OECD work in support of biodiversity

2021

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BETTER POLICIES FOR BETTER LIVES

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OECD work in support of biodiversity

The planet is facing its sixth mass extinction, with consequences that will affect all life on Earth, today and for centuries to come.
Humans have destroyed or degraded vast areas of the world's terrestrial, freshwater and marine ecosystems, and are pushing many towards ecological tipping points. Since 1990, primary forest, which includes some of the most biodiverse habitats, declined by over 80 million hectares (an area larger than Turkey). Over one million plant and animal species – a quarter of the world's species – face extinction.
These declines are driven by land and sea-use change, over-exploitation, climate change, pollution and spread of invasive alien species.

Failure to halt and reverse biodiversity loss poses a risk to the economy, business, the financial sector and society as a whole. Biodiversity and ecosystem services, such as crop pollination, water purification, nutrient cycling, flood protection and carbon sequestration, underpin human health and well-being, societal resilience and sustainable development. The Dasgupta Review (2021) illustrates that the economy is embedded within nature. All economic activities depend on and affect nature. According to the World Economic Forum, over half of global GDP is moderately or highly dependent on nature.

The OECD provides evidence-based analysis and data to help governments develop policies for biodiversity that are environmentally effective, economically efficient and distributionally equitable.
It supports efforts to deliver on national and international objectives such as the Sustainable Development Goals, particularly SDG 14 (Life below Water) and 15 (Life on Land), and to design and implement a Post-2020 Global Biodiversity Framework under the Convention on Biological Diversity (CBD). The OECD also provides a platform to exchange experiences and share good practices.

> **Biodiversity is "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems"** (CBD, 1992).

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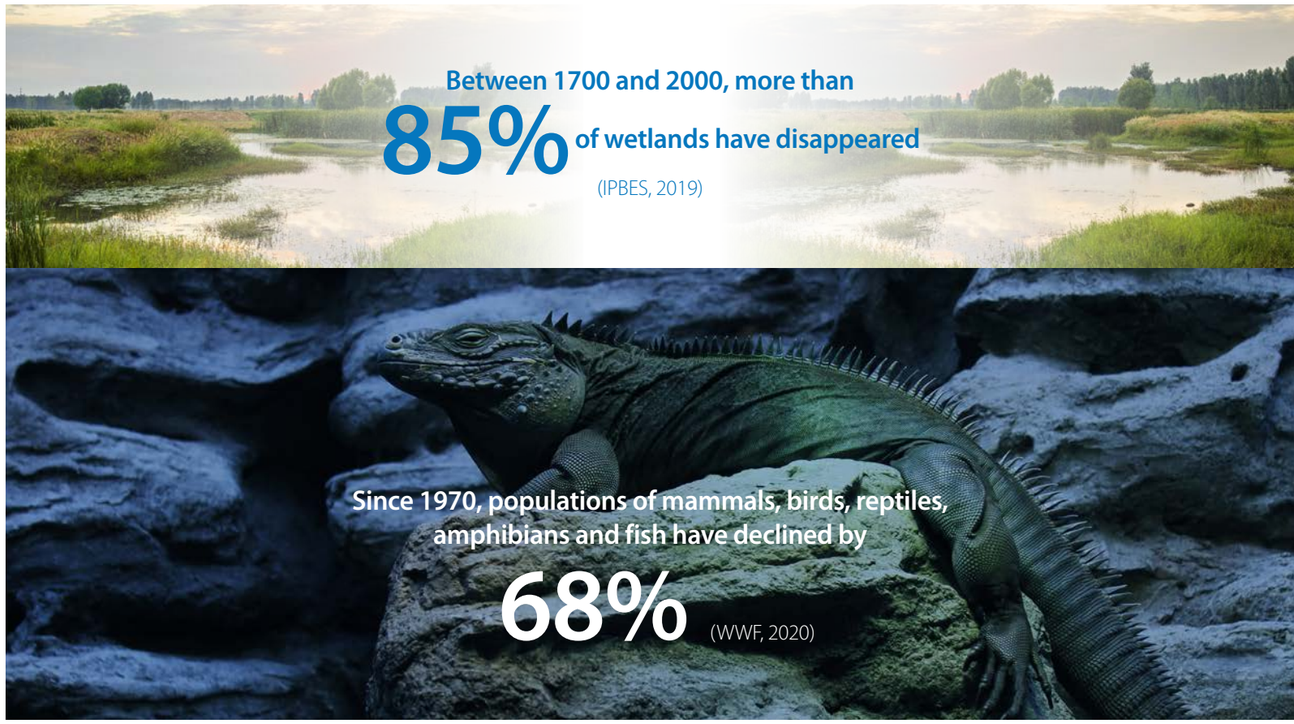
Examples of OECD work, which are detailed further in this brochure, include:

- Delivering analysis and recommendations on targets and indicators for a Post-2020 Global Biodiversity Framework
- Developing good practice insights on the design and implementation of policy instruments for biodiversity
- Tracking economic policy instruments and finance for biodiversity
- Identifying and assessing subsidies harmful to biodiversity
- Evaluating approaches to mainstream biodiversity across economic sectors and policy areas
- Understanding how to overcome political economy issues for effective biodiversity policy reforms
- Aligning biodiversity, climate and food policies for sustainable land use
- Ensuring the development of the ocean economy is environmentally sustainable
- Delivering economic modelling and projections on biodiversity under different scenarios.



KEY WEBSITE

Economics and policies for biodiversity: OECD's response: https://www.oecd.org/environment/resources/biodiversity/

Designing effective policy instruments for biodiversity

Governments have a key role in providing clear policy signals to promote environmentally sustainable patterns of production and consumption. Addressing biodiversity loss requires a mix of regulatory (command-and-control) instruments, such as protected areas, quotas, spatial planning; economic instruments, such as taxes, fees and charges, and tradable permit schemes; and information and voluntary approaches, such as ecolabelling and other industry commitments. Drawing on country experiences and case studies, the OECD examines how to better design and implement policy for biodiversity conservation and its sustainable use, and provides good practice insights. The OECD also tracks the use of biodiversity-relevant economic instruments.

A policy guide for finance, economic and environment ministers

At the request of the UK G7 Presidency, the OECD produced a report in 2021 on *Biodiversity, Natural Capital and the Economy: A Policy Guide for Finance, Economic and Environment Ministers*. The report provides the latest findings and policy guidance for G7 and other countries in four key areas: measuring and mainstreaming biodiversity; aligning budgetary and fiscal policy with biodiversity; embedding biodiversity in the financial sector; and improving biodiversity outcomes linked to international trade. It shows how finance, economic and environment ministries can drive the transformative changes required to halt and reverse the loss of biodiversity. The report builds on an earlier piece of OECD work prepared for the French G7 Presidency in 2019, *Biodiversity: Finance and the Economic and Business Case for Action*, which provides 10 priorities to scale up action on biodiversity, covering issues such as scaling up incentives, ecosystem restoration, aligning finance and better monitoring and reporting.

Tracking economic instruments for biodiversity

Economic instruments such as pesticide taxes, hunting and fishing fees and payments for ecosystem services provide incentives to achieve biodiversity objectives more cost-effectively. Most can also mobilise finance and generate revenue. The OECD collects data and tracks trends on biodiversity-relevant economic instruments – also referred to as positive incentives under CBD Aichi Target 3 and in the post-2020 Global Biodiversity Framework – and the revenue they generate, through the OECD Policy Instruments for the Environment (PINE) database. Currently, the database includes information from more than 120 countries. Latest trends are provided in *Tracking Economic Instruments and Finance for Biodiversity – 2021*, covering new data on payments for ecosystem services and biodiversity offsets.

Evaluating the effectiveness of policy instruments for biodiversity

Impact evaluation studies provide evidence on whether a policy intervention has had the desired impact on biodiversity, allowing governments to adapt their responses where needed and better target their scarce resources. *Evaluating the Effectiveness of Policy Instruments for Biodiversity* (2018) provides an overview of methodologies to evaluate the effectiveness of policy instruments for biodiversity, covering impact evaluation, cost-effectiveness analysis and other commonly used approaches. It then provides an inventory of biodiversity-relevant impact evaluation studies, across both terrestrial and marine ecosystems. The report concludes with lessons learned, policy insights and suggestions for further work, such as developing a more strategic approach to undertaking impact evaluation studies, so as to be more geographically representative, ensure a good balance between different policy instruments and of terrestrial and marine/ocean ecosystems, and to prioritise larger programmes.

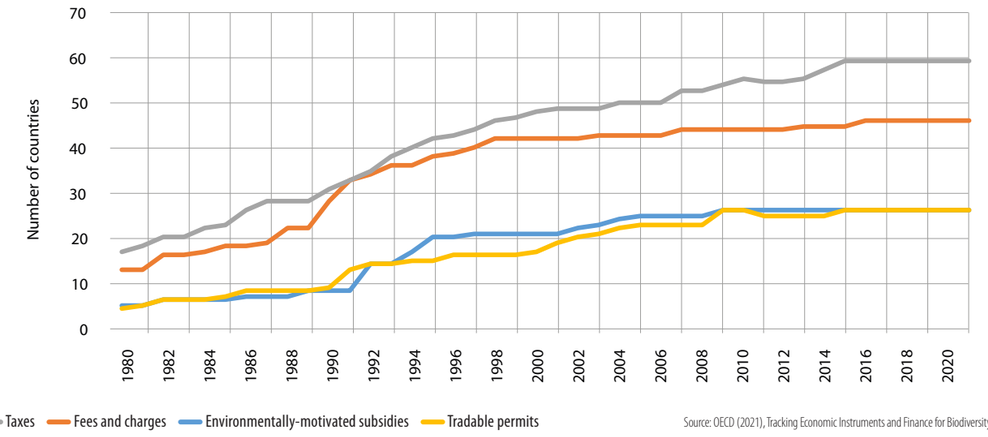
Overcoming barriers to implementing effective biodiversity policies

Governments may face obstacles when implementing policy reforms for biodiversity, such as concerns regarding competitiveness and impacts on income distribution as well as vested interests. *The Political Economy of Biodiversity Policy Reform* (2017) draws on literature and four case studies to identify how such obstacles can be overcome. The case studies cover the French tax on pesticides, agricultural subsidy reform in Switzerland, EU payments to Mauritania and Guinea Bissau to finance marine protected areas, and individually transferable quotas for fisheries in Iceland. Each case study focuses on the drivers for reform, the types of obstacles encountered, key features of the policy reform, and the lessons learned from the reform experience. The case studies underscore the need for broad stakeholder engagement, for a solid and clearly communicated foundation of evidence and for targeted measures to address potential impacts on competitiveness and income distribution.

Designing effective biodiversity offsets

Biodiversity offsets are used in a range of sectors to help compensate for the adverse effects caused by development projects, after steps have been taken to avoid and minimise biodiversity loss at the development site. *Biodiversity Offsets: Effective Design and Implementation* (2016) examines the key design and implementation features that need to be considered to ensure that biodiversity offset programmes are environmentally effective, economically efficient and distributionally equitable. Insights and lessons learned are drawn from more than 40 case studies, with an additional three in-depth country case studies from Germany, Mexico and the United States. Key insights from this report include the need to establish thresholds for what can be offset, to set clear goals and objectives for the programme, and to systematically monitor, report and verify offsets.

Number of countries with biodiversity-relevant economic instruments



Source: OECD (2021), Tracking Economic Instruments and Finance for Biodiversity - 2021.

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OECD (2010), *Paying for Biodiversity: Enhancing the Cost-Effectiveness of Payments for Ecosystem Services.* OECD Publishing, Paris, https://www.oecd-ilibrary.org/environment/paying-for-biodiversity_9789264090279-en

KEY WEBSITES

Policy instruments for biodiversity
https://www.oecd.org/environment/resources/biodiversity/tracking-economic-instruments-and-finance.htm

Policy instruments for the environment database
https://www.oecd.org/environment/indicators-modelling-outlooks/policy-instrument-database/

Scaling up finance and economic incentives for biodiversity

Halting and reversing current trends in biodiversity loss will require governments and the private sector to mobilise and align finance for biodiversity. The OECD collects data on biodiversity-related finance and economic incentives, and identifies opportunities for scaling up, aligning, and enhancing the effectiveness of finance for biodiversity.

Estimating global biodiversity finance

OECD's report *A Comprehensive Overview of Global Biodiversity Finance* (2020), prepared at the request of G7 Environment Ministers, estimates global biodiversity finance flows at between USD 78 and 91 billion per year (2015-2017 average). The analysis identifies USD 67.8 billion per year in public domestic expenditure, USD 3.9-9.3 billion in international public expenditure and USD 6.6-13.6 billion in private expenditure. The report also offers recommendations for improving the assessment, tracking and reporting of biodiversity finance.

Tracking finance for biodiversity

In addition to tracking economic instruments for biodiversity (see above), the OECD also collects data on how much finance the instruments generate or mobilise. For example, data reported to the PINE database indicate that biodiversity-relevant taxes in OECD countries generate USD 7.7 billion in revenue per year (2017-2019 average). Work is currently underway to collect information on payments for ecosystem services schemes (PES) and biodiversity offsets. Data collected by the OECD finds, for example, that across 10 countries, PES channels around USD 10 billion per year to biodiversity.

The OECD also collects data on biodiversity-related development finance through the OECD Creditor Reporting System, including Official Development Assistance (ODA), private finance mobilised by ODA activities and philanthropy. The data show that biodiversity-related ODA commitments by members of OECD's Development Assistance Committee have increased over the past decade, reaching USD 7.8 billion per year on average in 2017-2019 (2019 constant prices). Of the biodiversity-related ODA activities, 38% (USD 3.0 billion) targets biodiversity as a principal objective, while 62% (USD 4.8 billion) targets biodiversity as a significant objective.

Green budgeting

Green budgeting is a systematic approach to examine and improve the alignment of government spending and fiscal policy with environmental objectives. It can help to mainstream biodiversity and other environmental issues across policy domains, enhance transparency around government action for parliamentarians and civil society, and support efforts to monitor environmental progress. However, less than half of OECD countries surveyed practice some form of green budgeting, and in most cases biodiversity is not covered. The Paris Collaborative on Green Budgeting, launched at the One Planet Summit in 2017, is the first cross-country and cross-sectoral initiative designed to support governments to "green" their fiscal policy and embed climate and other environmental commitments. It aims to design new, innovative tools to assess and drive improvements in the alignment of national expenditure and revenue processes with climate, biodiversity and other environmental goals. OECD work is currently underway to identify, analyse and compare emerging green budgeting approaches for biodiversity and to develop good practice insights.

Facilitating exchange on good practice for scaling up biodiversity finance

To support the on-going discussions towards the Post-2020 Global Biodiversity Framework, the OECD and the UNDP Biodiversity Finance Initiative (BIOFIN) jointly convened a Virtual Global Conference on Biodiversity Finance in April 2020. The objectives of the conference were to: 1) examine trends and lessons learned in scaling up biodiversity finance and policy incentives; 2) foster exchange, among governments and biodiversity finance experts, of experiences, best practices and opportunities for mobilising, tracking and aligning finance for biodiversity; and 3) reflect on recommendations on biodiversity finance for the CBD Post-2020 Global Biodiversity Framework. The OECD also convenes government, business and financial organisations at its annual Green Finance and Investment Forum. The forum provides a space to exchange experiences, develop partnerships and identify opportunities for scaling up private finance for biodiversity, climate change and other environmental issues.

As part of its efforts to align private finance flows with biodiversity objectives, the OECD has been a member of the Informal Working Group (IWG) and the Technical Expert Group (TEG) tasked with establishing the Taskforce on Nature-related Financial Disclosure (TNFD). The aim of the TNFD is to help financial institutions and companies to report and act on their nature-related risks.

The OECD Guidelines for Multinational Enterprises and OECD Due Diligence Guidance for Responsible Business Conduct (RBC) capture biodiversity related considerations as part of responsible business behaviour – including across supply chains. To support the private sector integrate biodiversity as part of implementing RBC due diligence aligned with OECD recommendations, the OECD Centre for Responsible Business Conduct and the Environment Directorate plan to jointly undertake a project in 2021-22 to provide analysis, guidance and stakeholder dialogue supporting businesses and investors to better identify, manage and report on biodiversity risks and adverse impacts resulting from their portfolios, investments or business decisions.

Global biodiversity finance flows totalled

USD 78-91 billion per year

(2015-2017 average)

(OECD, 2020)

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OECD (2021), Tracking Economic Instruments and Finance for Biodiversity – 2021, https://www.oecd.org/environment/resources/biodiversity/tracking-economic-instruments-and-finance.htm

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OECD (2013), *Scaling-up Finance Mechanisms for Biodiversity*, OECD Publishing, Paris, https://www.oecd-ilibrary.org/environment/scaling-up-finance-mechanisms-for-biodiversity_9789264193833-en

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Biodiversity finance
https://www.oecd.org/environment/resources/biodiversityfinance.htm

OECD-UNDP Virtual Global Conference on Biodiversity Finance
https://www.oecd.org/environment/resources/biodiversity/oecd-undpvirtualglobalconferenceonbiodiversityfinance.htm

Centre on Green Finance and Investment
https://www.oecd.org/cgfi/forum/

Reforming government support, including subsidies, harmful to biodiversity

Some elements of government support to agriculture, fisheries and other sectors can encourage unsustainable patterns of production and consumption, thereby driving biodiversity loss. With the adoption of Aichi target 3 under the Convention on Biological Diversity, countries set a target to eliminate, phase out or reform incentives, including subsidies, harmful to biodiversity by 2020. However, governments have made little progress in this regard and failed to achieve this target. Globally, fossil fuel support and agriculture support potentially most harmful to the environment amount to more than USD 800 billion per year.

Tracking global trends in government support

The OECD collects data on government support to agriculture, fisheries and fossil-fuel production and consumption across OECD and a number of other economies. Drawing on these data, the OECD identifies global trends in government support, and estimates the volume of support that may be harmful to biodiversity.

Agriculture

In the agriculture sector, market price support and payments based on commodity output or variable input use without imposing environmental constraints on farming practices tend to be the most harmful to biodiversity, as they encourage intensification of production, which entails higher levels of fertiliser and pesticide use. On the other hand, payments based on non-commodity criteria (such as the provision of trees and hedges) and payments for input use linked to environmental constraints on farming practices, may reduce agricultural pressure on biodiversity.
In 2017-2019, OECD countries alone provided on average USD 231 billion in support to farmers, of which USD 112 billion (48%) is considered potentially most environmentally harmful compared to other types of support. Across 54 economies reporting to the OECD Producer Support Estimate database, USD 345 billion per year in agricultural support (2017-19 average) was provided in ways that are environmentally harmful and market distorting.

Fisheries

Fisheries support can be harmful to biodiversity if it creates incentives to fish beyond sustainable limits or in a way that negatively impacts threatened species and habitats.
On average, over 2016-18, the 39 economies reporting to the OECD Fisheries Support Estimate database spent USD 3.2 billion annually on polices that reduce the cost of inputs, despite the fact that these policies are the most likely to lead to overfishing and illegal, unreported and unregulated (IUU) fishing. Support to fuel was the single largest direct support policy, accounting for 25% of total support to the sector. Governments also finance infrastructure that can encourage overcapacity and overfishing in certain contexts. In some countries, spending on infrastructure increased significantly relative to fleet size between 2012-14 and 2016-18.
In contrast, the *OECD Review of Fisheries 2020*, shows measures that help fishers to operate their businesses more sustainably, effectively and profitably (e.g. through education and training), or which provide direct income support in a way that does not incentivise unsustainable fishing, currently account for less than a third of spending to reduce the cost of inputs (USD 1 billion).

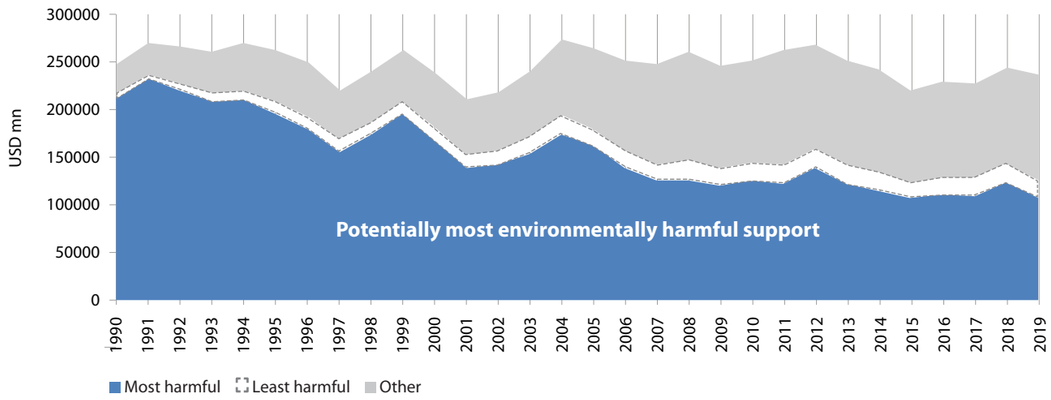
Fossil fuels

Fossil fuel support can incentivise the use and production of fossil fuels, thereby contributing to climate change – one of the largest direct drivers of global biodiversity loss. The OECD tracks fossil fuel support through the OECD Inventory of Support Measures for Fossil Fuels. OECD and IEA's joint estimate shows that 81 predominantly OECD and G20 economies spent USD 468 billion in fossil fuel support in 2019. In September 2009, Leaders of the Group of Twenty (G20) economies committed to "phase out and rationalise over the medium term inefficient fossil fuel subsidies while providing targeted support for the poorest." Countries subsequently engaged in voluntary and reciprocal peer reviews of the reform of inefficient fossil fuel subsidies, chaired by the OECD.

Identifying and assessing subsidies harmful to biodiversity at national level

Incentives such as subsidies can have different effects in different settings. It is therefore necessary to have a sound understanding at the national level of the magnitude and impacts of subsidies on biodiversity. While comparable data on government subsidies in different sectors is useful to track broad trends at a global level, studies conducted at the national level provide the higher degree of specificity necessary to inform and drive subsidy reform. Several countries have undertaken national-level studies to identify and assess subsidies harmful to biodiversity or to the environment, including France, Germany, Italy, Lithuania and Switzerland. To support countries in this endeavour, the OECD is developing guidance on identifying and assessing subsidies harmful to biodiversity at a national level.

Trends in agriculture producer support by potential environmental impact (OECD countries)



Source: OECD PSE database

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KEY WEBSITES

Agricultural support
https://data.oecd.org/agrpolicy/agricultural-support.htm

Fisheries support
https://data.oecd.org/fish/fisheries-support.htm

Fossil fuel support data and country notes
https://www.oecd.org/fossil-fuels/data/

Data, indicators and country performance reviews

Governments require reliable and objective information to design effective biodiversity policies. Through its databases and environmental indicators, the OECD provides a repository of information on the state of biodiversity (e.g. threatened species data), pressures on biodiversity (e.g. land-use change), and policy responses to reduce these pressures (e.g. protected areas and economic policy instruments). The data are collected in a transparent and consistent way, enabling decision makers to measure their country's performance, over time and compared to other countries. The OECD works closely with countries and international partners to continuously improve the quality and scope of information on biodiversity and related policy areas, and to develop coherent targets and indicators.

The Post-2020 Global Biodiversity Framework: Targets, indicators and measurability implications at global and national level

The 2011-2020 Strategic Plan for Biodiversity and the Aichi Biodiversity Targets expired in 2020, and governments agreed to establish a post-2020 framework for adoption at the 15th Conference of the Parties to the Convention on Biological Diversity (CBD COP15). OECD is working with governments to provide technical analysis to help inform the decision-making process in the lead up to and at CBD COP15. The project "The Post-2020 Biodiversity Framework: Targets, Indicators and Measurability Implications at Global and National Level" examines the lessons learned from the Aichi biodiversity targets, and how the Post-2020 Global Biodiversity Framework could be improved. In particular, the paper proposed the creation and use of headline indicators. The OECD convened an international expert workshop in February 2019 where the key concepts were first proposed.

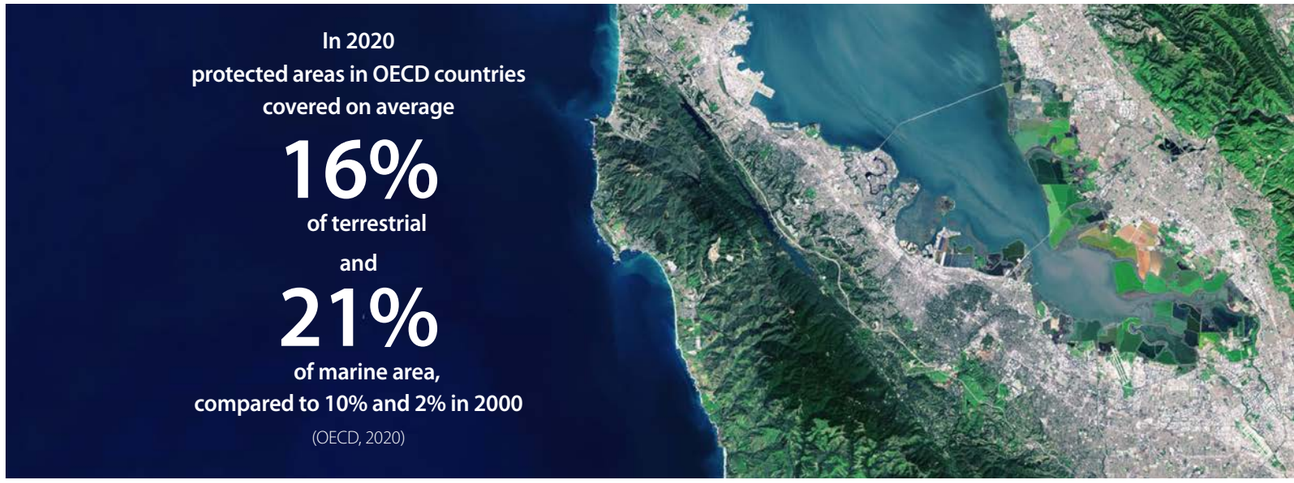
Environmental Performance Reviews

OECD's country-specific Environmental Performance Reviews (EPRs) provide independent assessments of countries' progress towards their environmental policy objectives. The reviews promote peer learning, enhance government accountability and provide targeted recommendations aimed at improving environmental performance, individually and collectively. All EPRs examine countries' performance in halting biodiversity loss. In addition, a total of 21 out of the 39 countries reviewed in 2010-2021 chose a biodiversity-related subject area for in-depth analysis. Recent country reviews with biodiversity chapters include Belgium (2021), Greece (2020), Luxembourg (2020), Australia (2019) and Latvia (2019). The Green Growth Policy Review of Indonesia (2019) includes a focus chapter on the land-ecosystems-climate nexus. The 2018 report *Biodiversity Conservation and Sustainable Use in Latin America: Evidence from Environmental Performance Reviews* summarises key findings on biodiversity and ecosystem services from the Environmental Performance Reviews completed for Brazil, Chile, Colombia, Mexico and Peru between 2013 and 2017.

Land use and ocean data

The OECD collects and reports on land use cover change data, a key indicator for pressure on biodiversity loss.

The OECD has also developed a Sustainable Ocean Economy database to provide timely and reliable data on the natural asset base and the sustainability of the ocean economy, including the health of marine ecosystems. This work will help meet the demands of the international community for a better evidence base to support decision making, including SDG 14.



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KEY WEBSITES

The Post-2020 Biodiversity Framework: Targets, indicators and measurability implications at global and national level
https://www.oecd.org/environment/resources/biodiversity/Post-2020-biodiversity-framework.htm

Environmental country reviews
https://www.oecd.org/environment/country-reviews/

OECD ocean data
https://www.oecd.org/ocean/data/

Mainstreaming biodiversity across government and sectors

Mainstreaming biodiversity conservation and sustainable use across all sectors of the economy is vital to ensuring sustainable development. A key step for mainstreaming biodiversity is to improve decision-makers' understanding of the benefits provided by biodiversity and ecosystem services, including their values. Biodiversity considerations must then be integrated into national development strategies, economic plans, national budgets, and agriculture, fisheries, forestry and other sectoral policies. Effective policies are needed to encourage business and households to conserve and more sustainably use biodiversity. It is also important to ensure robust monitoring and evaluation of mainstreaming occur over time.

Mainstreaming biodiversity into national and sector-level decision-making

Mainstreaming Biodiversity for Sustainable Development (2018) draws on experiences and insights from 16 predominantly megadiverse countries to examine how biodiversity is being mainstreamed at the national level; in the agriculture, forestry and fisheries sectors; and in development co-operation. It also considers the monitoring and evaluation of biodiversity mainstreaming and how this can be improved. Key messages from the report include the need to establish a strong social and business case for biodiversity, to align policies across biodiversity and the different sectors, and to develop monitoring and evaluation systems for biodiversity mainstreaming.

In-depth country case study analyses have also been undertaken, namely for Peru and South Africa. The paper on Peru highlights the significant progress made to mainstream biodiversity, through the creation of enabling institutional and legal frameworks. It outlines the remaining challenges, such as the need to strengthen public sector capacity sub-nationally, improve data quality and coverage, and scale up biodiversity finance. The paper on South Africa describes how biodiversity considerations have been mainstreamed in five key policy areas, namely: land use planning, mining, water, infrastructure, and agriculture. It highlights the key elements of mainstreaming success in South Africa, which include good science, the ability to harness windows of opportunity, and ensuring genuine links to development objectives.

Work is currently underway to examine (1) how to better mainstream biodiversity in infrastructure, and (2) how to enhance the effectiveness of sub-national biodiversity policy.

Valuing biodiversity and ecosystem services

Biodiversity and ecosystem services deliver considerable benefits, but these tend to be undervalued or unvalued in day-to-day decisions, economic accounts and market prices. One reason for this is market failures: the majority of ecosystem services are not priced in the market as they are often public goods. As a result, there are insufficient incentives to conserve and sustainably use biodiversity. The failure to account for the full economic values of biodiversity and ecosystem services in decision-making is one of the contributing factors to their over-exploitation and thus loss and degradation.

The report *Cost-Benefit Analysis and the Environment: Further Developments and Policy Use* (2018) examines the role of valuation of biodiversity and ecosystem services to quantify their contribution to human well-being. A large number of empirical studies that estimate the monetary values associated with the benefits provided by ecosystem services are now available. However, economic valuation of biodiversity and ecosystem services continues to face some methodological limitations linked to spatial variability and complexities in the way services are produced. Nevertheless, economic valuation remains a useful tool for integrating biodiversity values into policy making and project appraisal.

National ecosystem assessments

National ecosystem assessments (NEAs) help countries to gain a better understanding of their economic dependence on biodiversity and ecosystem services. They involve mapping, assessing and in some cases economically valuing ecosystem services. Evidence shows that NEAs can – and are already – informing policy. NEAs conducted in Japan and the United Kingdom, for example, have been mentioned in documents setting out future policy or biodiversity strategies, and in legal documents pertaining to the conservation and sustainable use of biodiversity. The sharing of experiences on NEAs could help refine future NEAs and their utility in policy making.

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KEY WEBSITE

Economics and policies for biodiversity: OECD's response
https://www.oecd.org/environment/resources/biodiversity/

Sustainable land use, agriculture and forests

Biodiversity and land use are intrinsically linked

Global land use is currently unsustainable. As global populations grow and economies develop, the demands placed on land-use systems will further increase. Land use and biodiversity are intrinsically linked. Land-use change, predominantly from the expansion and intensification of agriculture is the largest driver of biodiversity decline.

Agriculture covers approximately 49% of the global ice-free land surface, while managed and plantation forests cover another 22%.The pressures on land-use systems are likely to increase as populations grow and demand for land-intensive products increase. The increasing reliance on bio-energy and carbon sequestration in ecosystems to meet international climate commitments is also likely to have profound impacts on land use systems and subsequently biodiversity. Understanding how to make land-use systems sustainable is therefore a research and policy priority.

Sustainable agriculture is fundamental to well-being

Agriculture is fundamental to human well-being and is an important part of the socio-economic fabric of rural areas. It is, therefore, essential that reforms not only benefit biodiversity, but also ensure the provision of affordable food and support livelihoods. Without these precautions, enacting reforms can become challenging.

An important mechanism through which agriculture impacts biodiversity, is the use of agrichemicals such as chemical fertilisers and pesticides. The use of agrichemicals is essential to ensure enough food is produced to feed the world, but they can have negative consequences for biodiversity if excess nutrients leach from soils into waterbodies, or if pesticides impact non-target organisms. Pesticide use, alongside habitat loss and agricultural intensification, has led to precipitous declines in insect abundance globally.

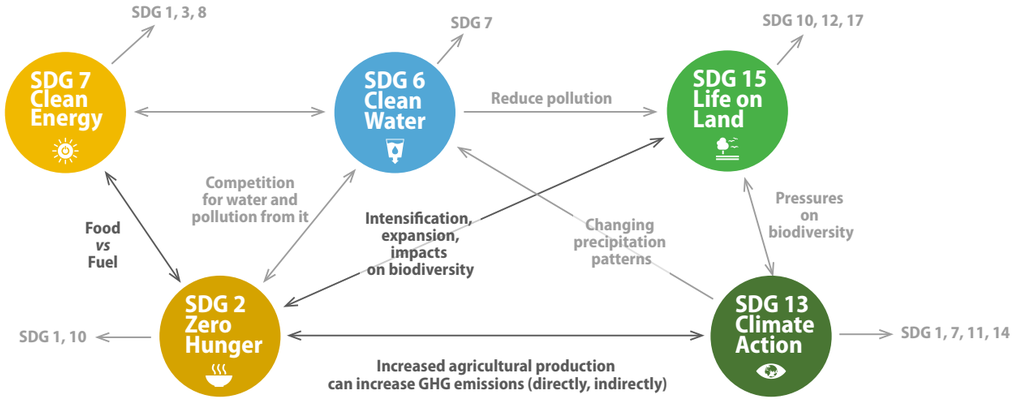
A broad mix of policy instruments will be needed to manage the use of pesticides and fertilisers to reduce the biodiversity impacts of agricultural intensification. *Managing the Biodiversity Impacts of Fertiliser and Pesticide Use* (2020) examines the approaches countries have taken so far and the steps they can take to better manage the impacts of agrichemicals. These include broadening the knowledge base, to understand better the risks these chemicals pose, setting quantified targets for their use and targeting 'hotspots' where the risks posed to biodiversity are highest.

Aligning policies for land-use and biodiversity

Governments are faced with multiple and overlapping challenges, including improving livelihoods, tackling climate change, mitigating biodiversity loss and addressing food insecurity, shortages and waste. To achieve sustainable land-use and address these interconnected challenges, governments require coherent national strategies and plans, institutions and policies. Coherent policy frameworks would allow governments to identify and leverage synergies between action for biodiversity, climate and food security, while managing trade-offs.

Land-use systems and management are not only essential to meeting biodiversity targets under the Convention on Biological Diversity, but also play a crucial role in achieving several of the Sustainable Development Goals (SDGs), such as ending hunger (SDG 2), clean water (SDG 6), clean energy (SDG 7), climate action (SDG 13), and life on land (SDG 15). How to align polices for sustainable land-use is therefore a crucial question for governments to answer if they are to reach international environmental goals, and halt biodiversity declines.

Towards Sustainable Land Use: Aligning Biodiversity, Climate and Food Policies (2020) identifies several strategies to improve policy alignment for sustainable land use. Governments should ensure input from all relevant stakeholders when developing national strategies and action plans in response to international agreements or for sectors with relevance to land use (e.g. agriculture, forestry and development). This will help to identify opportunities for win-wins where actions can have positive impacts across multiple sectors. In addition, governments should create incentives for sustainable land use by appropriately pricing the negative externalities of land-use and reassessing the balance of support provided to actors to ensure certain uses are not being promoted at the expense of biodiversity.



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Sustainable ocean, seas and marine resources

A healthy ocean and marine ecosystem services underpin the ocean economy, and provide critical support functions upon which human health and well-being depend. The multiple benefits that can be derived from well-functioning and resilient marine ecosystems are local, regional and global in scale, and range from coastal and habitat protection to climate mitigation and food provisioning. Coral ecosystems alone contribute an estimated USD 172 billion per year to the world economy. This value is derived from ecosystem services such as the provision of food and raw materials, moderation of extreme ocean events, water purification, recreation, tourism, and maintenance of biodiversity.

Enhanced action is needed to conserve and sustainably use our ocean and marine resources, which are under severe pressure from over-exploitation of fish and other marine resources, habitat destruction, invasive alien species, pollution (e.g. agriculture run-off, plastics and sewage) and climate change. Governments have a key role in putting in place an effective and coherent policy mix to ensure the achievement of SDG 14 "to conserve and sustainably use our oceans, seas, and marine resources", and marine-related CBD targets. Relevant policy instruments include regulatory, economic, and information and voluntary approaches. The pace of policy action is not keeping up with the pressures on oceans, however.

Establishing effective marine protected areas and marine spatial planning

Marine Protected Areas (MPAs) are one of the more traditional policy instruments for marine conservation and sustainable use. They can be an effective instrument for protecting critical marine habitats, and can help to ensure the provision of multiple ecosystem services that are fundamental for fisheries, tourism, recreation and coastal protection. The area of ocean under MPAs has expanded in recent years. MPA coverage is one of the few Aichi and SDG 14 targets that has been (partially) met by 2020. However, the extent to which MPAs cover the full spectrum of marine life is still weak and management effectiveness is often poor. *Marine Protected Areas: Economics, Management and Effective Policy Mixes* (2017) examines the evidence on the costs and benefits of MPAs and presents good practice insights on how to enhance the environmental and cost effectiveness of MPAs, and to scale up finance. It highlights the importance of integrating MPAs into emerging marine spatial planning instruments to increase their effectiveness, and of complementing MPAs with a mix of other policy instruments to address the multiple pressures on the ocean.

Marine spatial planning (MSP) also has a key role to play in managing the marine environment. Demands upon marine resources and for the use of the seas are increasing significantly, both for traditional maritime uses (such as shipping and fishing) and new uses (such as offshore wind energy and aquaculture). This is reaching the point that uses are coming into conflict with each other and leading to significant and often cumulative impacts on biodiversity. MSP has emerged as an approach to better regulate and manage maritime activities and their impacts on the marine environment by taking a place-based (rather than sectoral) approach. *Marine Spatial Planning: Assessing net benefits and improving effectiveness* (2017) provides an overview of key issues.

Fostering a sustainable ocean economy for developing countries

The overexploitation and degradation of marine ecosystems is a global challenge, which could potentially undermine the growth of the ocean economy. This is particularly true for developing countries, many of which have large coastal populations reliant on ocean ecosystems for employments and food (often in artisanal fisheries). *The Sustainable Ocean Economy for All: Harnessing the Benefits for Developing Countries* (2020), is a joint report from the OECD Development Co-operation; Science Technology and Innovation; and the Environment Directorates, which highlights both how developing countries can better manage and finance the conservation and sustainable use of oceans marine resources and how developing countries can facilitate this through development co-operation.

A complementary paper on *Reframing Financing and Investment for a Sustainable Ocean Economy* (2020) sets out a new framing of the challenges and opportunities for scaling up financing and investment for a sustainable ocean economy. It examines the particular challenges associated with financing sustainable ocean activities across different sectors and explores promising financing instruments, including by identifying learnings from elsewhere in the green finance sphere.

Tackling illegal, unreported and unregulated fishing

Fisheries play an important role in coastal communities, but directly impact marine biodiversity. The OECD helps governments establish good policies and governance to achieve environmentally sound fisheries and sustainable aquaculture to support resilient communities, provide quality food and secure livelihoods.

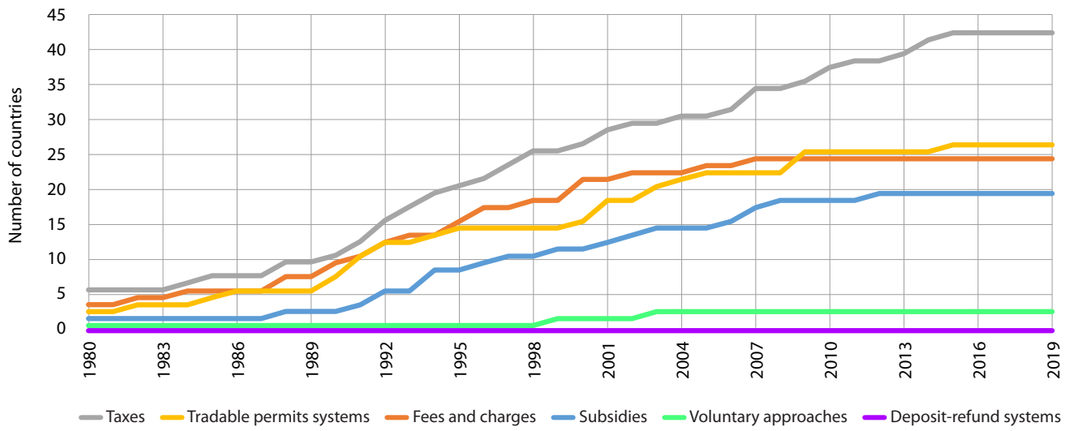
One of the key issues for marine capture fisheries is Illegal, Unreported and Unregulated (IUU) fishing. Two recent studies by the OECD, *Closing gaps in national regulations against IUU fishing* (2019) and *Intensifying the fight against IUU fishing at the regional level* (2019), help countries identify how to better address IUU fishing. Results from the *OECD Review of Fisheries 2020* show considerable progress in improving regulatory frameworks and enforcing legislation since 2005, particularly on implementation of port state measures, which were not widely used in 2005, and are now the most widespread of all interventions measured. However, there are still opportunities to improve in three key areas: transparency over vessel registration and authorisation processes; the stringency of transhipment regulation; and market measures aimed at increasing traceability and closing access to markets and fisheries services to IUU fishing operators.

Reducing ocean pollution

Recent work at OECD has focused on addressing key pollutants of marine ecosystems including plastics, excess nitrogen and ghost fishing gear. A 2021 report prepared for the G7 UK Presidency for example, discusses the implications of abandoned, lost or otherwise discarded fishing gear for fisheries, non-target species (e.g. entanglement of wildlife), habitats as well as navigational safety, and coastal tourism. The report identifies good practices and policies to prevent gear loss, reduce its impacts, and to recover lost gear.

14 LIFE BELOW WATER

Number of countries with ocean-related instruments



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OECD work in support of a sustainable ocean brochure
https://www.oecd.org/ocean/OECD-work-in-support-of-a-sustainable-ocean.pdf

OECD work for a sustainable ocean website
https://www.oecd.org/ocean/

Biodiversity and climate change action

Biodiversity and climate change are closely linked. First, climate change is driving changes in the structure and function of ecosystems, impacting the quality and quantity of the services they provide to society. Climate change has already resulted in shifts in species distribution, population declines and changes in phenology (the timing of seasonal activities such as flowering or breeding). Increases in the frequency and intensity of extreme weather events, such as flooding, drought, storms and heatwaves are placing increasing strain on ecosystems. Climate change is set to become an increasingly important driver of biodiversity decline. For example, the IPCC report finds that the majority (70-90%) of warm water (tropical) coral reefs that exist today will disappear even if global warming is constrained to 1.5°C.

Second, the loss and degradation of ecosystems, particularly forests and peatlands, not only contributes to significant greenhouse gas emissions but also reduces the natural capacity of ecosystems to sequester and store carbon. Conversely, well-managed ecosystems can sequester carbon and help countries achieve GHG emissions targets. Furthermore, the services provided by ecosystems can buffer society from the impacts of climate change, such as extreme weather, sea level rise and flooding.

Third, how countries respond to climate change also has implications for biodiversity. Some actions to mitigate and adapt to climate change (e.g. expansion of bioenergy and renewable energy infrastructure, and the construction of dams and seawalls) may negatively affect biodiversity, and therefore require careful planning and management. The mitigation pathways countries choose will also determine the extent of potential trade-offs between climate and biodiversity action. For example, scenarios with higher levels of future energy demand show lower levels of CO_2 emissions reductions to 2030 and rely to a much greater extent on the use of bioenergy with carbon and capture storage for negative emissions (BECCS) later in the century, increasing demand for land.

Harnessing nature-based solutions for climate change mitigation

Preventing and reversing ecosystem degradation can both address declines in biodiversity and mitigate greenhouse gas emissions. One study, for example, estimates that conservation, restoration and improved management of forests, grasslands, wetlands and agricultural lands could deliver 23.8 $GtCO_2$ of cumulative emission reductions by 2030. This is 37% of the emission reductions needed by 2030 to have a greater than two thirds chance of keeping warming below 2°C. Synergies between action on climate change and biodiversity are an opportunity for governments to address multiple environmental challenges simultaneously. To take advantage of these synergies, and manage potential trade-offs, governments must ensure policy making is coherent across all sectors. *Towards Sustainable Land Use* (2020) provides guidance on how governments can ensure land-use policy is coherent with biodiversity and climate goals.

13 CLIMATE ACTION

Strengthening adaptation-mitigation linkages for a low-carbon, climate-resilient future (2021) illustrates how fostering linkages between climate change adaptation and mitigation can also have broader environmental and social benefits, including for biodiversity.

Scaling up nature-based solutions for adaptation

Biodiversity and ecosystem services play an important role in helping people adapt to the impacts of climate change, and reducing the risk of climate-related disasters. Coastal ecosystems, such as mangroves provide significant benefits to adjacent communities, including reducing the impact of coastal flooding events by dissipating the energy from waves, as highlighted in *Adapting to a changing climate in the management of coastal zones* (2021). Mangrove areas in Florida, for example, are estimated to have prevented USD 1.5 billion in flooding damage from hurricane Irma. In terrestrial systems, forested slopes stabilise sediments, protecting people and their assets from landslides. Healthy, connected and biodiverse ecosystems also tend to be more resilient to the effects of climate change than degraded ecosystems. *Nature-based Solutions for Adapting to Water-related Climate Risks* (2020) explores why prevailing decision making frameworks may fail to adequately consider nature-based solutions to address water-related climate risks. It sets out a policy evaluation framework that supports the identification of, and proposed ways to address constraints on the use of nature-based solutions to address water-related climate risks.

A subsequent report *Scaling up Nature-based Solutions to Tackle Water-related Climate Risks: Insights from Mexico and the United Kingdom* (2021) highlights good practices for scaling up these approaches.

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KEY WEBSITES

Adaptation to climate change
https://www.oecd.org/environment/cc/climate-adaptation/

OECD
BETTER POLICIES FOR BETTER LIVES

For more information:

www.oecd.org/env/resources/biodiversity/

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