Tracking Economic Instruments and Finance for Biodiversity
2020
Tracking Economic Instruments

Through the adoption of the Strategic Plan for Biodiversity 2011-2020 under the Convention on Biological Diversity, and the 2030 Agenda for Sustainable Development, the international community committed to a set of ambitious goals on ‘living in harmony with nature’. This requires immediate and ambitious action to protect both life below water and life on land, so as to conserve and sustainably use biodiversity and ecosystem services.

Economic instruments, such as taxes, fees and charges, tradable permits, payments for ecosystem services schemes, and environmentally-motivated subsidies, provide signals to both producers and consumers to behave in a more environmentally-sustainable way. These instruments also provide continuous incentives to achieve objectives in a more cost-effective manner, and most are also able to mobilise finance and/or generate revenue. Economic instruments are the so-called “positive incentives” embedded in the 2011-2020 Aichi Biodiversity Targets, notably Target 3.
The OECD Environmental Policy Committee (EPOC), through its unique database of Policy Instruments for the Environment (PINE), collects quantitative and qualitative information on policy instruments, from 110 countries worldwide. All countries are welcome to report to this database. This brochure presents statistics on the biodiversity-relevant economic instruments and the finance they mobilise, based on currently available data in PINE. The data are relevant to monitoring progress towards Aichi Biodiversity Target 3 (on incentives), Target 20 (on resource mobilisation) as well as Sustainable Development Goal (SDG) Target 15.a. on biodiversity finance.
The number of biodiversity-relevant taxes has been steadily increasing over time. There are a total of 229 biodiversity-relevant taxes, as currently reported to the OECD PINE database, of which 206 are in force today, spanning 59 countries. In OECD countries, these biodiversity-relevant taxes generate approximately USD 7.5 billion a year (average 2016-2018) in revenue.

The number of biodiversity-relevant fees and charges has also been increasing, with 189 fees and charges currently reported, of which 179 are in force today in 48 countries. Information on the revenue collected from these fees and charges is not yet consistently reported to the PINE database.

The number of biodiversity-relevant tradable permits schemes has also been on the rise, with 38 tradable permits currently active in 26 countries. At least 4 of these tradable permit schemes also allow for the auctioning of a portion or all of the permits.

The number of environmentally-motivated subsidies relevant for biodiversity, as reported in the PINE database, is 146, in place in 25 countries.

While the OECD PINE database does not currently track information on Payments for Ecosystem Services, a review of 10 large national PES programmes suggests that the finance these have mobilised is in the order of USD 10 billion a year.

Overall, many countries are making progress towards developing and applying different types of positive incentives to promote biodiversity conservation and its sustainable use, as called for in Aichi Target 3 under the Convention on Biological Diversity.

There is, nevertheless, substantial potential to scale up the use and ambition of biodiversity-relevant economic instruments. For example, the revenue generated from biodiversity-relevant taxes amounted to 0.92% of the total revenue from environmentally-relevant taxes in OECD countries (average 2016-2018).

Key highlights

1. The number of biodiversity-relevant taxes has been steadily increasing over time. There are a total of 229 biodiversity-relevant taxes, as currently reported to the OECD PINE database, of which 206 are in force today, spanning 59 countries. In OECD countries, these biodiversity-relevant taxes generate approximately USD 7.5 billion a year (average 2016-2018) in revenue.

2. The number of biodiversity-relevant fees and charges has also been increasing, with 189 fees and charges currently reported, of which 179 are in force today in 48 countries. Information on the revenue collected from these fees and charges is not yet consistently reported to the PINE database.

3. The number of biodiversity-relevant tradable permits schemes has also been on the rise, with 38 tradable permits currently active in 26 countries. At least 4 of these tradable permit schemes also allow for the auctioning of a portion or all of the permits.

4. The number of environmentally-motivated subsidies relevant for biodiversity, as reported in the PINE database, is 146, in place in 25 countries.

5. While the OECD PINE database does not currently track information on Payments for Ecosystem Services, a review of 10 large national PES programmes suggests that the finance these have mobilised is in the order of USD 10 billion a year.

6. Overall, many countries are making progress towards developing and applying different types of positive incentives to promote biodiversity conservation and its sustainable use, as called for in Aichi Target 3 under the Convention on Biological Diversity.

7. There is, nevertheless, substantial potential to scale up the use and ambition of biodiversity-relevant economic instruments. For example, the revenue generated from biodiversity-relevant taxes amounted to 0.92% of the total revenue from environmentally-relevant taxes in OECD countries (average 2016-2018).

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1. The statistics in this document are based on data reported to the OECD PINE database as of 10 March 2020. See the section on “Methodology and how to contribute” for appropriate caveats and next steps planned for this work.

TERRITORIAL NOTE: The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.
THE OECD POLICY INSTRUMENTS FOR THE ENVIRONMENT (PINE) DATABASE

The OECD PINE database contains nearly 3,600 instruments, of which about 3,190 are currently in force, from across 110 countries. The policy instruments covered include:

- taxes
- fees and charges
- tradable permits
- subsidies

For each policy instrument, the following information is collected:

- when it was introduced
- a description of what it applies to
- the geographical coverage
- the environmental domains it aims to address (e.g. biodiversity, climate change, air pollution)
- the industries concerned
- revenues, costs or rates
- whether the revenue is earmarked
- exemptions

Environmental domains represent the focal issues (environmental externalities) covered by a certain policy instrument. Instruments can have both a direct and an indirect effect on several environmental domains; however, only the domain to which the instrument has a direct effect is indicated in the database. Multiple domains can be indicated for a single instrument. For example, a tax on groundwater extraction will have natural resources and biodiversity as its domains. In reality, every domain could be related indirectly; hence, the classification by domain is most valuable if only used in a direct narrow sense. For instance, a tax on motor vehicle fuel will have a direct effect on climate change, transport, energy efficiency and air pollution. Through its effect on climate change, it may also have an indirect effect on biodiversity. In this case, biodiversity is not indicated as a domain.

2. The PINE database also covers deposit refund schemes and voluntary approaches. For more information, see http://oe.cd/pine.
The information in this brochure is also complemented by initial information collected on Payments for Ecosystem Services, another type of economic instrument that provides incentives for biodiversity conservation and its sustainable use.

**Aichi Biodiversity Target 3: By 2020, at the latest**, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimise or avoid negative impacts, and **positive incentives for the conservation and sustainable use of biodiversity are developed and applied**, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.

According to CBD/COP/DEC/XIII/28, the generic indicator for positive incentives is: Trends in development and application of incentives that promote biodiversity conservation and sustainable use. The three specific indicators proposed under this generic indicator are: (i) number of countries with national instruments on biodiversity-relevant taxes, charges and fees; (ii) number of countries with national instruments on REDD plus schemes; (iii) number of countries with national instruments on biodiversity-relevant tradable permit schemes.

**Aichi Biodiversity Target 20: By 2020, at the latest**, the mobilisation of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilisation, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.

According to CBD/COP/DEC/XIII/28, the generic indicator for this target is: Trends in the mobilisation of financial resources.

**SUSTAINABLE DEVELOPMENT GOAL 15.A: Mobilise and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.**

The indicators for this target are: 15.a.1 (a) Official development assistance on conservation and sustainable use of biodiversity; and (b) revenue generated and finance mobilized from biodiversity-relevant economic instruments.
Biodiversity-relevant taxes

Biodiversity-relevant taxes include taxes on pesticides, fertilisers, forest products and on timber harvests. Based on the polluter pays principle, these instruments place an additional cost on the use of the natural resource or the emission of a pollutant, to reflect the negative environmental externalities that they generate. As such, they provide incentives for both producers and consumers to behave in a more environmentally-sustainable way.

According to data reported to the OECD PINE database, currently 59 countries apply biodiversity-relevant taxes, with this number steadily increasing since 1980 (Figure 1).

The total number of biodiversity-relevant taxes reported is 226 (Figure 2). The number of biodiversity-relevant taxes by country is depicted in Figure 3.

Figure 1. NUMBER OF COUNTRIES WITH BIODIVERSITY-RELEVANT TAXES

Note: Three countries are not reflected in the figure as data on the year their instrument(s) were introduced are not currently available.
These countries are Burkina Faso, Mauritania and Switzerland.

Figure 2. NUMBER OF BIODIVERSITY-RELEVANT TAXES

Note: 33 instruments are not reflected in the figure as data on the years they were introduced are not currently available.
Figure 3: NUMBER OF BIODIVERSITY-RELEVANT TAXES BY COUNTRY (2020)

Note by Turkey: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Together these taxes have raised, on average (2016-2018), an estimated USD 7.5 billion per year across OECD countries and a total of USD 7.7 billion per year across all countries (including OECD) as reported in the PINE database. The top ten countries that have mobilised the largest amount of revenue from biodiversity-relevant taxes are depicted in Figure 4.

Examples of where tax revenue has been earmarked for biodiversity-relevant purposes

In Denmark, 100% of the revenue from the pesticides tax is earmarked for environmental purposes and to compensate farmers. The tax revenue amounted to USD 78.1 million in 2016. In France, part of the revenue from the pesticides tax is earmarked to fund the Ecophyto I and II plan, with the rest going to the Water Agencies.

Note: The biodiversity-relevant taxes generating this revenue in the Netherlands are a municipal sewerage charge (USD 1.807 million) and a levy on water pollution (USD 1.431 million).

Biodiversity-relevant fees and charges

Biodiversity-relevant fees and charges include entrance fees to national parks, fees on hunting licenses, charges on land-based sewage discharge (such as for the Great Barrier Reef area in Australia), charges for groundwater abstraction and biodiversity-relevant non-compliance fines.

Currently, 189 fees and charges across 48 countries, as reported in the database, are relevant for biodiversity (Figure 5).

Information on the revenue collected from these fees and charges is not yet consistently reported to the PINE database.

What is the difference between a tax and a fee or charge?
A charge is a requited payment to general government, meaning that the payer of the charge gets something in return, more or less in proportion to the payment made, whereas a tax is a compulsory unrequited payment. For example, a wastewater payment which varies according to the volume of water consumed would constitute a fee (sometimes called a charge), while a wastewater payment which varies according to the amount of pollution generated would be classified as a tax. In the OECD PINE database, the terms “fees” and “charges” are used interchangeably.

Figure 5. NUMBER OF COUNTRIES WITH BIODIVERSITY-RELEVANT FEES AND CHARGES

Note: Five countries are not reflected in this figure as data on the year their instrument(s) were introduced are not currently available. These countries are Botswana, the Democratic Republic of the Congo, Hungary, Mali and Niger.

Figure 6. **NUMBER OF BIODIVERSITY-RELEVANT FEES AND CHARGES BY COUNTRY**

Biodiversity-relevant tradable permits

Biodiversity-relevant tradable permits include individual transferable quotas (ITQs) for fisheries, tradable development rights, and tradable hunting rights. These policy instruments (also referred to as cap-and-trade programmes) set a limit on the total amount of a natural resource that can be exploited. Individual permits are then allocated to users so they can also trade. The allocation of these permits can be grandfathered (i.e. allocated to existing users of the resource free of charge, typically in perpetuity) or auctioned. If they are auctioned, tradable permits can also generate finance.

Currently, 42 active tradable permit schemes in 26 countries have been identified as relevant for biodiversity (Figure 7). At least four of these schemes allocate permits via auctioning. These include the bighorn sheep hunting auctions in Alberta, Canada, and similar auctions in Baja California, Mexico. Auctioning of hunting permits is also common in the United States. In Chile, amendments to the Fisheries Law in 2013 indicate that for fisheries determined to be fully-exploited, such as jack mackerel, up to 15% of the annual TAC is auctioned off. Quotas for horse mackerel were auctioned for the first time in December 2017.

Revenue from these auctions can also be earmarked for biodiversity purposes. In Alberta, for example, a minimum of 60% of funds generated by the hunting auction have been contractually designated to be invested in projects for the long-term benefit of Rocky Mountain bighorn sheep with the potential that all 100% can be invested.

From these tradable permit schemes, 23 countries currently have at least one individual transferable quota (ITQ) for fisheries in place³ (Figure 8). In the fisheries context, setting an appropriate total allowable catch (TAC) is equivalent to setting a cap, and is what ensures sustainability for the specific stock(s). The extent to which this contributes to maintaining biodiversity more generally therefore depends on the extent to which TACs cover the species present in the ecosystem. The main added benefit of introducing transferability to the TAC via the ITQ system (i.e. equivalent to the trading element in cap-and-trade programmes) is that it reduces incentives for overcapitalisation and to ‘race to fish’; situations that can result in levels of effort, bycatch, habitat damage and pollution being above what is necessary to harvest the TAC.

Figure 7. NUMBER OF COUNTRIES WITH BIODIVERSITY-RELEVANT TRADABLE PERMITS SYSTEM


³ ITQs previously introduced by Ecuador and the Netherlands, in 2001 and 1985 respectively, are no longer active.
The 23 countries that have active ITQs in place for at least one fishery are: Argentina, Australia, Canada, Chile, Denmark, Estonia, Finland, Iceland, Lithuania, Malta, Mauritius, Mexico, Morocco, Mozambique, Namibia, Norway, New Zealand, Peru, Spain, Sweden, South Africa, the United Kingdom and the United States.

Figure 8. **NUMBER OF COUNTRIES WITH AT LEAST ONE ITQ FOR FISHERIES**

Notes: This figure only covers the number of countries with at least one ITQ in place and does not reflect whether the number of species covered by the ITQ has changed.

Biodiversity-relevant subsidies

Biodiversity-relevant subsidies include subsidies for forest management and reforestation, subsidies for organic or environmentally-friendly agriculture, for pesticide-free cultivation, and for land conservation.

There are currently 176 environmentally-motivated subsidies relevant for biodiversity reported in the PINE database. Of these, 146 are currently in force, spanning 25 countries (Figures 9 and 10).

Figure 9: \textbf{NUMBER OF COUNTRIES WITH BIODIVERSITY-RELEVANT SUBSIDIES IN PLACE}

![Graph showing the number of countries with biodiversity-relevant subsidies over time]

Note: As data on the year of introduction of biodiversity-relevant subsidies in Greece, Iceland and Mexico are not available in the database, the total number of countries in this figure is 21.


Figure 10: \textbf{NUMBER OF ENVIRONMENTALLY-MOTIVATED SUBSIDIES BY COUNTRY}

![Bar chart showing the number of environmentally-motivated subsidies by country]


Did you know?

Data on environmentally-motivated subsidies in the PINE database can be complemented with information on environmentally-harmful subsidies from the OECD Inventory of Support Measures for Fossil Fuels: www.oecd.org/site/tadffss

Similarly, the data can be complemented with information on potentially environmentally beneficial, neutral and harmful support to agriculture as measured via the OECD PSE database, as well as to fisheries support (including subsidies) via the OECD FSE database.


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Payments for Ecosystem Services

Payments for Ecosystem Services (PES) can be defined as: (1) voluntary transactions (2) between service users (3) and service providers (4) that are conditional on agreed rules of natural resource management (5) for generating offsite services (Wunder, 2015).4 PES are based on the user- or beneficiary-pays approach.

Work is currently underway to collect data on PES instruments, which will eventually be incorporated into the OECD PINE database. In the meantime, Table 1 provides an overview of some of the larger PES programmes currently in place, together with the finance they mobilise.

Table 1. FINANCE MOBILISED BY 10 LARGE PES PROGRAMMES

<table>
<thead>
<tr>
<th>Country</th>
<th>Name of programme</th>
<th>Year introduced</th>
<th>Objectives</th>
<th>Finance mobilised</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Environmental Stewardship Programme</td>
<td>2007</td>
<td>Biodiversity conservation, habitat restoration, nationally threatened species</td>
<td>USD 5.19 million per year (2007-2017 average)</td>
</tr>
<tr>
<td>Brazil</td>
<td>Green Grants programme (Bolsa Verde)</td>
<td>2011</td>
<td>Sustainable use of protected areas, improved environmental management and poverty reduction</td>
<td>USD 33.8 million (2011-2013 average)</td>
</tr>
<tr>
<td>China</td>
<td>Sloping Land Conversion Programme (Grain for Green)</td>
<td>1999</td>
<td>Reducing soil and water erosion by the targeting and conversion of marginal farmland to forest or grassland</td>
<td>USD 4.9 billion per year on average (USD 69 billion by end of 2014)</td>
</tr>
<tr>
<td>China</td>
<td>Natural Forest Conservation Programme</td>
<td>1998</td>
<td>Protection and restoration of natural forests</td>
<td>USD 4.7 billion in 2015</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>Pago por Servicios Ambientales</td>
<td>1996</td>
<td>Carbon storage, hydrological services, protection of biodiversity and landscapes</td>
<td>USD 42.4 million in 2012</td>
</tr>
<tr>
<td>Ecuador</td>
<td>Socio Bosque</td>
<td>2008</td>
<td>Forest conservation, carbon storage</td>
<td>USD 7.9 million a year (2015)</td>
</tr>
<tr>
<td>Mexico</td>
<td>Biodiversity PES</td>
<td>2003</td>
<td>Forest conservation, biodiversity conservation</td>
<td>USD 22.3 million in 2016</td>
</tr>
<tr>
<td>Mexico</td>
<td>Payment for Hydrological Environmental Services</td>
<td>2003</td>
<td>Forest conservation, hydrological services</td>
<td>USD 28.2 million in 2016</td>
</tr>
<tr>
<td>United States</td>
<td>Conservation Reserve Programme</td>
<td>1985</td>
<td>Wildlife habitat benefits, water quality benefits, on-farm soil-retention benefits</td>
<td>USD 1.8 billion in 2015</td>
</tr>
<tr>
<td>United States</td>
<td>Catskills</td>
<td>1997</td>
<td>Hydrological services, habitat restoration, environmentally-friendly farming</td>
<td>USD 167 million per year</td>
</tr>
</tbody>
</table>


An overview of biodiversity-relevant economic instruments and the finance they generate

An overview of the PINE data on biodiversity-relevant economic instruments by country is provided in Figure 11. Instruments include tradable permits systems, taxes, fees/charges, and environmentally motivated subsidies.

ESTIMATED FINANCE GENERATED ACROSS SEVERAL BIODIVERSITY-RELEVANT MECHANISMS

Looking across the existing data available on finance mobilised from these economic instruments (i.e. biodiversity-relevant taxes, 10 large PES programmes), as well as data available on biodiversity offsets from Bennet et al (2017)5 and bilateral biodiversity-related ODA from the OECD6, a rough lower bound estimate of finance generated by these mechanisms is about USD 30 billion (Table 2).

Table 2. FINANCE FROM SELECTED BIODIVERSITY-RELEVANT MECHANISMS

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Finance</th>
<th>Coverage</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biodiversity-relevant taxes</td>
<td>USD 7.5 billion (2016-2018 average)</td>
<td>OECD countries</td>
<td>OECD PINE database</td>
</tr>
<tr>
<td>Payments for Ecosystem Services</td>
<td>~USD 10 billion</td>
<td>10 large PES programmes</td>
<td>OECD desk research</td>
</tr>
<tr>
<td>Biodiversity offsets</td>
<td>USD 4.8 billion (2016)</td>
<td>Global</td>
<td>Bennet et al. (2017)</td>
</tr>
<tr>
<td>Bilateral allocable biodiversity-related ODA</td>
<td>USD 8.3 billion (2016-2017 average, commitments, constant 2017 prices)</td>
<td>OECD DAC members</td>
<td>OECD CRS database</td>
</tr>
</tbody>
</table>


Figure 11. NUMBER OF BIODIVERSITY-RELEVANT ECONOMIC INSTRUMENTS BY COUNTRY AND TYPE (2020)

Note: These counts include national and sub-national instruments. For Cyprus, see the note in Figure 3.

Methodology and how to contribute

GENERAL

Information for the PINE database is collected via a network of 200 country experts, including in government agencies (Ministries of Finance and Environment, statistical institutes) as well as research institutes and international organisations. Data is collected systematically for the 36 OECD members as well as the active accession countries. A growing number of non-member countries also provide information. Registered experts are asked to update data at least once a year, typically in January or February, through a password-protected interface. The data collection method may result in some reporting bias, as OECD members and active accession countries are likely to report more data on a regular basis, and all figures should be interpreted in this context.

The OECD Secretariat, in consultation with countries, validates the data before they are published online. The management of PINE is overseen by OECD Committees and Working Parties such as the Working Party on Environmental Information (WPEI), the Working Party on Biodiversity, Water and Ecosystems (WPBWE) and the Joint Meetings of Tax and Environment Experts (JMTEE). Please contact miguel.cardenasrodriguez@oecd.org if you have any feedback on the database, or if you would like to contribute on a regular basis.

BIODIVERSITY

A new environmental domain for ‘biodiversity’ was added in 2017, and all existing policy instruments were subsequently tagged as biodiversity-relevant as appropriate. While the database currently includes policy instruments from 110 countries, the biodiversity-relevant policy instruments in the database may not yet be exhaustive. To view the data, go to https://oe.cd/pine and select Environmental Domain and then Biodiversity from the menu on the left of the page. Please contact katia.karousakis@oecd.org or edward.perry@oecd.org if you have any feedback on the biodiversity-relevant instruments, or if you would like to contribute on a regular basis.

The information on PES provided in this brochure was collected via a literature review. For more information see Table 1.

Figure 12. POLICY INSTRUMENTS BY TYPE AND ENVIRONMENTAL DOMAIN

![Policy Instruments by Type and Environmental Domain](image-url)

Next steps planned for
**Tracking economic instruments and finance for biodiversity**

- Send out a complementary survey on Payments for Ecosystem Services and on Biodiversity Offsets to registered contacts

Any other government who wishes to receive and complete this survey, please contact katia.karousakis@oecd.org and edward.perry@oecd.org

- Seek to expand country coverage of the database

- Update the information in this brochure on a regular basis

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**FURTHER READING**


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