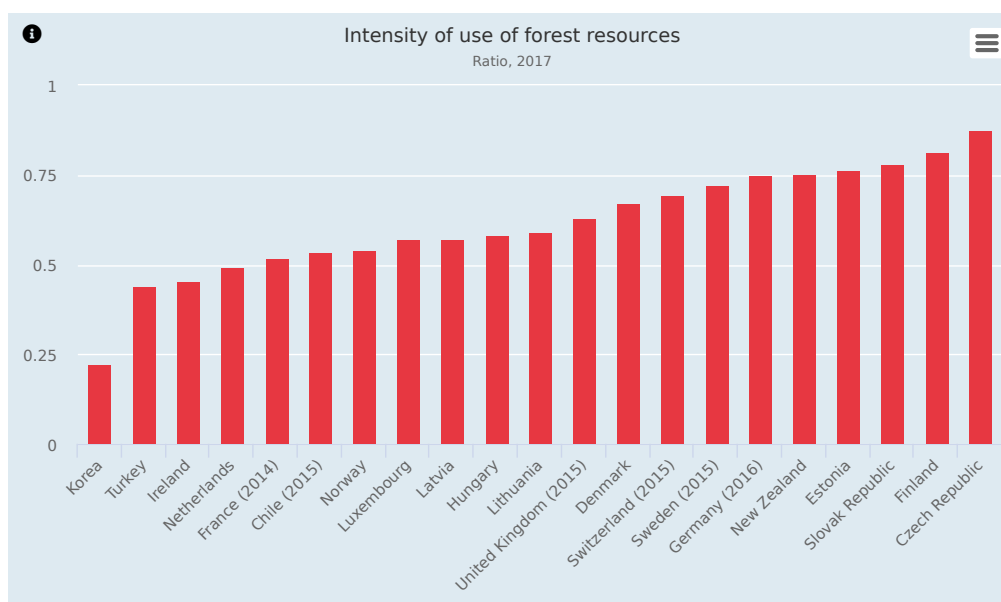
Many **forest resources** are threatened by overexploitation, fragmentation, degradation of environmental quality and conversion to other types of land use. The main pressures result from human activities, including agriculture expansion, transport infrastructure development, unsustainable forestry, air pollution, climate change and intentional burning of forests. Demand for wood to reach renewable energy targets plays an important role in the commercial exploitation of forests.

Forests are unevenly distributed. A handful of the most forest-rich countries account for the bulk of the world’s forest resources. OECD countries account for about 27% of the world’s **forest area**. Since 1990, the area of forests and wooded land has remained stable or has slightly increased in most OECD countries, but it has been decreasing at world level due in part to continued deforestation in tropical countries, often to provide land for agriculture, grazing and logging.

Most OECD countries show a **sustainable use** of their forest resources. In forests available for wood supply, most do not over-harvest their forest resources, maintaining the use intensity below 100%. However, there is significant variation among and within countries. Since the 1990s, intensity of forest use has generally increased in 13 out of 23 countries in which longer trends are available. This is partly due to the use of wood as biomass for energy. Korea show a relatively low intensity because its forests are young and grow rapidly (due to massive reforestation programmes since 1973).

## Indicators





## Comparability and interpretation

The **intensity of use** of forest resources provides insights into quantitative aspects of forest resources. It presents national averages that may conceal important variations among forests. It should be read with information on forest quality (e.g. species diversity, including tree and non-tree species; forest degradation; forest fragmentation) and be complemented with data on forest management practices and protection measures. Data on the intensity of use of forest resources can be derived from forest accounts and from international forest statistics and the FAO/UNECE Forest Resource Assessments for most OECD countries, although differences in the variables monitored result in interpretation difficulties. Historical data often lack comparability or are not available over longer periods.

For further details see the metadata in the source databases listed under *Sources* below.

## Threatened species and protected areas

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## Key messages

- **Pressures on biodiversity** are increasing. A high percentage of species are threatened, particularly in countries with high population density, and a high level of concentration of human activities.
- In the OECD area, **amphibians** and **freshwater fish** are on average more threatened than **birds, plants and mammals**.
- **Protected areas** are growing in all OECD countries and now cover on average 16% of land and 25% of marine areas (compared to respectively 11% and 5% in 2000). Worldwide, protected areas followed the same trend and cover 13% of land areas and 17% of marine areas.

## Main trends and recent developments

Pressures on biodiversity are increasing. Many natural ecosystems have been degraded, limiting the services they provide, and many animal and plant species are threatened by habitat alteration or loss, both within and outside protected areas (e.g. on farms and in forests). In most OECD countries, the number of **animal and plant species** identified as endangered is increasing, particularly in countries with a high population density, and a high level of concentration of human activities. Amphibians and freshwater fish are on average more threatened than birds, plants and mammals. But specialist birds have declined by nearly 30% in 40 years, reflecting habitats degradation. The largest declines occurred in grasslands and arid lands in North America, and in farmed lands in Europe.

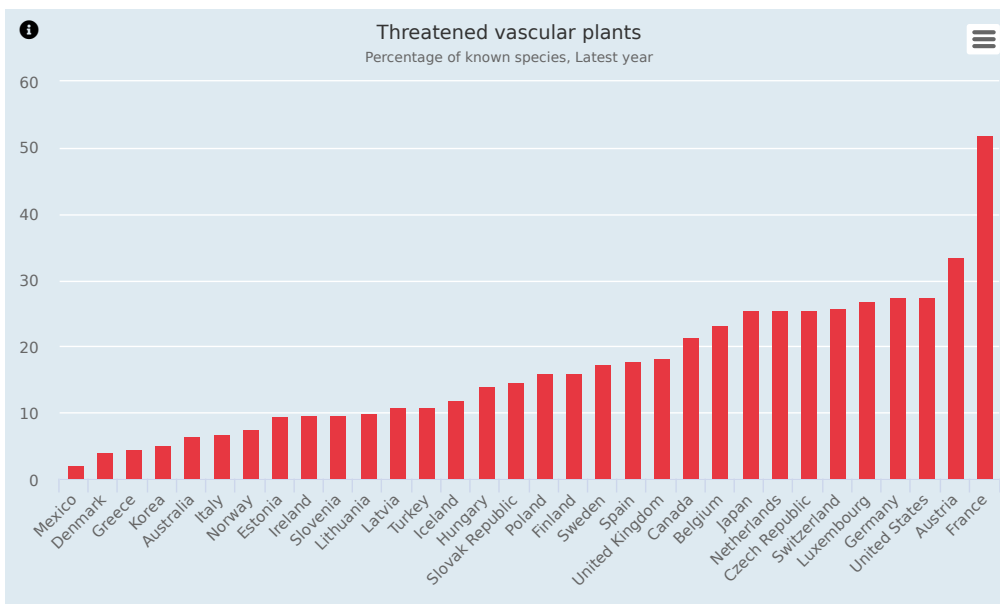
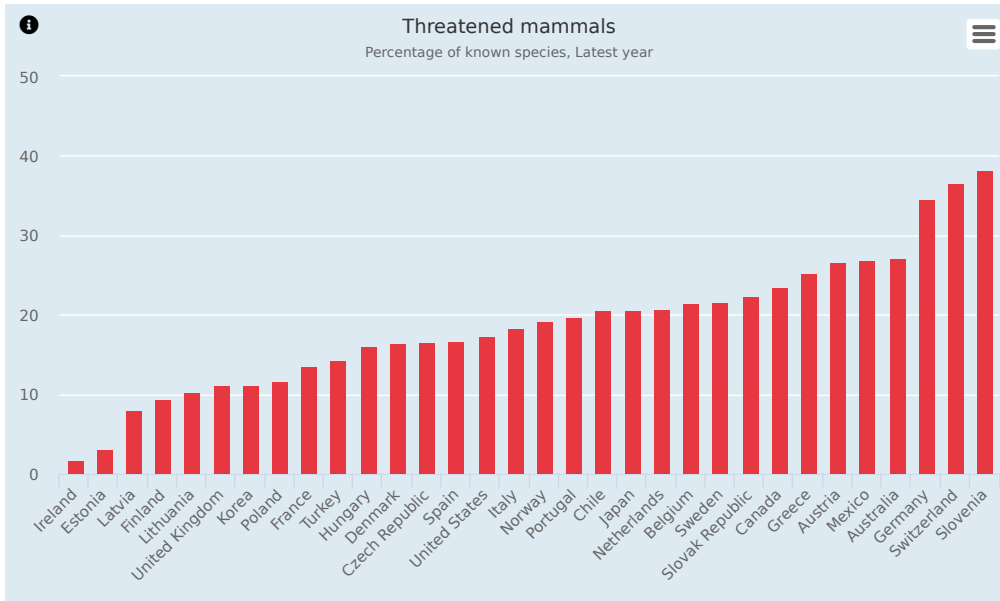
**Protected areas** are growing in all OECD countries. They cover on average 16% of the land area and 25% of marine areas (i.e. exclusive economic zones - EEZ), compared to respectively 11% and 5% in 2000. However, biodiversity outcomes and actual protection levels remain difficult to evaluate, as protected areas change over time: new areas are designated, boundaries are revised and some sites may be destroyed or changed by pressures from economic development or natural processes. Environmental performance depends both on the designation of the area and on management effectiveness.

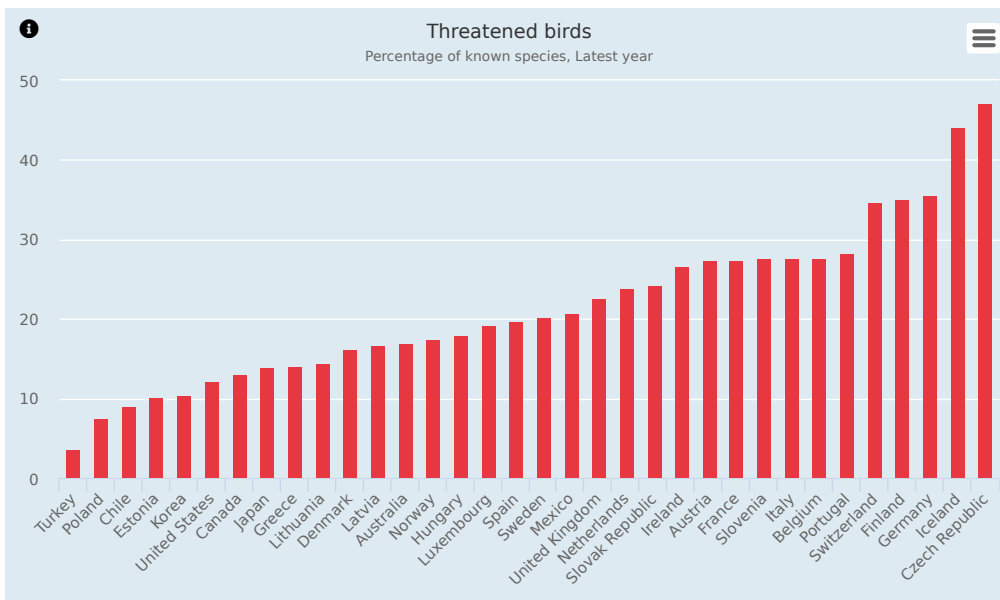
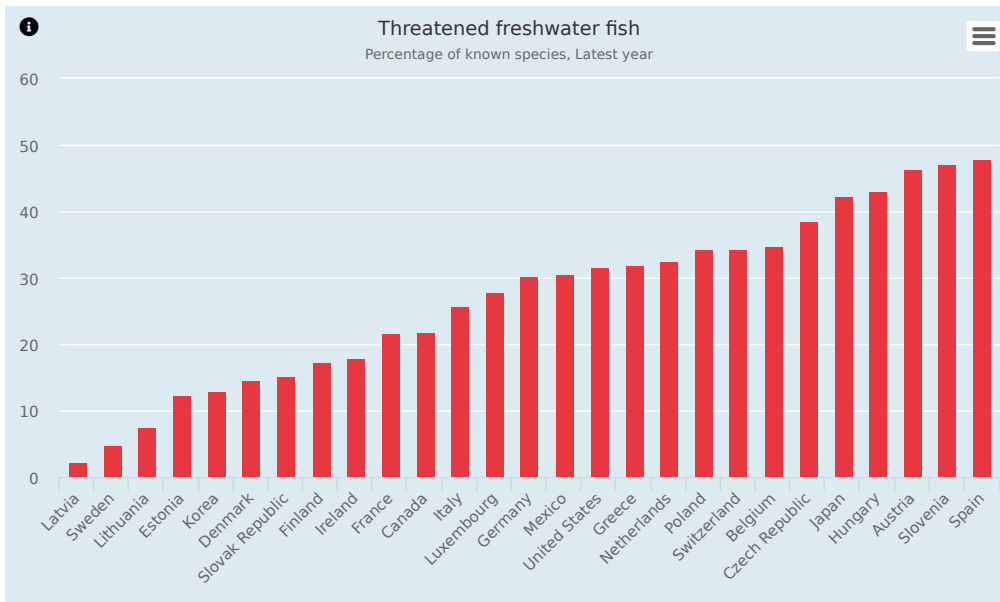
**Worldwide**, the designation of new terrestrial protected areas were designated at a consistently high rate since 1970 and now cover 13% of the land area. Designation of marine protected areas was slow until 2000. Since then, they increased by more than 22 million square kilometres and now cover about 17% of marine areas.

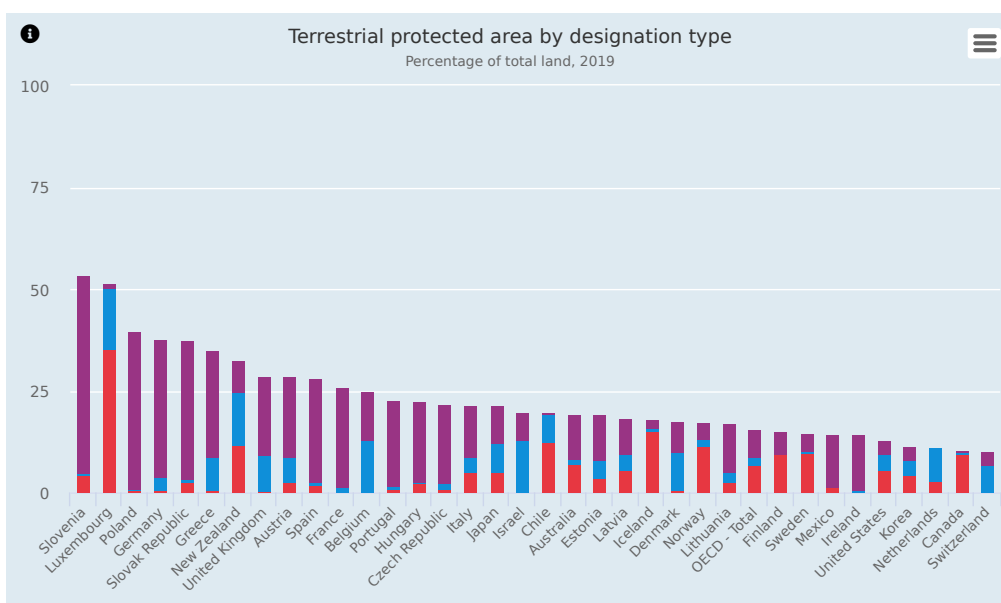
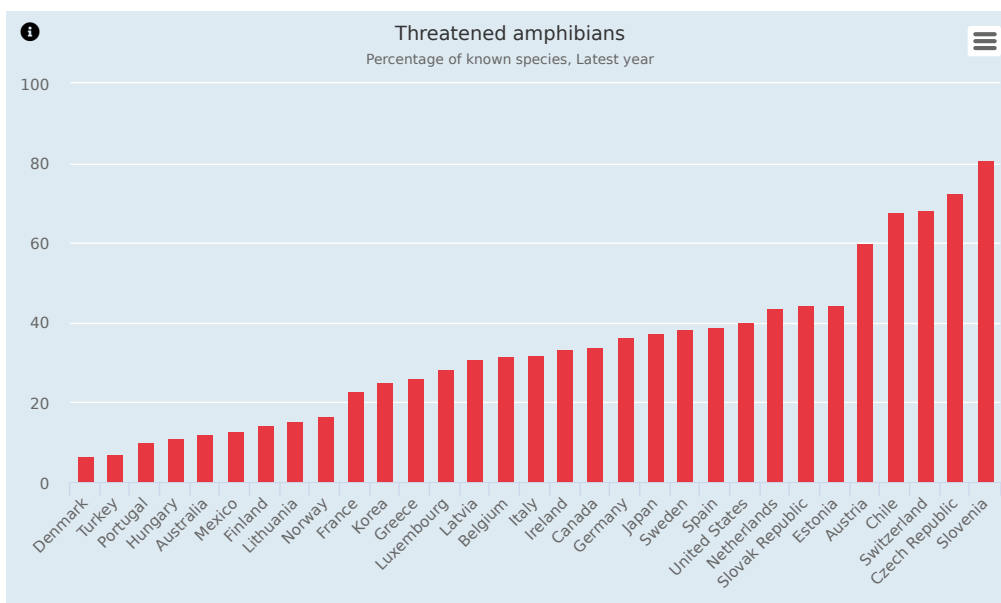
Based on the indicators shown, 26 OECD countries would meet the **Aichi 2020 target** to protect at least 17% of their land area and 18 countries the target to protect at least 10% of coastal and marine areas. However, there are large variations among countries in the extent and the management objectives of **terrestrial protected areas**. These can be partly explained by differences in geography, ecology, and the pre-existing patterns of human settlement in the territory. Some countries (e.g. Chile, Iceland, Luxembourg, New Zealand, Norway) have designated proportionally large areas as strict nature reserves, national parks and wilderness areas (IUCN management categories I-II).

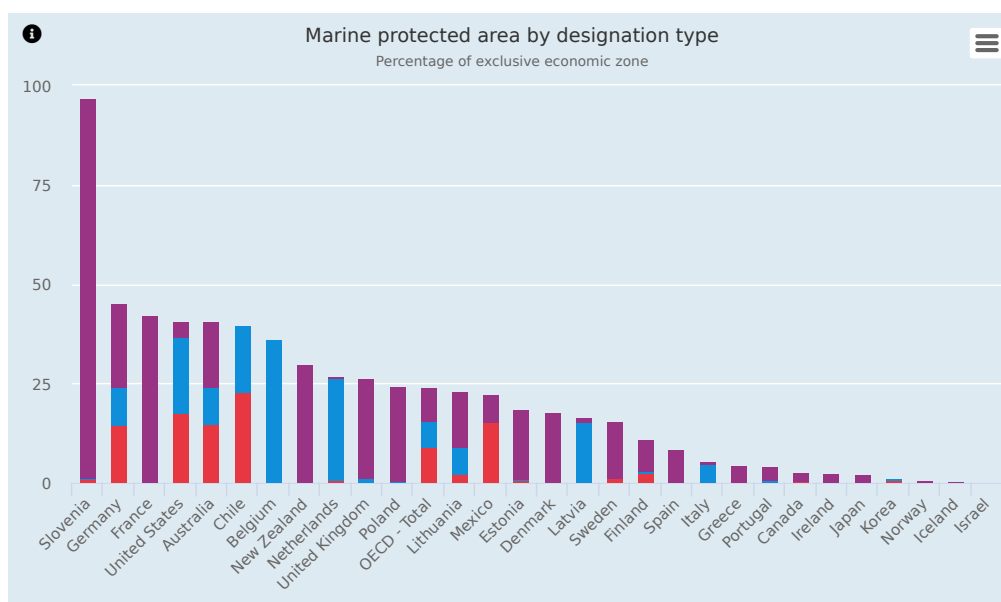
Some countries (e.g. Belgium, Israel, Luxembourg and New Zealand) use these designations to establish habitats and species management areas (categories III and IV) and others (e.g. France, Germany, Greece, Poland, the Slovak Republic and Slovenia) for the preservation of cultural heritage or the promotion of sustainable resource use (categories V and VI). Still other countries use mainly regional and international designations such as the European Natura 2000 regional network (e.g. Ireland).

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## Comparability and interpretation

Data on **threatened species** are available for all OECD countries with varying degrees of completeness. The number of species known or assessed does not always accurately reflect the number of species in existence, and the definitions that should follow IUCN standards are applied with varying degrees of rigour in countries. Historical data are generally not comparable or not available. For many of the incompletely evaluated species groups, assessment efforts have focused on species that are likely to be threatened; therefore any percentage of threatened species reported for these groups would be heavily biased (i.e., the % threatened species would likely be an overestimate). For some countries, data include extinct species. For some countries, birds' data refer to breeding species only.

Data on **protected areas** are available for all OECD countries. The definitions, although harmonised by the World Conservation Monitoring Centre, may vary among countries. The extent, and management types, of terrestrial and marine protected areas can indicate countries' efforts to safeguard habitats and species as well as landscapes shaped by human-environment interactions that are valued for cultural or other reasons. Protected areas are not always representative of national biodiversity or sufficiently connected. Indicators on the extent of protected areas do not reflect the effectiveness of the management of these areas.

For further details see the metadata in the source databases listed under *Sources* below.

## Glossary

Built-up areas	Expressed in m <sup>2</sup> per capita and as a percentage of total land area. "Built-up" is defined as the presence of buildings (roofed structures). This definition largely excludes other parts of urban environments and the human footprint such as paved surfaces (roads, parking lots), commercial and industrial sites (ports, landfills, quarries, runways) and urban green spaces (parks, gardens). Consequently, such built-up area may be quite different from other urban area data that use alternative definitions.
Forest area as percentage of land area	Forest land refers to land area spanning more than 0.5 ha and a canopy cover of more than 10%, or trees able to reach these thresholds in situ. It excludes woodland or forest predominantly under agricultural or urban land use and that used only for recreation.
Intensity of use of forest resources (timber)	Actual harvest or fellings over annual productive capacity. Annual productive capacity is either a calculated value, such as annual allowable cut, or an estimate of annual growth for existing stock. It should be noted that the national averages presented here may conceal variations among forests.
Land cover type	The observed physical and biological cover of the Earth's surface, including natural vegetation, abiotic (non-living) surfaces and inland.
Natural and semi-natural land	Used to designate land covered by natural or semi-natural vegetation with limited anthropogenic footprint as a proxy for land which is important for maintaining biodiversity and provides higher-value ecosystem services at the global scale.
Terrestrial and marine protected areas as percentage of total land and of exclusive economic zone (EEZ)	<p>Protected areas are areas of land and/or sea especially dedicated to the protection and maintenance of biological diversity and of natural and associated cultural resources, and managed through legal or other effective means. The data refer to the World Conservation Union (IUCN) management categories I-VI. National classifications may differ. The data cover areas under the management categories:</p> <ul style="list-style-type: none"> <li>• I (strict nature reserves and wilderness areas),</li> <li>• II (national parks),</li> <li>• III (natural monument or feature)</li> <li>• IV (habitat or species management area),</li> <li>• V (protected landscape or seascape) and</li> <li>• VI (protected area with sustainable use of natural resources).</li> </ul> <p>• Areas nationally/internationally designated without any IUCN category assigned are also included. This category includes regional and international designations such as the European Natura 2000 network.</p> <p>In general, under the 1982 UN Convention on the Law of the Sea the EEZ of a country extends 200 nautical miles from the coastline, or to the mid-point between coastlines where the EEZ of different countries would otherwise overlap.</p>
Threatened species	The number of threatened species compared to the number of known or assessed species. "Threatened" refers to the categories of "endangered", "critically endangered" and "vulnerable" species (i.e. species in danger of extinction and species soon likely to be in danger of extinction), as defined by the IUCN.

## Data sources

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## References and further reading

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## Citation

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## Metadata, Legal and Rights

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