Assessing biodiversity effects of public financial incentives

A methodology for the Dutch government

CE Delft

Committed to the Environment

Assessing biodiversity effects of public financial incentives

A methodology for the Dutch government

This report was prepared by:
Geert Bergsma, Eefje de Gelder en Nikki Odenhoven

Delft, CE Delft, February 2024

Publication code: 24.230317.023

Client: Ministry of Agriculture, Nature and Food Quality

Publications of CE Delft are available from www.cedelft.eu

Further information on this study can be obtained from the contact person Geert Bergsma (CE Delft)

Content

Summary

In an effort to curb further biodiversity loss, the Netherlands, together with other OECD countries, has committed to achieving Target 18 under the 'Kunming-Montreal Global Biodiversity Framework'[1]. This commitment instructs that the Dutch government identifies subsidies harmful to biodiversity by 2025 and eliminates, phases out, or reforms incentives by 2030, starting with most harmful incentives and scaling up positive ones. Financial public incentives, encompassing subsidies, tax cuts, and guarantees, among others, are defined in accordance with WTO and OECD standards and in this context referred to as biodiversity harmful subsidies (BHS).

This report outlines a methodology for fulfilling the initial phase of this commitment by identifying Dutch financial public incentives detrimental and beneficial to biodiversity. The assessment encompasses national and global biodiversity effects, evaluating both direct and indirect impacts, including consideration of the area and intensity of biodiversity effects where applicable.

Our proposed methodology builds upon OECD Guidelines and draws lessons from other national assessments (such as those in Italy, Germany, France, and Switzerland) and the quickscan conducted by RVO. Additionally, the assessment aligns with the EU Commission's draft methodology of Environmentally Harmful Subsidies (EHS). The OECD guideline consist of four steps: (1) *scoping* (determine which type of financial public incentives are taken into account), (2) *screening* (map which incentives possibly impact biodiversity), (3) *data collection* (collect data to prepare step 4 with the help of a fact sheet) and (4) *assessment* (analysing the impact of each incentive using academic literature).

For the scoping and screening step, we offer three options (minimum, medium and maximum), each containing additional incentives and sectors, thus requiring increasing time commitments (see Figure 1). The minimum option involves analysing both direct (e.g. transfer of funds) and indirect incentives (e.g. tax exemptions) for sectors with significant potential biodiversity effect, including agriculture, forestry & fisheries, water & infrastructure, energy & industry, construction & housing and transport. In addition to the components analysed in the minimum option, the medium option extends the assessment to include procurement and the tourism & recreation sector. The maximum option expands further to encompass more complex incentives, such as regulatory measures and implicit incentives (not taxing of externalities) and covers all sectors listed in the EU EHS documents, such as healthcare and arts. We recommend starting with the medium option and potentially extending the analysis to include the maximum option at a later stage.

For the data collection step we propose a collaborative effort between policy advisors, economists and ecologists to provide input for the last assessment step. For the assessment step we also present three options (basic, medium and advanced), each varying in the number of experts required and depth of the analysis as seen in Figure 1. For this step, it is recommended to select one approach, as adding additional depth to the analysis or involving more experts at a later stage would result in duplicative efforts. The basic option categorises biodiversity effects as strictly positive or negative. The medium option adds two 'mixed' categories (predominantly negative or predominantly positive) based on expert input, while the advanced option includes two additional levels of positive and negative categories.

[1] Target 18 (cbd.int)

A notable addition to our methodology is guidance on the compartmentalisation of large incentives and soliciting expert recommendations on reforming incentives to mitigate biodiversity harm, aiding policymakers in future adjustments. Currently, the 'Medium' assessment approach seems most appropriate for the ministry of Agriculture, Nature and Food quality as it provides a more extensive analysis than the quickscan without overwhelming complexity, with five experts involved. For other key ministries — Infrastructure and Water Management (I&W), Economic Affairs and Climate Policy (EZK), and Internal Affairs and Kingdom Relations (BZK)—a basic approach initially in 2024 can inform a collaborative national report by 2025, with the potential for more in-depth analysis thereafter.

Figure 1 - Summary of options for scoping, screening and assessment

<table>
<tr><th>OECD step</th><th>Options</th><th>Note</th></tr>
<tr><td>1. Scoping</td><td rowspan="2">Minimum
Only direct and indirect subsidies, including potential transfers (guarantees), market price support and EU subsidies

Most important sectors:
• Agriculture, Forestry & Fisheries
• Water & Infrastructure
• Energy & industry
• Construction & Housing
• Transport

Medium
Also include procurement

Also include related sectors:
• Tourism & recreation

Maximum
Also include regulation and not taxing externalities

Also include other sectors named by the EU EHS:
• Healthcare & social work
• Defence
• Arts, entertainment
• Education

Increasing time investment</td><td rowspan="2">Options can be added to each other gradually</td></tr>
<tr><td>2. Screening</td></tr>
<tr><td>4. Assessment</td><td>Basic
1 positive
1 negative
1 neutral

Medium
1 positive
1 negative
1 neutral
2 mixed

Advanced
2 positive
2 negative
1 neutral
2 mixed

Increasing complexity and data</td><td>One option should be chosen for the analysis</td></tr>
</table>

Samenvatting (NL)

Om verdere biodiversiteitsverlies te beperken, heeft Nederland, samen met andere OESO-landen, zich gecommitteerd aan het behalen van Doel 18 van het 'Kunming-Montreal Global Biodiversity Framework'. Dit vereist dat de Nederlandse regering subsidies die schadelijk zijn voor biodiversiteit identificeert tegen 2025 en deze subsidies uiterlijk in 2030 afschaft, afbouwt of hervormt, te beginnen met de meest schadelijke en tegelijk positieve stimulansen op te schalen. Financiële publieke stimuli, waaronder subsidies, belastingverlagingen en garanties, worden gedefinieerd in overeenstemming met WTO- en OESO-richtlijnen en worden in deze context aangeduid als biodiversiteitsschadelijke subsidies (BHS).

Dit rapport schetst een methodologie om aan de eerste fase van deze toezegging te voldoen door Nederlandse financiële publieke stimuli te identificeren die schadelijk en gunstig zijn voor biodiversiteit. De beoordeling omvat zowel nationale als mondiale biodiversiteitseffecten, waarbij zowel directe als indirecte effecten worden geëvalueerd, inclusief overweging van het gebied en de intensiteit van biodiversiteitseffecten waar van toepassing.

Onze voorgestelde methodologie bouwt voort op OESO-richtlijnen en leert van andere nationale beoordelingen (zoals die in Italië, Duitsland, Frankrijk en Zwitserland) en de quickscan uitgevoerd door RVO. Daarnaast sluit de beoordeling aan bij de concept-methodologie van de EU-Commissie voor Milieuschadelijke Subsidies (EHS). De OESO-richtlijn bestaat uit vier stappen: (1) *scoping* (bepalen welke soorten financiële publieke stimuli in aanmerking komen), (2) *screening* (in kaart brengen welke stimuli mogelijk invloed hebben op biodiversiteit), (3) *data collection* (gegevens verzamelen ter voorbereiding van stap 4 met behulp van een factsheet) en (4) *assessment* (analyseren van de impact van elke stimulus met behulp van academische literatuur).

Voor de afbakening en screening bieden we drie opties aan (minimum, medium en maximum), waarbij elk extra stimuli en sectoren omvat en dus toenemende tijd vereist (zie Figure 1) . De minimumoptie omvat de analyse van zowel directe (bijvoorbeeld geldoverdrachten) als indirecte stimuli (bijvoorbeeld belastingvrijstellingen) voor sectoren met een significant potentieel effect op biodiversiteit, waaronder landbouw, bosbouw en visserij, water en infrastructuur, energie en industrie, bouw en huisvesting en transport. Naast de onderdelen die worden geanalyseerd in de minimumoptie, breidt de mediumoptie de beoordeling uit naar inkoop en de toerisme- en recreatiesector. De maximumoptie breidt verder uit om meer complexe stimulansen te omvatten, zoals regelgevende maatregelen en impliciete stimuli (niet belasten van externe effecten) en alle sectoren die zijn vermeld in de EU-EHS-documenten analyseert, zoals gezondheidszorg en kunst. We raden aan te beginnen met de mediumoptie en de analyse mogelijk uit te breiden om de maximumoptie op een later tijdstip op te nemen.

Voor de gegevensverzamelingsstap stellen we een gezamenlijke inspanning voor tussen beleidsadviseurs, economen en ecologen om input te leveren voor de laatste beoordelingsstap. Voor de beoordelingsstap presenteren we ook drie opties (basis, medium en gevorderd), die elk variëren in het aantal benodigde experts en de diepgang van de analyse, zoals te zien in Figure 1. Voor deze stap wordt aanbevolen om één optie te selecteren, aangezien het toevoegen van extra diepgang aan de analyse of het betrekken van meer experts op een later tijdstip zou resulteren in dubbel werk. De basisoptie categoriseert biodiversiteitseffecten als strikt positief of negatief. De mediumoptie voegt twee

‘gemengde’ categorieën toe (overwegend negatief of overwegend positief), terwijl de gevorderde optie twee extra niveaus van positieve en negatieve categorieën omvat.

Een toevoeging aan onze methodologie is de onderverdeling van grote stimuli en het vragen van expertaanbevelingen over het hervormen van stimuli om biodiversiteitsschade te verminderen, wat beleidsmakers zal helpen bij toekomstige aanpassingen. Momenteel lijkt de 'medium'-benadering het meest geschikt voor het ministerie van Landbouw, Natuur en Voedselkwaliteit, omdat deze een uitgebreide analyse biedt dan de quickscan zonder overweldigende complexiteit, met vijf betrokken experts. Voor andere belangrijke ministeries - Infrastructuur en Waterstaat (I&W), Economische Zaken en Klimaat (EZK) en Binnenlandse Zaken en Koninkrijksrelaties (BZK) - kan een basis *assessment* in 2024 een nationaal rapport opleveren tegen 2025, met mogelijkheid voor meer diepgaande analyse daarna.

Figure 1 - Samenvatting van opties voor scoping, screening en assessment

<table>
<tr><th>OECD stap</th><th>Opties</th><th>Opmerking</th></tr>
<tr><td>1. Scoping

2. Screening</td><td>
<table>
<tr><th>Minimum</th><th>Medium</th><th>Maximum</th></tr>
<tr><td>Only direct and indirect subsidies, including potential transfers (guarantees), market price support and EU subsidies</td><td>Also include procurement</td><td>Also include regulation and not taxing externalities</td></tr>
<tr><td>Most important sectors:
• Agriculture, Forestry & Fisheries
• Water & Infrastructure
• Energy & industry
• Construction & Housing
• Transport</td><td>Also include related sectors:
• Tourism & recreation</td><td>Also include other sectors named by the EU EHS:
• Healthcare & social work
• Defence
• Arts, entertainment
• Education</td></tr>
<tr><td colspan="3">Increasing time investment</td></tr>
</table>
</td><td rowspan="2">Opties kunnen geleidelijk aan elkaar worden toegevoegd.

Voor de analyse dient één optie worden gekozen.</td></tr>
<tr><td>4. Assessment</td><td>
<table>
<tr><th>Basic</th><th>Medium</th><th>Advanced</th></tr>
<tr><td>1 positive
1 negative
1 neutral</td><td>1 positive
1 negative
1 neutral
2 mixed</td><td>2 positive
2 negative
1 neutral
2 mixed</td></tr>
<tr><td colspan="3">Increasing complexity and data</td></tr>
</table>
</td></tr>
</table>

List of abbreviations

Abbreviation	Full name
BHS	Biodiversity harmful subsidies
BZK	Internal affairs and Kingdom Relations (Dutch: ministerie van Binnenlandse Zaken en Koninkrijksrelaties)
BuZa	Ministry of Foreign Affairs (Dutch: Ministerie van Buitenlandse Zaken)
VBD	Convention on Biological Diversity
CBS	Dutch National Statistical Office
EHS	Environmentally Harmful Subsidies
EZK	Ministry of Economic Affairs and Climate Policy (Dutch: Ministerie van Economische Zaken en Klimaat)
IMF	International Monetary Fund
I&W	Ministry of Infrastructure and Water Management (Dutch: Ministerie van Infrastructuur en Water)
LNV	Ministry of Agriculture, Nature and Food Quality (Dutch: Ministerie van Landbouw, Natuur en Voedselkwaliteit)
MER	Milieu Effect Rapportage
MinFin	Ministry of Finance and Climate (Dutch: Ministerie van Financiën)
NBSAP	Dutch National Biodiversity Strategy & Action Plan
OECD/OESO	The Organisation for Economic Co-Operation and Development
RVO	National Institute for Dutch Entrepreneurs Rijksdienst voor Ondernemend Nederland
WWF	World Wide Fund for Nature
WTO	World Trade Organization

1 Introduction

1.1 Background

Global biodiversity levels are declining at an alarming rate. The 'Living Planet Report' by World Wide Fund for Nature (WWF) emphasises that global biodiversity loss is currently at its worst (WWF, 2022). In addition to international efforts, numerous businesses advocates for the reform of financial public incentives to safeguard biodiversity, see Textbox 1. The urgency to address biodiversity loss is further stressed by the emergence of several biodiversity-related documents such as the currently drafted 'Dutch National Biodiversity Strategy & Action Plan' (NBSAP)(Dutch National Committee of the IUCN, 2021) and the 'Agenda Natuurinclusief' (LNV et al., 2023). In an effort to bring further biodiversity loss to a halt, the Netherlands, together with other countries, has committed itself to reach Target 18 under the 'Kunming-Montreal Global Biodiversity Framework'[2]:

"Identify by 2025, and eliminate, phase out or reform incentives, including subsidies, harmful for biodiversity, in a proportionate, just, fair, effective and equitable way, while substantially and progressively reducing them by at least $500 billion per year by 2030, starting with the most harmful incentives, and scale up positive incentives for the conservation and sustainable use of biodiversity."

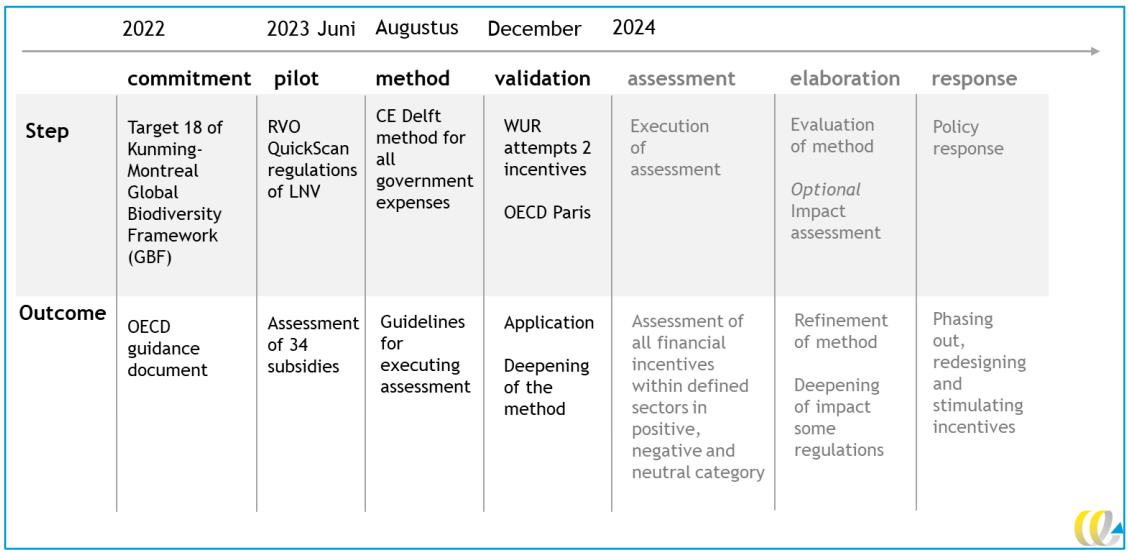
To assist countries to implement the above target, the Organisation for Economic Co-Operation and Development (OECD) has published a guidance document. Furthermore, at the European level, a guidance document for identifying environmentally harmful subsidies (EHS)[3] has been drafted and is currently updated (NB: this document is not officially published yet).

Following the OECD Guidelines, the Dutch Ministry of Agriculture, Nature and Food Quality (LNV) completed a first quickscan: 'Effecten van het LNV-instrumentarium op natuur en biodiversiteit', identifying harmful financial public incentives at its policy department (RVO, 2023). LNV asked CE Delft to extend this quickscan and to develop a methodology applicable to all financial public flows for assessing biodiversity damage. Figure 1 illustrates the envisioned timeline.

2 Target 18 (cbd.int)

3 Phasing out Environmentally Harmful Subsidies (europa.eu)

Figure 1 - Timeline of methodology development



Textbox 1 - Business advocate for reforming financial public incentives stressing the need for nature conservation: Business for Nature Coalition's policy recommendations

Business for Nature is a global coalition of more than 200 companies emphasising the urgent need to address nature loss in our economy. The coalition urges governments to adopt five key policy recommendations. Reforming subsidies and incentives is listed as number four within these recommendations:

1. **Adopt targets to reverse nature loss**: Set science-based targets to guide businesses in reversing nature loss by 2030, addressing issues like habitat loss and species decline.
2. **Align, Integrate, and Enforce Policies**: Ensure policy coherence among climate change, nature conservation, and social equality efforts. Integrate nature considerations into policies and regulations, encouraging investment and job creation.
3. **Value and Embed Nature in Decision Making**: Integrate the value of nature into decision-making processes, moving beyond short-term profit and GDP considerations. Develop frameworks to assess the impact on nature and incorporate these values into business decisions.
4. **Reform Subsidies and Incentives:** Shift subsidies away from practices that harm nature and redirect them toward sustainable, circular, and resilient approaches. Encourage innovative financial solutions like green financing and public funds to support nature-based solutions.
5. **Join Forces for Nature and Empower Everyone:** Encourage collaboration between public, private, and civil society sectors. Governments should empower society to collaborate for nature, integrating business commitments into national plans and promoting collaborative initiatives among stakeholders.

Source: www.businessfornature.org/news/business-for-natures-5-policy-recommendations

1.2 Goal and definition of methodology

The methodology to assess the impact of financial public incentives on biodiversity developed in this report is foremost policy-oriented and based on the OECD Guidelines, complemented with insights from the EU EHS-Guidelines.

The main research question of this report is:

1. How can the Dutch government identify and assess financial public incentives with a damaging and protecting effect on (global) biodiversity?

The following sub-questions are defined (similar to the OECD Guidelines):
2. What type(s) of financial public incentive should be included (scoping)?
3. Which financial public incentive should be analysed (screening)?
4. How should data be gathered (data gathering)?
5. How can the impact on biodiversity be determined, classified, and reported (assessing)?

The methodology should furthermore be:
- applicable to all Dutch Ministries;
- capable of evaluating both positive (protecting, improving) and negative (damaging) impact on biodiversity;
- suitable for incorporation into existing policy evaluation procedures;
- addressing both indirect and direct biodiversity impact (see Section 1.3);
- addressing biodiversity impact in the Netherlands as well as abroad;
- updated with newfound insights as more experience is gained executing the assignment.

Although this report may subtly suggest potential policy reforms, its focus remains on the identification of financial incentives with negative and positive biodiversity effects. The Dutch government could focus on gradually eliminating or reconfiguring detrimental financial public incentives whenever feasible, in line with its commitment to the aforementioned Target 18 on biodiversity. While it is recognised that certain economic and social factors might warrant the retention of certain harmful regulations, this document does not delve into trade-offs that come along with such policy reforms.

This methodology drew valuable insights from the feedback provided by policy advisors across multiple ministries, experiences in other countries, and the contributions of international researchers (particularly from Switzerland, Italy, Germany and France) and the National Institute for Dutch entrepreneurs, Rijksdienst voor Ondernemend Nederland (RVO). The development process involved regular working group meetings with the Dutch National Statistical Office (Centraal Bureau voor de Statistiek - CBS), Wageningen University Research (WUR), the Netherlands Environmental Assessment Agency: Planbureau voor de Leefomgeving (PBL) and Naturalis. Additionally, a workshop was conducted to discuss key issues in the methodology with the mentioned organizations, as well as OECD members (see Annex A for a complete list).

The authors would like to thank all those involved for their input. However, the content of this report remains the sole responsibility of CE Delft.

1.3 Structure of this report

This document presents the methodology for assessing the impact of financial public incentives on biodiversity. In Chapter 2, we establish the definitions of key concepts to provide a foundation for the subsequent chapters. Chapter 3 outlines the OECD Guidelines and their implementation in various countries, with specific focus on best practices applicable to the Dutch methodology. In Chapter 4 we propose specific steps of the methodology for use in the Netherlands, including key considerations. Relevant examples of incentives are provided to illustrate the guidelines for the reader and executing parties. In conclusion, Chapter 5 summarizes our primary findings and presents policy recommendations.

2 Financial public incentives and biodiversity explained

In this chapter we define financial public incentives and biodiversity, and map how the relationship between these two has been assessed in other reports. The aim is to clarify these concepts and provide insights on how the relationship between financial public incentives and biodiversity has been studied.

2.1 Financial public incentives

Financial public incentives are various forms of government regulations typically designated as 'subsidies'. In line with the definition of the WTO and OECD, we define financial public incentives as governmental policies resulting in a financial flow towards non-governmental organizations.

In determining the scope of the study, generally, a distinction can be made between direct, indirect and implicit financial public incentives:

- *Direct* incentives refer to on-budget incentives which include financial flows from public authorities that can directly be related to consumption/production (e.g., subsidies or grants).
- *Indirect* incentives refer to off-budget incentives which include financial flows that can indirectly be related to the consumption/production (e.g., tax exemptions).
- *Implicit* incentives refer to off-budget incentives which include unregulated financial flows, i.e. 'uncorrected market failures' or also denoted as external costs. Implicit incentives are hard to identify, as these are not immediately visible or clear-cut. These are often not taken into account given that it is a complex task to put a monetary value on such unregulated financial currents, and regarded widely a "policy principle that goes beyond subsidy policy" (OECD, 2022).

Given the wide array of financial flows, governments could select which ones to take into account or not when studying the impact on biodiversity. For some financial flows it holds that the total impact is difficult to determine, such as for implicit incentives. Researchers studying therefore typically have made a selection of which incentives (not) to take into account. For example, in the Netherlands, the Dutch government has evaluated Dutch fossil 'subsidies' - aligning with the definition of the WTO – and studies financial aid and tax concessions (i.e. tax exemptions and reduced tax tariffs for certain users).

Table 1illustrates how different types of financial public incentives have been taken into account in earlier studies.

Table 1 - Earlier studies and taking into account different types of financial public incentives when investigating the impact on biodiversity

Financial public incentive ('subsidy')	OECD (2005)	WTO	IMF (2013)
Financial aids Direct payments or grants; including low-interest or preferential loans provided. E.g. Grants and subsidies to fossil fuels; aids for structural change, subsidies for the modernisation of fishing vessels; aids for agriculture; support to airports; car fleet renewal schemes.	X	X	X
Tax exemptions and reductions Preferential tax treatments include tax reductions or tax exemptions. Examples are: reduced fuel excise duty for diesel used in agricultural machinery and fisheries; reduced energy taxes for industry, under-taxation of company cars; lower excise on diesel than on gasoline; tax deduction of commuting.	X	X	X
Provision of specific infrastructure Government provides goods or services other than general infrastructure e.g.; roads servicing a single mine or factory.	X	X	X
Guarantees Government covers liabilities or provides a guarantee on debts hence taking on the risk of default. This can be for example limited liability of companies for nuclear accidents or oil spills.	X	X	X
Exemptions from standards The government exempts certain subjects or groups from specific regulations/ standards like GHG emissions from landfills are not included in the EU Emission Trade System.	X	X	X
Market support Governments give certain businesses (advantageous) access to the market.	X	X	X
Incomplete internalisation Externalisations appear when the full costs of production of particular goods are not borne by producers are not covered or passed over to society at large.			X

Source: (Niebert, 2020).

2.2 Biodiversity

Defining Biodiversity

In this report, we adhere to the definition of biodiversity as described by the UN in 1993 (Article 2):

"The variability among living organisms from all sources, covering terrestrial, marine, and other aquatic ecosystems, along with their ecological complexes. This encompasses diversity within species, between species, and of ecosystems, addressing every form of life on Earth, including plants, animals, fungi, and micro-organisms. Biodiversity operates on three key levels: ecosystem diversity (variety of ecosystems), species diversity (variety of different species), and genetic diversity (variety of genes within species)."

Following from this definition, in investigating impacts on biodiversity, changes in characteristics of ecosystems and the subsequent ecosystem services are key. Disturbances to biodiversity can affect the functioning of ecosystems and the delivery of ecosystem

services (see Textbox 2). If ecosystem services decline, ultimately human well-being and welfare will be negatively affected (Ten Brink et al., 2014).

Textbox 2 - Defining ecosystems and ecosystem services

Ecosystems: The term ecosystem, defined by the UN in 1993 (Article 2), describes a dynamic complex of plant, animal, and micro-organism communities interacting with their non-living environment as a functional unit. Each ecosystem is marked by intricate relationships between living (biotic) and non-living (abiotic) components—resources, sunlight, air, water, minerals, and nutrients. The quantity (e.g., biomass, productivity), quality, and diversity of species (e.g., richness, rarity) are integral, with certain species or groups playing key roles, such as in pollination, grazing, predation, or nitrogen fixation.

Ecosystem Services: Ecosystem services, according to the Millennium Ecosystem Assessment (MA, 2005), refer to the benefits flowing from ecosystems. These encompass provisioning services (e.g., food, fibre, fuel, water), regulating services (e.g., climate regulation, pollination, disease control, waste management), cultural services (e.g., recreation, tourism, aesthetic, spiritual, and ethical values), and supporting services (e.g., soil formation, photosynthesis, nutrient cycling) crucial for sustaining other ecosystem services.

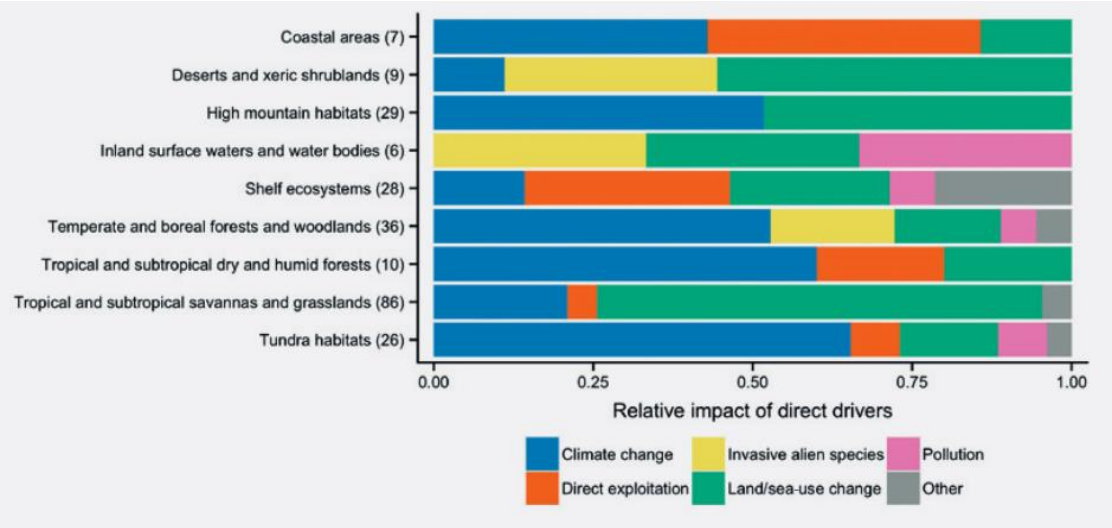
Five main drivers or threats to biodiversity

Biodiversity loss is typically studied using five main drivers or threats to biodiversity[4]. Variations may occur depending on the ecosystem studied, as visible in Figure 2.
The following order indicates the contribution to biodiversity loss at the global level, ranging from 1 (highest impact) to 5 (least impact) (IPBES, 2019):

1. **Land and sea use change (30% contribution):**
   The perturbation of natural habitats through processes such as land conversion for agriculture, urbanisation, infrastructure development, and related activities leads to habitat loss, fragmentation, and degradation.
2. **Direct exploitation (23% contribution):**
   Overharvesting of plants and animals for human consumption, trade, medicine, or other purposes can lead to the depletion of populations and, in extreme cases, extinction.
3. **Climate Change (14% contribution):**
   Global climate change, driven by human activities like the burning of fossil fuels, deforestation, and industrial processes, can alter temperature and precipitation patterns, affecting the distribution and behaviour of species and leading to habitat loss.
4. **Pollution (14% contribution):**
   Pollution from various sources, such as industrial discharges, agricultural runoff, and air pollution, can negatively impact biodiversity by contaminating ecosystems and causing harm to species within them.
5. **Invasive species (11% contribution):**
   The introduction of non-native species to new environments, either intentionally or accidentally, can disrupt ecosystems and outcompete or prey upon native species, leading to declines in biodiversity.

[4] The remaining 9% contribution to biodiversity loss can be attributed to other factors, including fire, human disturbance, recreational activities and tourism.

Figure 2 – Attribution of changes in different ecosystems (rows) to direct drivers of biodiversity loss (colour bars)



Source: (IPBES, 2019).

2.3 Linking financial public incentives and biodiversity loss

Studying the impact of financial public incentives on biodiversity draws the attention to various issues related to the nature of the relationship between these two. Generally, biodiversity can be impacted both directly and indirectly by financial public incentives. For instance, transportation subsidies and road infrastructure investments may damage ecosystems through habitat fragmentation by road expansion (direct impact) and by increased GHG emissions (indirect impact). Also, the impact on biodiversity can occur at different geographic scales (local, regional, national, and global) and over diverse time periods (immediate, gradual, and spanning many years) (OECD, 2022). The nature of the impact, the geographical scale and time period are important factors to take into account when assessing the impact of financial public incentives on biodiversity loss.

We highlight here the EU Commission's methodology to identify 'other environmentally harmful subsidies' (i.e. the EU EHS). EU member states will use this methodology to report regularly to the Commission, enabling the Commission to report on the level and type of these incentives, along with progress made in phasing these out. The methodology focuses on sixteen sectors of economic activities and evaluates the environmental effect of a financial public incentive using the EU Taxonomy framework. The EU Taxonomy framework is closely linked to the drivers of biodiversity loss, as depicted in Table 2.

Table 2 – The objectives and criteria of the EU Taxonomy framework, linking economic activities to biodiversity loss drivers

EU Taxonomy objective	Criteria	Drivers of biodiversity loss
Climate change mitigation	Activities must contribute to a significant reduction in greenhouse gas emissions compared to a baseline. Investments in renewable energy sources, such as wind, solar, hydropower, and geothermal, must meet certain criteria to be considered environmentally sustainable.	Climate change
Climate change adaptation	Activities that enhance resilience to the adverse impacts of climate change, such as infrastructure projects designed to withstand extreme weather events.	No direct link
Sustainable use and protection of water and marine resources	Activities that promote sustainable water use and protect water quality and investments that contribute to the protection and sustainable use of marine ecosystems, including measures to reduce marine pollution.	Sea use change Overexploitation of species
Transition to a circular economy	Activities that promote the efficient use of resources, including recycling, reusing, and reducing waste.	No direct link, indirect link by lowering effects on climate change and less pollution and land use by mining
Pollution prevention and control	Activities that reduce or eliminate pollution emissions, including air and water pollution	Pollution
Protection and restoration of biodiversity and ecosystems	Criteria for the protection of biodiversity may include measures to prevent habitat destruction.	Land use change Invasive species

3 OECD Guidelines: Applications and Experiences

In this chapter we describe the OECD Guidelines – a four step procedure – and share insights derived from its application in six countries: Finland, France, Germany, Italy, Norway, Switzerland[5] and the Netherlands (the quickscan version of LNV). Integrating these observations with suggestions provided during an expert workshop in Paris we establish the foundation for our proposed methodology in the next chapter.

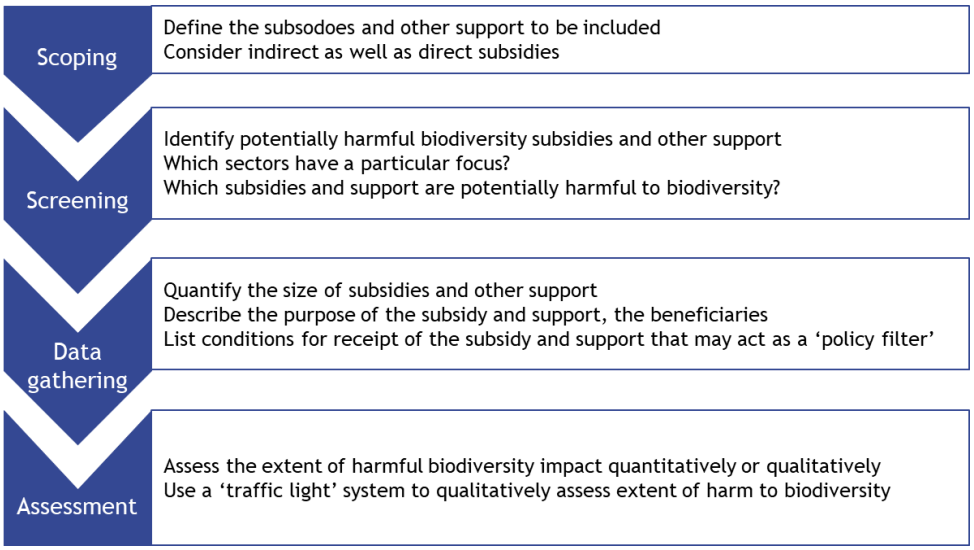
3.1 Introduction: Four steps to identify and assess incentives

The OECD recommends four steps to undertake a study assessing the impact of financial public incentives on biodiversity at the national level:

1. Scoping.
2. Screening.
3. Data gathering.
4. Assessing the extent of harm to biodiversity.

Performing these four steps enables the identification and structured assessment of financial policy incentives that are potentially harmful to biodiversity. Governments can then select which incentives can be prioritized for reform and proceed sequentially as needed. Figure 3 provides the overview of each step and the different sub-steps involved.

Figure 3 - OECD Guidelines to identify and assess financial incentives harmful to biodiversity



Source: (OECD, 2022).

[5] The analysis by the OECD was taken as a starting point for selecting these countries and respective studies. Other studies may also be relevant but are not included (due to an absence of a specific emphasis on biodiversity).

A summary of existing studies on biodiversity harmful subsidies (BHS) is given in Table 3. The scope, sectors, financial volume of BHS and the number of financial public incentives is provided. Note that all countries applied *qualitative research methods*.

Table 3 - Overview of countries that performed a study to identify and assess biodiversity harmful subsidies (BHS) in terms of the four-step OECD-procedure

Country	Scope of study[a]	Screening: Sectors covered	Data: BHS volume (Billion €/year)	Assessment: No. of incentives	Source
Finland	Tax subsidies Direct budgetary support Indirect support	Agriculture, transport, Reindeer Husbandry, energy, forestry	Not applicable	19	(Ympäristöministeriö, 2015)
France	Direct subsidies Tax expenditures	All expenditures in the public budget	10,8	Entire green budget	(French Government, 2021)
Germany	Direct subsidies Indirect subsidies Implicit subsidies[b] (excl. internalisation of external costs)	Energy, transport, construction and housing, agriculture and forestry, fisheries	65	41	(Umweltbundesamt, 2021)
	Direct subsidies Indirect subsidies	Resource, agriculture, forestry and fishing, traffic, construction and housing, tourism, energy	67[c]	29	(FÖS Marktwirtschaft, 2021)
Italy	Direct subsidies Indirect subsidies	Agriculture, energy, transport, other, reduced VAT	36	72	(MATTM, 2019)
Norway	Budget items that include direct transfers	All government schemes	Not applicable	16[d]	(Magnussen, 2020)
Switzerland	Direct benefits Foregone revenue (tax deductions) Non-internalised, external costs	Transport, agriculture, forestry, energy production and consumption, settlement development, tourism, wastewater disposal and flood protection	40	162	(Gubler et al., 2020)

Authors compilation derived and adapted from (OECD, 2022).

[a] Germany, France and Italy also include agricultural European Union subsidies in their analysis.

[b] Implicit subsidies are in this study taking into account include sureties and guarantees, targeted advantages within government regulation or the provision or procurement of goods, services and rights by the government at prices that are not in line with market prices.

[c] This includes subsidies that do not have a direct impact on biodiversity as the study was not able to determine the total value of the biodiversity-damaging share of all the subsidies studied.

[d] 16 schemes were assessed but the study found that only a few of the schemes have significant, direct negative effects on biodiversity.

3.2 Step 1: Scoping of financial public incentives

The first step regards defining the scope of the study, resulting in the decision as on whether or not to include a financial public incentive. A wider definition of financial public incentives is preferred over a more narrow one, increasing the probability of encountering incentives that potentially have a larger adverse impact on biodiversity compared to a narrower definition.

In Section 1.3, various types of financial public incentives were outlined. Most countries encompass direct and indirect subsidies, various tax regulations, and European financial public incentives for EU member states. Public procurement and regulations are often excluded, with ongoing discussions about incorporating implicit incentives (external costs). Switzerland, however, includes non-internalised external costs in its assessment, identifying fifteen such implicit incentives harmful to biodiversity. Among these, four are classified as having a high negative impact on biodiversity, although their financial scale is not quantified. While acknowledging the complexity, it is noteworthy that the EU study indicates that despite the challenges, the cumulative impact of these incentives can be substantial (OECD, 2022). Consequently, considering the significance, it might be advisable to address externalities in a later stage of the assessment, as discussed in Chapter 4.

3.3 Step 2: Screening to identify financial public incentives potentially harmful for biodiversity

The second step concerns making a list of financial public incentives that are potentially harmful for biodiversity. A financial incentive is potentially harmful for biodiversity if the incentive 'increases production or providing services that has a specific negative impact on biodiversity'.[6] The OECD argues that "the net should be cast wide to include all those sectors and activities likely to have an adverse effect on biodiversity" (OECD, 2022).

In drafting the list, financial incentives in sectors known for their potentially impact on biodiversity can already be listed and are based on the assessments by other countries (see Table 3). These sectors as stipulated by the OECD are listed below:

- agriculture;
- construction and housing;
- energy;
- fisheries;
- forestry;
- infrastructure;
- transport;
- water.

These sectors have overlap with the high risk sectors named in the 'Taskforce on Nature-related Financial Disclosures' (TFND)[7].

The relationship between possible incentives within these sectors and biodiversity loss is detailed in Table 4.

[6] We will take in to account financial public incentives with a positive impact on biodiversity as well, see Chapter 3.

[7] Annex I of Guidance_for_Financial_Institutions_v1.pdf (tnfd.global). Top10_biodiversity-impact_ranking.pdf (financeforbiodiversity.org)

Table 4 – Examples of different sectors and their channels for biodiversity harm and impact

Sector	Examples of channels for biodiversity harm	Examples of biodiversity impact
Agriculture	Incentives leading to overuse of fertilizer and inefficient application leading to fertilizer leaching and loss to the atmosphere	Air pollution, climate change, acidification and eutrophication of terrestrial, aquatic and coastal ecosystems resulting in direct damage to biological diversity and pollution of the groundwater, surface water and seas
Construction and housing	Incentives for the construction of new homes or the development of new areas for industry leading to urban sprawl	Habitat fragmentation, ecosystem degradation, climate change
Energy	Incentives leading to the increased use of fossil fuels	Climate change, pollution
Fisheries	Incentives leading to overcapacity, increased fishing effort, illegal, unreported and unregulated fishing	Overfishing and depletion of stocks, marine habitat destruction
Forestry	Incentives leading to enhanced forestry capacity and increased consumption	Habitat destruction and ecosystem degradation
Infrastructure	Incentives leading to road construction, bridges, etc.	Habitat fragmentation, ecosystem degradation, climate change
Transport	Incentives leading to increased traffic-induced emissions	Climate change, air pollution and land take
Water	Incentives leading to overuse water or use of inappropriate technologies	Depletion of water sources Salinization and water-flow problems

Source: Adapted from (OECD, 2022).

This step requires a thorough review of all budget documents (in the Netherlands: the 'Miljoenennota'). According to OECD, this review should be combined with expert discussions from relevant ministries and agencies as well as NGOs or expert institutions. That way, the underlying policy framework underpinning these incentives can be integrally understood as well as other incentives affecting the level of activity. Tax collecting agencies may also publish a list of tax expenditures that can be used to support the list.

In drafting this list, already an initial, qualitative discussion can be started about "the nature of the causal relationship between the level of activity in a sector and its putative effect on biodiversity" (OECD, 2022). As recommended by the OECD, several countries utilize the 'Driver-Pressure-State-Impact-Responses' (DPSIR) framework to establish this link (see Textbox 3 for an explanation). In both the French and Swiss studies, the starting point for the screening process was the definition of the current state of biodiversity. Subsequently, pressures that could potentially influence this state were selected. Finally the analysis included only the financial incentives that affected these pressures (Gubler & Ismael, 2023).

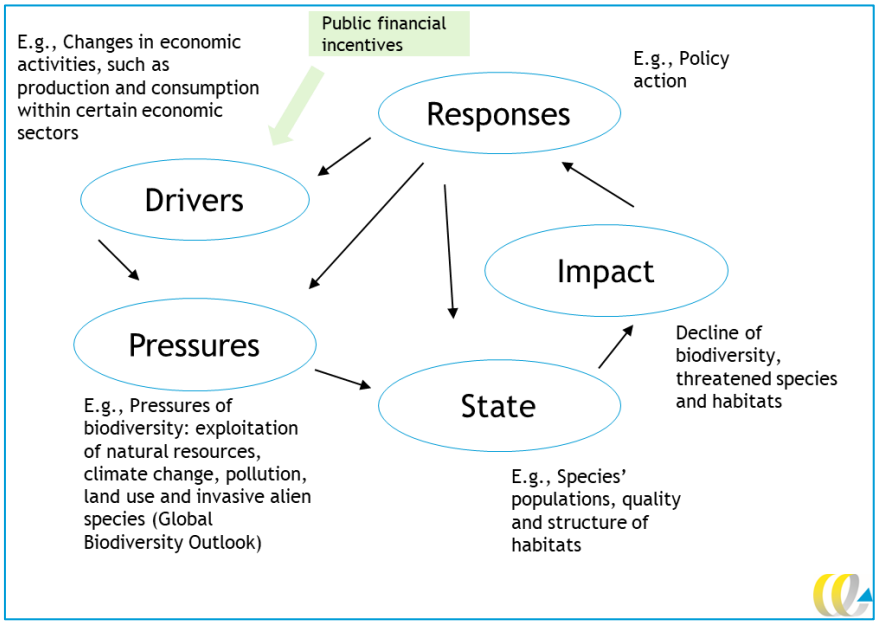
Textbox 3 – Driver-Pressure-State-Impact-Response (DPSIR framework)

The Driver-Pressure-State-Impact-Responses (DPSIR) framework was developed by the European Environment Agency (EEA) in 1999. It was built upon the Pressure-State-Responses (PSR) framework presented by the Organisation for Economic Cooperation and Development (OECD) in 1993. The framework is a structured approach for monitoring and guiding environmental policies across different countries.

The DPSIR outlines a series of causal links. 'Driving forces' (economic sectors, human activities) leading to 'pressures' (land and sea use change, pollution, species overexploitation, climate change, invasive species), 'states' (physical, chemical, and biological conditions), and 'impacts' on ecosystems, human health, and functions. These elements eventually lead to political 'responses' (prioritization, target setting, indicators).

Below is outlined how the DPSIR framework may be utilised in the context of biodiversity harmful subsidies:

- **Drivers (D):** Identify the social, economic, and policy drivers that lead to subsidies contributing to biodiversity loss. This could include activities such as agriculture, fishing, or resource extraction that receive financial support from the government.
- **Pressures (P):** Identify the subsidies provided by the government that create pressure on biodiversity. These could include subsidies promoting deforestation, overfishing, or the use of harmful pesticides, among others.
- **State (S):** Assess the current state of biodiversity, including the health and diversity of ecosystems, endangered species, and other relevant indicators. This step involves understanding the baseline condition of biodiversity in the absence of harmful subsidies.
- **Impact (I):** Analyse the impacts of harmful subsidies on biodiversity. This involves understanding how subsidies negatively affect ecosystems, species, and overall biodiversity health. This step quantifies the consequences of subsidies on the environment.
- **Response (R):** Evaluate the existing policies, regulations, and responses in place to counteract the negative impacts of harmful subsidies. Determine whether there are policies to mitigate the damage or if corrective actions are needed.



3.4 Step 3: Data gathering to measure impact

The third step regards gathering data on the financial public incentives allowing for an integrative assessment of the impact of financial public incentives on biodiversity. Particularly, data is needed on the following issues:

- description of the purpose, beneficiaries and conditions of allocating the financial public incentive;
- size or amount of the financial public incentive.

To support the data collection and presentation, using fact sheets is suggested. A format for a potential fact sheet has been provided by the OECD (see Figure 4), presenting an integrative overview of each financial public incentive.

Filling in the fact sheet involves gathering data from various sources, including budget documents (in the Netherlands: 'Miljoenennota') and input from the relevant policy makers. Tax collecting agencies may also publish a list of tax expenditures that can support this list. The evaluation of the biodiversity impact (positive or negative) is carried out in the subsequent assessment in Step 4, drawing on insights from academic literature and an expert group.

It is important to distinguish between the intended purpose, beneficiaries, and conditions outlined in the incentive's description and the outcomes observed in practise.
Some incentives may be designed with the aim of benefiting a specific group or positively contributing to biodiversity. However, in practise, the recipients of the financial public incentives may not align with those contributing positively to biodiversity. For larger subsidies, a deeper understanding of the recipients enhances the accuracy of the analysis.

Figure 4 - Format of fact sheet to organise the data on potential harmful financial public incentives

Heading	Description
Existing subsidy or support more broadly	Name of the subsidy and support analysed
Responsible stakeholder/organisation/agency	Stakeholders/organisation and agency involved or related to the subsidy and support
Sector	Relevant sector(s)
Drivers	Describe the motivations explaining the introduction and continuation of the subsidy and support
Direct or indirect	Is it a direct or indirect subsidy or support?
Financial value	Financial value of the subsidy or support
Description – intended objective and beneficiaries	Describe the main objectives of the subsidy/support, the intended beneficiaries, and criteria for eligibility
Benefits (social, environmental, economic)	Describe the different benefits that the subsidy/support has and will have on social, environmental and economic aspects Example: Agriculture subsidy to support rural employment
Biodiversity benefits	Are there ways that the subsidy benefits biodiversity?
Biodiversity-harmful impacts	What harmful impacts on biodiversity can be expected or are known? (see Step 4 of these guidelines)
Relevant legislation	Describe the main laws and regulations creating the subsidy or support
Links to related studies including cost-benefit studies, economic evaluations etc.	Describe different sources of analysis related to the subsidy or support (e.g., any economic justification)

Source: (OECD, 2022).

In the Italian assessment, additional details are used such as the introduction year, end year (if any), tax rate (if any) and qualification of the financial public incentive. The fact sheet's final section includes a motivation segment where economic environmental researchers justify the reasoning behind identifying a financial public incentive as harmful.

An important feature to note is that a single subsidy may encompass multiple sub-categories (e.g., reduced VAT on fertilizers for general use and those beneficial for biological control). These sub-categories are denoted as ‘a’ and ‘b’ in the fact sheet and the biodiversity effects are evaluated separately.

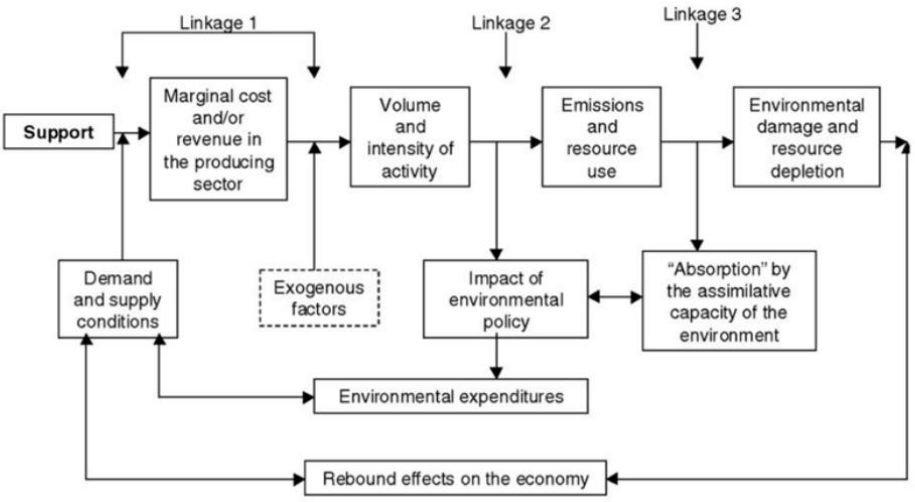
3.5 Step 4: Assessing the extent of harm to biodiversity

The fourth step regards the assessment of the extent of harm to biodiversity related to the financial public incentive. This step requires the involvement of experts on biodiversity relying on academic literature (conservation management, ecology, biology, climate science).

The OECD has developed a three-linkage model to assess the environmental impacts of support measures, which can also be applied to biodiversity. These are visible in Figure 5, and regard the following:

1. The extent to which the financial incentive increases economic output.
2. How the increase in economic output affects emissions and resource use.
3. The assimilative capacity of nature/biodiversity.

Figure 5 - Three linkages are forwarded when determining the effect of a financial public incentive on biodiversity. Note that the figure takes into account ‘environment’ as well as biodiversity



Source: (OECD, 2022).

National studies using tools developed by the OECD to study these three linkages highlight the complexity and interlinked nature of environmental impacts from financial public incentives. Establishing a direct causal connection between a financial public incentive and environmental damage, particularly on biodiversity, is challenging due to the following uncertainties:

- data quality may vary;
- establishing a direct causal relation between an incentive and biodiversity loss can be difficult;

- the impact can be highly influenced by other factors: its design, existence of flanking policies (and policy filters), and environmental context (these factors may become visible on factsheets as well);
- the impact can be indirect more than direct.

The OECD mentions that while quantitative estimates of adverse impacts are usually difficult due to uncertainties, a qualitative assessment, often using a 'traffic light' system, is a more common and feasible approach.

Examples: Systemic approaches at the different national levels

Studies performed at the national level have used different systemic approaches to determine the extent or intensity of the relationship. Table 5 provides an overview of the number and type of categories different countries use for determining the extent or intensity of the relationship between financial public incentives and biodiversity.
The impact can be categorised as positive (+ to +++), negative (- to ---) or neutral (0).

As visible from this table, Switzerland and Germany employ three levels of negative impact (low, medium and high), while France employs three types of positive biodiversity impact and only one level of negative impact. Italy and Norway assign a single impact score for each category. The German and Swiss studies have incorporated a set of indicators to assess the intensity of biodiversity harm in more detail, including the intensity, duration and area effect of biodiversity damage. On one hand, the inclusion of multiple levels of biodiversity impact makes the analyses more specific. On the other hand this increases the need for semi-quantitative indicators and more in depth analyses.

Table 5 - Overview of scales used in national studies when assessing the degree or intensity of biodiversity effects of potentially harmful incentives

Biodiversity effect / Country	Positive			Neutral	Negative			Further specification and interpretation of categories
	+++	++	+	0	---	- -	-	
Finland		X		X		X		Negative and positive effects are presented on a horizontal axis so some degree of fluidity possible.
France	X	X	X	X		X		(+1) indicates favourable but controversial: meaning short term favourable effects but presence of a long term technology lock-in risk. (+2) indicates favourable: no explicit environmental target, but indirect positive impacts. (+3) indicates very favourable: environmentally targeted expenses.
Germany[a]				X	X	X	X	Negative biodiversity effects are presented as high, medium and low depending on intensity, duration and area effect of the damage.
Germany[b]				X		X		Focus of the report is on significant negative biodiversity effects.
Italy		X		X		X		Focus of the report is on significant negative and positive biodiversity effects.
Norway		X		X		X		No subsidies are classified to have only a damaging effect.

Biodiversity effect Country	Positive			Neutral	Negative			Further specification and interpretation of categories
	+++	++	+	0	---	- -	-	
Switzerland				X	X	X	X	Negative biodiversity effects are presented as high, medium and low depending on intensity, duration and area effect of the damage.
The Netherlands (quick scan LNV)		X	X	X		X		Negative biodiversity effects are classified as potentially harmful while positive effects are classified as adding a positive effect to nature (+++) or reducing negative pressure on nature. (+).

[a] (FÖS Marktwirtschaft, 2021).

[b] (Umweltbundesamt, 2021).

3.6 Assessing biodiversity: Summary of choices other countries

The main takeaways for each step of the OECD procedure following from the experiences of the aforementioned six countries are summarised here. The suggestions provided in the expert workshop in Paris are also considered here. For the detailed responses from the countries that have already conducted an analysis and were present at the expert workshop, please refer to Annex A.

1. **Scoping:**
   - All countries cover at least direct and indirect financial public incentives (mainly tax reductions).
   - French, German and Italian studies include European agriculture subsidies (CAP);
   - Debate whether to include externalities persists. These have only been included in the Swiss analysis[8].
   - Suggestion to consider implicit incentives (non-internalised external costs) in a second phase.
2. **Screening:**
   - All countries examine agriculture, energy and transport. Italy, France and Norway include all government expenditures.
3. **Data collection:**
   - Most countries start with official government documents for screening.
   - Lists are expanded with input from policy officers and biodiversity experts in some cases.
   - Suggestion to compartmentalise large incentives based on users.
4. **Assessing damage to biodiversity:**
   - Different negative/positive scales used in all studies.
   - Qualitative or semi-quantitative assessment executed by an expert group relying on academic literature.
   - Semi-quantitative indicators (intensity, impact area, fragility) can provide more insights and multiple damage levels.
   - Certain financial public incentives exhibit mixed outcomes, like being positive for climate change while posing a risk for deforestation. In the Italian assessment these were included as ‘uncertain’.

[8] The EU EHS guidance document advices not to include taxing external costs, while the International Monetary Fund (IMF) does recommend including these.

3.7 Assessing biodiversity: Lessons learned from the first Dutch pilot

The initial 'quickscan' performed by RVO for LNV resulted in a first list of potential biodiversity-harmful financial public incentives.
Although the quickscan can be considered a good starting point for identifying harmful financial public incentives, it exhibits certain limitations, as identified during an interview with RVO:

- it offers a limited description of the causal relationships between financial public incentives and their impact on biodiversity;
- the definition of subsidy damage as 'potential' allows too much room for interpretation;
- mixed financial public incentives are not addressed, i.e. the idea of 'compartmentalisation' should be included;
- a single incentive can be classified into multiple categories simultaneously;
- the justification for classifying incentives into certain categories could be more precise.

Despite these limitations, this first exercise with the OECD method in the Netherlands has significantly enhanced the understanding of the complexities associated with performing such assessments.

4 Biodiversity impact of Dutch financial public incentives: a methodology

In this chapter we propose guidelines to identify and assess the impact of Dutch financial public incentives on biodiversity. We mainly follow OECD Guidelines and integrating insights from the earlier Dutch pilot study (the quickscan), EU EHS Guidelines, already performed studies abroad, and comments from an expert meeting on an earlier version.

Carrying out the first two steps as suggested in the OECD Guidelines – scoping (S*tep 1*) and screening (S*tep 2*) - vary in time investment depending on the number of sectors and incentives investigated. We therefore propose three options: minimum, medium and maximum. The minimum scenario contains the least but most important number of incentives and sectors to investigate while the maximum scenario includes all sectors of the economy as defined by EU EHS. The minimum option can be carried out first and the medium and maximum options can be executed in a later stage (see Figure 6).

The assessment (S*tep 4*) also consist of different options given that complexity and data requirement may vary. We suggest to choose between one of the following three options: basic, medium and advanced. These three options increase in the number of categories on the scale and the number of experts required. In order to provide more in-depth information about incentives the data requirement also increases and better monitoring information at project level may be required (e.g., RVO data on subsidy allocation).

Figure 6 - Three options to perform Step 1 and 2: scoping and screening of financial public incentives

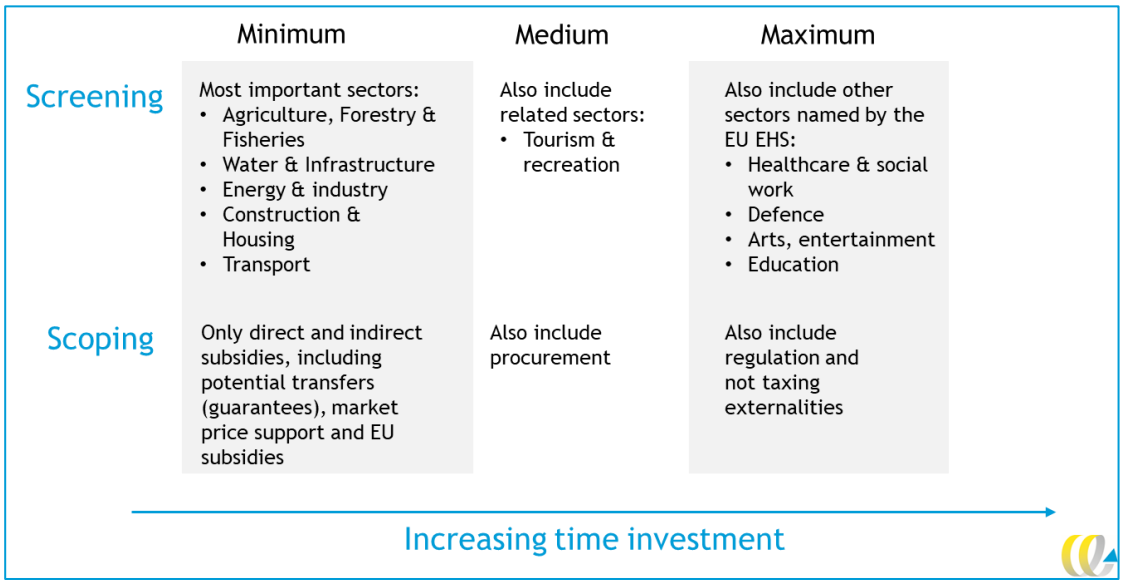
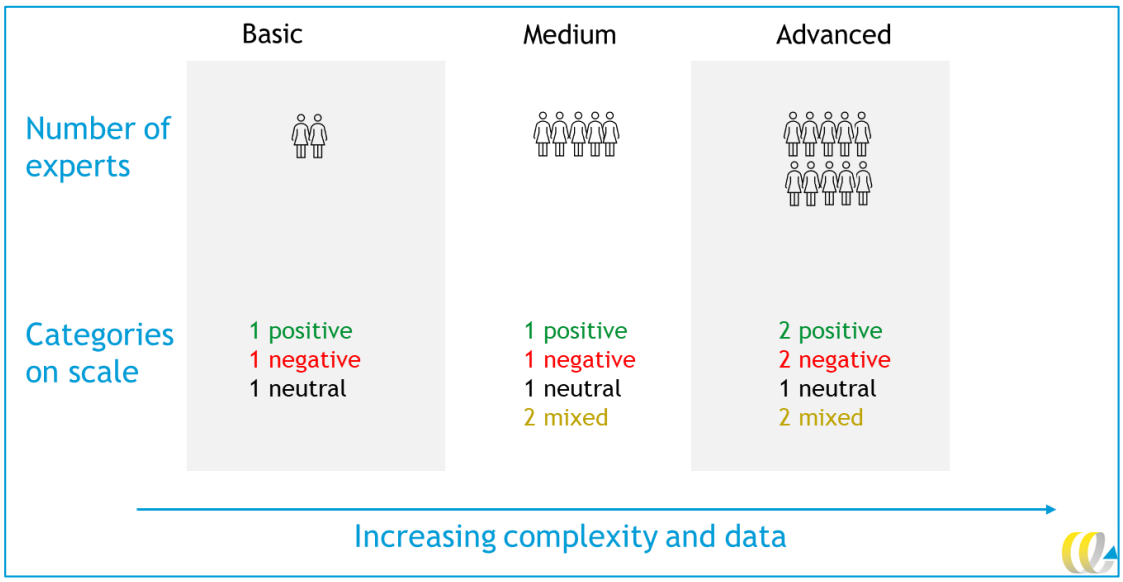


Figure 7 - Three options for performing Step 4: Assessing the impact of financial public incentives on biodiversity



4.1 Step 1: Scoping

The first step regards *scoping*: defining which financial public incentives will or will not be included in the assessment.

In Section 2.1 we provided an overview of the definition of financial public incentives. We define financial public incentives in a similar line as how subsidies were defined in the OECD and in the EU EHS Guidelines: a policy measure connected to a financial incentive that "confers an advantage on consumers or producers, in order to supplement their income or lower their costs" ((OECD, 2022) (European Emission Expert Group, 2023)). We follow the idea that a wider definition will be better able to cover all financial public incentives that may impact the biodiversity (OECD, 2022).

As particularities for the scoping process, we furthermore propose to:

- Take as a starting point all *financial* public incentives implying that regulation and implicit public incentives (not taxing of externalities) are not taken into account. These are more complex, but can be investigated at a later stage (applying the same logic).
- Focus on looking at *financial streams* rather than taking certain pre-defined incentives as starting point. Taking financial streams first will overcome the risk of not considering certain incentives because the focus had been narrowed down to studying only pre-defined measures such as 'subsidies' (and debates regarding the definition of measures will be avoided).
- Compartmentalise 'mixed' financial public incentives. These include big incentives that consist of multiple users (e.g. the Dutch incentive 'SDE' which includes wind, solar as well as bioenergy). Different activities or modules of mixed financial public incentives should be evaluated separately.

In the scoping of the assessment, a prioritisation can take place in terms of which financial public incentives are to be assessed first (in line with the three options presented in Figure 6):

a Direct incentives (e.g., financial aid, guarantees).
b Indirect incentives (e.g., tax reductions, market price support).
c European incentives.
d Procurement.
e Implicit incentives (e.g., no taxation of external costs).
f Regulatory measures.

Textbox 4 - Why should the Dutch government include procurement, regulation and implicit incentives in the later stages of the assessment?

Not all national assessments include procurement, regulatory measures and implicit incentives due to their complexity. We elaborate below on why we recommend including these economic incentives in either the medium or advanced approach.

Procurement
In 2015, both the Dutch government and local governments committed to make all public procurement sustainable. The goal was that this € 80 billion of governmental spending would cause no substantial harm to the environment and biodiversity. However, the complexity of this issue has resulted in the establishment of environmental regulations for only a portion of the procurement processes. While there has been notable improvement, achieving sustainability across all procurement remains a distant objective. Given the magnitude of governmental commitments and the significant financial resources involved, we advocate for the inclusion of procurement in both the medium and advanced approaches.

Regulation
Certain regulations, such as the biofuels obligation for petrol and diesel, exert a significant influence on the economy while simultaneously having an effect on biodiversity. These effects could also have been achieved through the implementation of subsidies; for example, bio electricity receives support through subsidies, while biofuels are subject to obligations. It is therefore advisable to integrate certain large regulatory schemes into the advanced approach, particularly those in which the objectives could have been alternatively pursued through subsidies.

Implicit incentives
There may be various reasons for the existence of implicit incentives: unawareness of the (implications of) external costs, or the idea that other parties will take responsibility (the 'market' will solve it). As long as implicit incentives are invisible, the detection of these incentives is difficult. However, despite the complexities that may come across in identifying and later monetizing these implicit incentives, we plead for the inclusion in advanced approaches as the importance of these may be rather extensive. In the Swiss study estimates are given for these, an example being the external costs due to material pollution of water bodies (Gubler et al., 2020).

4.2 Step 2: Screening

The second step concerns creating a list of financial public incentives that are potentially harmful for biodiversity. Note that in this step, the size of the effect on biodiversity is *not* assessed yet (this will be done in Step 4, see Section 4.4).

We recommend screening for financial public incentives in the following sectors (in Dutch the Ministry):
- Agriculture, Forestry & Fisheries (LNV);
- Water & Infrastructure (I&W);
- Energy & Industry (EZK);
- Construction & Housing (BZK);
- Transport (I&W).

In the Netherlands, this list means that the relevant ministries have to be involved: Ministry for Agriculture and Nature (LNV: Agriculture, Fisheries, Forestry), Internal affairs and Kingdom Relations (BZK: Construction and Housing), Economic Affairs and Climate (EZK: Energy and Industry) and Infrastructure and Water Management (I&W: Infrastructure and Transport, Water).

Additionally, we propose setting a minimum threshold for financial public measures to ensure the analysis remains manageable. This threshold may vary between ministries due to differences in the average size of financial incentives. Collaboration with the Dutch National Statistical Office (CBS) can help determine these thresholds.

For LNV, CBS conducted a parallel analysis focusing on instruments above € 3 million. This threshold captured 89% of the national financial flows (€ 1.9 billion out of € 2.1 billion total) and involved 55 direct national financial flows. Among these 55 financial flows, the purposes of some could not be identified due to insufficient data, and the funds were received by intermediary governmental agencies such as 'State Forestry Management' (Dutch: Staatsbosbeheer). An additional analysis step is required to determine the purpose of these financial flows. In addition to the 55 direct national flows, CBS identified fifteen European subsidies totalling € 894 million.

This initial list can serve as a starting point for the screening process and can be supplemented with other relevant incentives that are not direct subsidies. Refer to Textbox 5 for an example related to LNV.

Textbox 5 - Example: Performing the Scoping and Screening step for the Dutch Ministry for Agriculture and Nature (LNV)

The Dutch Ministry for Agriculture, Nature and Food Quality wants to start the process of studying the impact of financial public incentives on biodiversity in 2024. They can build on the insights derived from the earlier quickscan and an analysis by the Dutch National Statistical Office (CBS).

For the scoping and screening we advise:
- use all yearly expenditures of more than € 3 million (selected by CBS) to draft an initial list of incentives to be included (55 posts plus 15 European posts);
- compare this list with the quickscan list and add missing financial incentives (34 posts);
- compartmentalise incentives that have different activities;
- add tax reductions using the LNV budget and the Dutch governmental budget overview ('Miljoenennota')- Discuss the possibility of including procurement (not very large for LNV).

We expect that this will result in a list of 50 to 70 financial incentives.

4.3 Step 3: Data gathering

We recommend data collection according to a fact sheet structured in four modules (and similar to the Italian assessment):

I General information.
II Incentive information.
III Biodiversity information.
IV Reform information.

For the first two modules (I and II), we propose engaging environmental economists which can utilise publicly available data and collaborate with relevant policymakers for a thorough data compilation. An important feature of module II is the compartmentalisation of financial incentives. We suggest to compartmentalise an incentive when its sub-components correspond to distinct activities with different effects on biodiversity, essentially forming components of a broader incentive. In such cases, we suggest obtaining spending data from RVO, detailing the allocation of funds across various categories of larger incentives.
For instance, concerning the SDE++ (the Dutch subsidy for renewable energy including both wind energy, solar energy and bioenergy), this entails acquiring data on the distribution of funds among different techniques.

The biodiversity assessment in part III aligns with Step 4 (Section 3.4) and is undertaken by members of the expert group, consisting of independent environmental experts. Part IV is initially addressed by the expert group, capturing preliminary insights, while a more comprehensive evaluation can be carried out together with policy experts in a subsequent policy review.

Please note that such data collection is especially valuable for *existing* financial public incentives[9] (see Section 3.6.2. for suggestions on *new* financial policy incentives).

Table 6 – Fact sheet

I	
Indicator	**Description**
Incentive name	Name
Code name	XX
EU Co-financing	Yes/no
Introduction year	What year did the incentive get introduced
End year (if any)	What year will the incentive end?
II	
Description	Description of the financial incentive; if relevant split up in sub categories; If available, link to existing policy evaluation or impact assessment
Intended goals (economic, social, environmental)	Describe the main objectives of the financial public incentive, the intended beneficiaries, the criteria for eligibility
Type of incentive	Direct or indirect incentive
Level of reform	National, European or Global
Baseline scenario/counterfactual	Explanation of the chosen baseline scenario, what would happen *without* the incentive.

[9] For existing incentives, integrate biodiversity impact assessments into mandatory policy evaluations performed every 4–7 years. This involves adding biodiversity to the existing criteria for both current and new incentives, focusing on unintended side-effects. Ensure that biodiversity is systematically considered during the evaluation process.

Rate	Ordinary/Normal	Reduced
VAT Rate (if relevant)	%	%
Level of reform	National , European or Global	
Financial size		
III		
Biodiversity score	Positive (+), Negative (-), Mixed (+/-), Neutral (0) or unknown	
Drivers of biodiversity loss	Which of the five drivers of biodiversity loss are increased and/or decreased	
Motivation	Justification of the biodiversity score and (optional) the level of confidence	
IV		
Reform (optional)	(optional) suggestions for reform of incentive; consider the OECD checklist[10] (is there a policy filter; availability of better alternatives; conditionality)	

4.4 Step 4: Assessing

The fourth step involves evaluating the magnitude of the positive or negative biodiversity impact of the financial public incentive. Throughout the course of writing this document, discussions have arisen regarding whether the assessment of biodiversity effects should undergo quantitative or qualitative analysis. While quantitative analysis can guide policy prioritization by indicating environmental damage severity (as discussed in Section 3.5), it faces numerous challenges with establishing a direct causal connection between a subsidy and environmental damage. Despite existing quantification tools (also used in the finance sector, as outlined in Annex C), the primary obstacle lies in the limited availability of data at the government level. A qualitative analysis is recommended, conducted by an expert group providing relevant academic literature on the drivers of biodiversity loss.

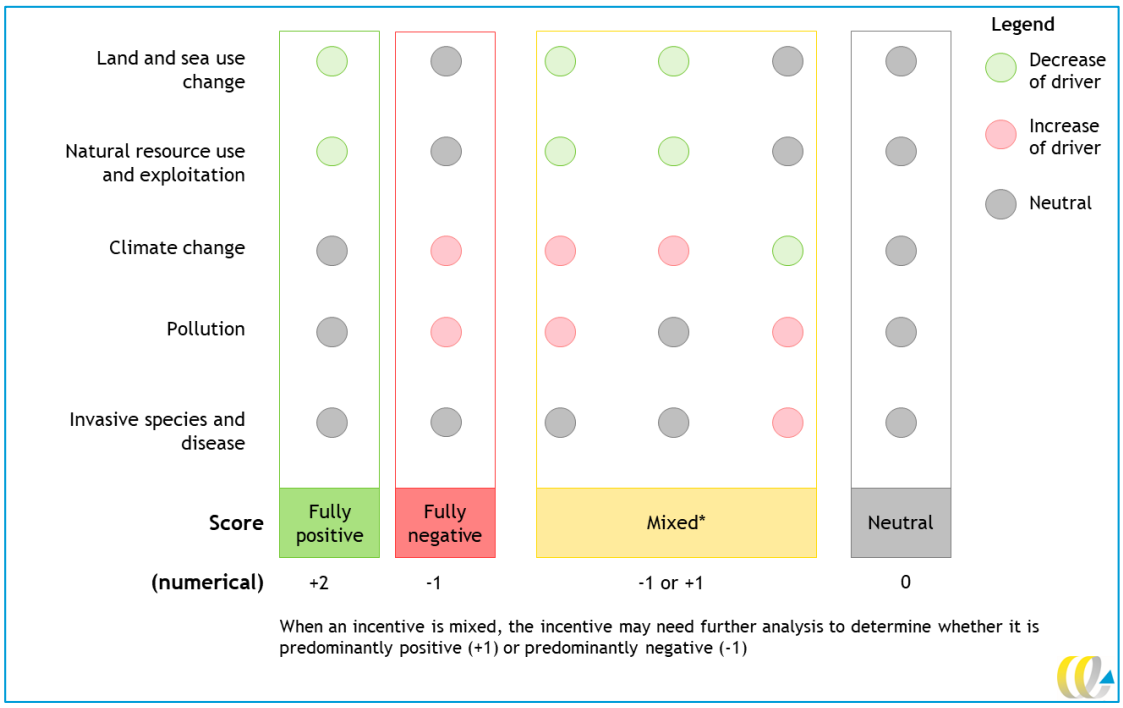
4.4.1 Performing the Assessment: Scale and scoring

Different scales can be used for categorising biodiversity effects. Using multiple levels can help prioritisation with redesigning and/or abolishing financial public incentives, but requires more thorough analysis. Employing only one level for negative and positive effects may be too simplified for regulations that have multiple effects. Therefore, we propose incorporating the following scores: fully positive, fully negative, mixed (predominantly positive and predominantly negative) and neutral (illustrated in Figure 8).

The assignment of a specific score to an incentive is determined by the biodiversity loss drivers. Figure 8 outlines various combinations and their corresponding scores. If one or more drivers experience a decrease, the score is deemed fully positive. Conversely, if one or more drivers increase, the score is designated as fully negative. In cases where some drivers increase while others decrease, the score is categorized as mixed. If the drivers neither increase or decrease, the score is deemed neutral. The next paragraphs provide more detail on how to perform this assessment.

10 35219812.pdf (oecd.org)

Figure 8 - Schematic overview of the possible combinations of assessment leading to different scores



4.4.2 Determining causal link between (increasing or decreasing) drivers and incentive

The expert group assesses per incentive (or compartmentalised incentive) whether a significant[11] causal link exists between the economic activity and the drivers of biodiversity loss, primarily based on scientific evidence. Scientific evidence and/or advisory boards contribute information to support the motivation behind a score, considering factors such as:

- Fragility: Examining whether the incentive impacts vulnerable habitats or species. This includes land of high biodiversity value and land that serves as habitat of endangered species (flora and fauna) listed on the European Red list[12] or the IUCN Red List[13].
- Area: Evaluating the extent to which the incentive affects a large geographical area.
- Intensity: Assessing whether the incentive leads to irreversible biodiversity damage.
- If possible, subdividing the effects in the following compartments on biodiversity:
  - impact on very high-risk species and habitats;
  - impact on vulnerable species and habitats;
  - impacts on specific compartments of biodiversity (e.g., birds, soil, plants, etc.).

[11] A standardized definition for what constitutes a significant effect is currently absent. In this context, we consider an effect as significant when it deviates from zero.

[12] IUCN, the IUCN European Red List of Threatened Species: Europe | IUCN

[13] IUCN, the IUCN Red List of Threatened Species: IUCN Red List of Threatened Species

Furthermore, when carrying out this assessment it is important to include:

- **Supply chain effects:** This involves evaluating not only the immediate effects within the Netherlands but also those extending beyond borders, encompassing both upstream and downstream effects.[14]
- **Baseline:** Generally, the baseline scenario for determining the financial magnitude of an incentive is noted in part II of the factsheet. This same baseline is employed to assess biodiversity damage, typically defined as the scenario in the absence of the incentive. An exception is made for EU financial public incentives, where a marginal approach is adopted due to their substantial size. This entails defining the scenario as '1 million euros less' of that financial public incentive.
- **Short term and long term effects:** It is important to consider both short and long term impacts when assessing incentives. In some cases the short term increase in drivers of biodiversity loss may contribute to the long term decrease in drivers of biodiversity loss. An example is the exploitation of critical resources for the material supply for windmills.
- **Direct and indirect effects:** Both direct and indirect effects caused by incentives have to be included in the analyses. An example of an indirect effect could be the analyses of a subsidy for renewable energy which both makes the energy mix greener but also reduces the average cost of energy. This lower price will lead to an extra use of energy (price effect) and decrease the emission reduction. Another example are subsidies for roads which will not only lead to emission for building the road but will also result into extra emissions by traffic.

To initiate this assessment, it is beneficial to refer to the high-risk activities identified by the Taskforce on Nature-related Financial Disclosures (TNFD), categorised by their Industry Classification Benchmark (ICB) code (Annex I of Guidance_for_Financial_Institutions_v1.pdf (tnfd.global)), and adhere to the criteria for "do no significant harm" outlined in the Annex of the DNSH Technical Guidance (Annex A-D of taxonomy-regulation-delegated-act-2021-2800-annex-1_en.pdf (europa.eu)).

4.4.3 Incentives with a mixed score

Further assessment is required for incentives that exhibit a dual impact, reducing certain biodiversity loss drivers while simultaneously increasing others. It is essential to recognise that not all biodiversity loss drivers carry equal contribution to biodiversity loss. Therefore, if an incentive results in a reduction of two biodiversity loss drivers and an increase in one, its overall impact cannot be deemed predominantly positive without considering the contextual factors surrounding the incentive. As depicted in Figure 2 in Chapter 1, the contribution of biodiversity loss drivers to overall biodiversity loss varies based on the ecosystem under examination.

The joint report by the on biodiversity and climate change (IPCC & IPBES, 2021) highlights instances where actions aimed at mitigating climate change may inadvertently conflict with biodiversity conservation. Examples of activities that address climate change but potentially impede biodiversity include bioenergy and biofuels, hydropower, and afforestation.

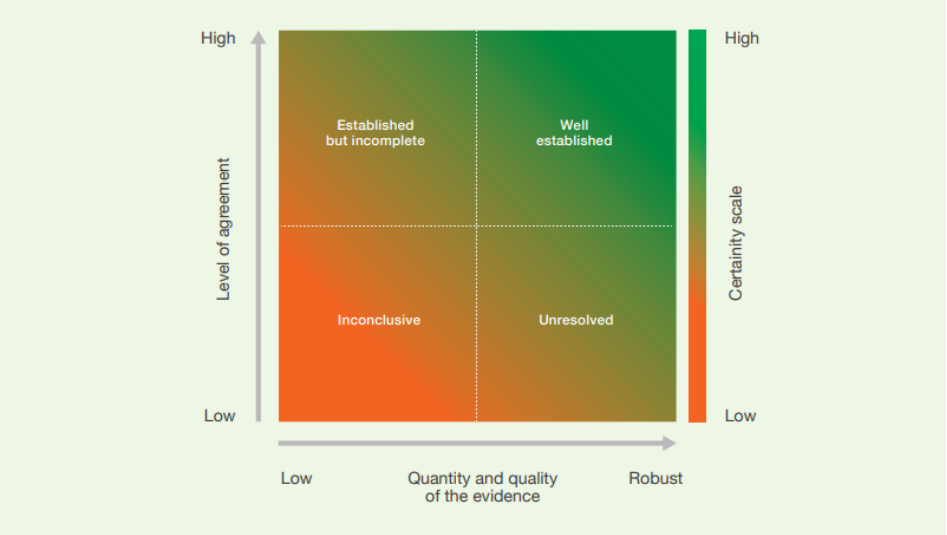
[14] For instance, the interview with LNV discussed incentives related to fishing activities, highlighting the need to consider not only the potential effect of fishing in Dutch waters but also those in waters of adjacent countries, such as the UK, Denmark or Germany.

4.4.4 Including communication of confidence

The standard practice in IPBES assessments involves the expert group communicating the confidence levels of their findings. This is essential due to the complex nature of knowledge and scientific data concerning the natural world and the influence of human activities. Employing this method for conveying confidence levels can also be used in the current assessment. In IPBES assessments, a four-box model of confidence is utilized (see Figure 9), based on evidence and agreements that give four main confidence terms:

1. **'Well Established' (much evidence and high agreement):** Indicates a robust foundation, supported by comprehensive meta-analysis, syntheses, or multiple independent studies in agreement.
2. **'Unresolved' (much evidence but low agreement):** Signifies a situation where multiple independent studies exist, yet their conclusions do not align, leading to low agreement among experts.
3. **'Established but Incomplete' (limited evidence but good agreement):** Reflects a general consensus, even with limited evidence and a lack of a comprehensive synthesis, or imprecise addressing of the question in existing studies.
4. **'Inconclusive' (limited or no evidence and little agreement):** Suggests a finding based on suggestion or speculation, with either limited evidence or a complete absence of it, and minimal agreement among experts.

Figure 9 - Four-box model of confidence



Confidence increases towards the top-right corner as suggested by the increasing strength of shading. 'Well-established' can be further subdivided into 'very well established' and 'virtually certain'.
Source: (IPBES, 2018).

4.4.5 Examples

In Table 7, we present the proposed assessment scale along with examples of financial public incentives corresponding to different biodiversity scores. It is important to understand that these examples are meant for illustration purposes only. The precise biodiversity scores will need to be determined based on relevant policy information, academic literature and the consensus reached by the independent expert group.

Table 7 - Proposed scale for categorising biodiversity effects of financial public incentives (examples for illustration, not for definitive place in this table)

Scale	2	1	0	-1	-2
Explanation	Fully positive	Predominantly positive few negative effects	Neutral	Predominantly damaging with few positive effects	Fully damaging
Examples	Agricultural nature and landscape management (ANLb) Subsidy energy savings households (ISDE)[e]	Market launch energy innovations greenhouse horticulture (MEI) Subsidies for windmills (SDE++)[a] Low leasing tax for electric cars (bijtelling)[b] Subsidies for innovations (RVO)[c]	Subsidy free school lunch	Subsidies for credits for small business (BMKB)[f] Subsidies for growing companies (Groeifaciliteit)[ff] Mortgage interest tax deduction (hypotheekrente aftrek)[d]	Example of Swiss study is the reduced VAT on animal products Subsidy for advertisements for meat No VAT and no kerosine tax for air traffic[h] Many fossil subsidies[i]

a Lowering the CO_2 emissions per kWhe but some biodiversity issue with migratory birds.

b Reducing the emissions of a car per km compared to a petrol car but stimulating the use of cars because of the low costs per km in leasing systems.

c Many innovations focussing on sustainability but not all.

d A stimulus for the building sector with land use and emissions but also low energy use in new buildings.

e Most support is for isolation with a substantial energy saving and Climate reduction effect. Some negative effects for material use but LCA studies show that these are in general neglectable or much lower than the positive effect. For isolation of walls a check on bats is necessary.

f Businesses can grow faster which will stimulate economic growth and environmental effects connected to that. Some small businesses are the 'environmental business' or use the money to become more sustainable.

g Production of animal products are a main source of biodiversity loss. Caused by both land use, carbon emissions and other emissions.

h No taxation of air traffic is seen as a fossil subsidy which stimulates the demand for air traffic and rises emissions (both climate and others).

I Most posts on the list of Dutch fossil subsidies (€ 46 billion per year) recently published by the Dutch government will be in this category because of the stimulation of GHG emissions and other emissions by this 'fossil subsidies'.

4.5 Other considerations: expert judgement, policy evaluation and suggestions for reform

We briefly discuss other aspects that may become important when carrying out the assessment. This involves: expert judgment (Section 4.5.1), policy evaluation (Section 4.5.2) and suggestions for reform (Section 4.5.3).

4.5.1 Expert judgement based on scientific data

From the expert workshop and working sessions we conclude that the following aspects are important when composing an expert group:

- **Independence:** Biodiversity experts engaged in the assessment process should be drawn from non-governmental organisations (NGOs) or research institutes, fostering a diverse panel with a minimum of two and a maximum of ten experts per incentive.
- **Variety of expertise**: Biodiversity experts should be categorized based on their areas of expertise, such as land or marine ecosystems and evaluate incentives fitting this categorisation.
- **Exclusion of commercial stakeholders**: Initially, it is advisable not to involve stakeholders from commercial entities in the assessment process. However, their input can be sought after the session with biodiversity experts, before the findings are made public.
- **Include reliability (confidence)**: It is advisable to include a reliability assessment (as presented in Section 4.4.4).

The format of the expert group could, in fact, be similar to that of the Dutch MER commission (Dutch: Commissie voor de Milieueffectrapportage), for which an ecological authority is already established (see Home - Ecologische Autoriteit). The MER commission comprises five experts with diverse independent backgrounds. The ecological authority is responsible for both the selection of experts and the supervision of their expert judgments. In the future, this commission could also be invited to play a role in the biodiversity assessment of existing and/or new policies.

4.5.2 Policy evaluation

Performing an assessment on the potential of biodiversity damage can be done concomitantly with the performance of the obligatory policy evaluations of financial public incentives as was suggested earlier. These evaluations are performed every 4–7 years.

The impact of a measure on biodiversity could be included in the list of evaluative criteria taken into account, i.e. taken up into the regular obligatory policy evaluations as a standard criteria set by the Dutch government.

This will imply the following with the *existing* evaluations:

1. Biodiversity impact should be added to the list of evaluation criteria (may be combined also with climate effects) even if the policy has no biodiversity, nature or climate goal.
2. These periodical evaluations will also need to involve an additional expert group on biodiversity as suggested in this report compared to when such an assessment on biodiversity is not performed (i.e. ex post evaluation). This group should consist of researchers in the relevant field, and be independent and reliable. Its size should be determined also on budgets available. The group will use the general information on the financial public incentive, and focuses on the impact of the financial flow on biodiversity.
3. Such an additional assessment will also require more budget for performing the policy evaluations. Estimations of such an biodiversity evaluation are estimated a 20% on top of the regular costs for an evaluation.

For *new* financial public incentives this implies:

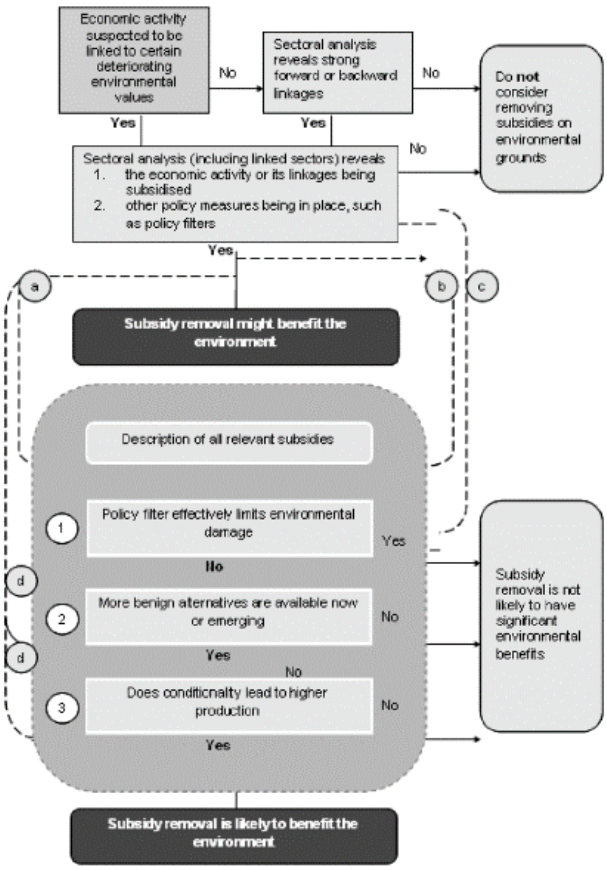
1. Biodiversity impact should be evaluated *before* the financial public incentive will start (and if the impact is conservable negative, the incentive could be revised).
2. This will imply that an expert group on the impact of biodiversity will already need to be involved at the moment of drafting the desired financial incentive (i.e. ex ante impact assessment). A similar procedure as suggest in this report can be followed (regarding, e.g., the composition and research methods employed).
3. After performing the assessments for the four key ministries in the Netherlands an instruction for developing new policy with a check on biodiversity effects could be developed based on the experience from these assessments.

4.5.3 (Optional) Reform

This step is optional but may provide useful insights for policy reform. After categorising the incentives into a score experts may provide insights into possible mitigating measures and conditions. Incentives that are placed in the fully positive and predominantly positive category may require a set of minimum conditions for the positive effect to occur.
For incentives that are placed in the fully negative and predominantly negative category there may exist mitigating measures capable of alleviating the negative biodiversity effect.

To facilitate this step experts can make use of the OECD checklist for policy reform (see Figure 9 for more information).

Figure 10 - Flow chart of the OECD checklist



Source: (OECD, 2005).

5 Conclusions

In this report, we propose a methodology for assessing the impact of financial public incentives on biodiversity based on the OECD-methodology and studies performed so far (including the EU EHS). The methodology consist of four main steps: Scoping, Screening, Data Gathering and Assessment. To inform the particularities of the different steps as proposed by the OECD-methodology, we carried out various interviews with Dutch ministries and tested our preliminary findings with an expert group including OECD members in Paris.

Performing each step of the methodology raised questions mostly on the extent or depth of the analyses. Notably the range of financial public incentives (e.g., direct, indirect, implicit that each have their own categories), as well as the number of sectors (e.g., include tourism or not) and the overall depth of the assessment (e.g., denote the impact as +, - or also include ++ and --). The width and depth of applying the methodology will however also depend on the budget and time available at each governmental department.

Based on our discussions we suggest that direct and indirect subsidies as well as public procurement are included in the scope, and that the analysis for the most important sectors starts in 2024. The expert group should use a positive, negative, neutral and mixed scale providing evidence for their scores based on scientific evidence.

Issues that remain open so far are stakeholder involvement, allocating budget and future policy evaluations. Further, it is advisable that other Dutch ministries also start with a Basic approach (similar to the earlier LNV quickscan) identifying the potentially harmful subsidies.

5.1 Recommendations

- We recommend that LNV undertake an assessment of all approximately 70 incentives, both at the national and European levels, compartmentalising them where required, with a medium approach.
- Ideally, the other three key ministries (I&W, EZK and BZK who deal with infrastructure, energy and industry and housing) should also conduct assessments using the medium approach. However, if time constraints are significant, a basic approach would be the next viable option.
- Following the completion of assessments by the four key ministries, it is advisable to standardise the reporting format for consistency. It would be insightful to aggregate both positive and negative expenses and monitor their trends over the years.
- Subsequent to several rounds of assessments using these methodologies, it is imperative to refine the approach based on accrued experiences.
- Furthermore, after multiple assessments, an instructional guide could be developed for policymakers to mitigate potential biodiversity impacts stemming from new policies.

6 References

Bundesamt für Naturschutz. (2019). *Abbau naturschädigender Subventionen und Kompensationszahlungen auf stoffliche Belastungen.*

FÖS Marktwirtschaft. (2021). *Environmentally Harmful Subsidies in Germany: Focus on Biodiversity. Forum Ökologisch-Soziale.*

OECD. (2022). *Identifying and assessing subsidies and other incentives harmful to biodiversity.*

Bundesamt für Naturschutz. (2019). *Abbau naturschädigender Subventionen und Kompensationszahlungen auf stoffliche Belastungen.*

Dutch National Committee of the IUCN. (2021). *The Dutch Action Agenda for Biodiversity: pledges by non-state actors to the 2030 CBD targets.*

European Emission Expert Group. (2023). *Guidance document for reporting of non-energy Environmentally Harmful Subsidies (EHS)*

FÖS Marktwirtschaft. (2021). *Environmentally Harmful Subsidies in Germany: Focus on Biodiversity.* F. Ökologisch-Soziale.

French Government. (2021). *Rapport sur l'impact environmental du budget de l'État.*

Gubler, L., & Ismael, S. (2023). *Interview on the biodiversity harmful subsidy methodology in Switzerland* [Interview].

Gubler, L., Ismail, S., & Seidl, A. (2020). *Biodiversitätsschädigende Subventionen in der Schweiz.*

IPBES. (2018). *IPBES Guide on the production of asessments.*

IPBES. (2019). *Global assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services.*

IPCC, & IPBES. (2021). *Scientific outcome of the IPBES-IPCC co-sponsored workshop on biodiversity and climate change.*

LNV, IPO, Natuurmonumenten, Staatsbosbeheer, & Landschappen NL. (2023). *Agenda Natuurinclusief 2.0.*

Magnussen, K. e. a. (2020). *KARTLEGGING AV STØTTEORDNINGER MED NEGATIVE KONSEKVENSER FOR NATURMANGFOLD.*

MATTM. (2019). *Catalogo dei Sussidi Ambientalmente Favorevoli e dei Sussidi Ambientalmente Dannosi 2018.*

Niebert, K. (2020). *Environmentally Harmful Subsidies: From subsidising the past to shaping the future.*

OECD. (2005). *Environmentally Harmful Subsidies: Challenges for Reform.*

OECD. (2022). *Identifying and assessing subsidies and other incentives harmful to biodiversity.*

RVO. (2023). *Quickscan efecten van het LNV instrumentarium op natuur en biodiversiteit.*

Ten Brink, P., Lehmann, M., Kretschmer, B., Newman, S., & Mazza, L. (2014). Environmentally harmful subsidies and biodiversity. In *Paying the Polluter - Environmentally Harmful Subsidies and their Reform*. Edward Elgar Publishing.

Umweltbundesamt. (2021). *Environmentally Harmful Subsidies in Germany*

WWF. (2022). *Living Planet Report 2022.*

Ympäristöministeriö. (2015). *Luonnon monimuotoisuudelle haitalliset tuet.*

A Expert workshop

The authors would like to thank all those involved for their input. However, the content of this report remains the sole responsibility of CE Delft.

A.1 Notes on the expert workshop

Rough notes

Workshop on the Assessment of Biodiversity Impacts of Budgetary Subsidies and Other Financial Flows by Governments

Organized by: *Government of the Netherlands*
Date: *7 December 2023, 09:30 am to 18:30 pm*
Location: *Atelier Néerlandais, 121 Rue de Lille, 75007 Paris*

Speakers:

• Jasper Dalhuisen	*Permanent Representation of the Netherlands to the OECD*
• Maaike Moolhuijsen	*The Netherlands Ministry of Agriculture, Nature and Food Quality*
• Frank Laurent	*European Commission, DG Environment (ENV)*
• Katia Karousakis	*Organisation for Economic Co-operation and Development (OECD)*
• Geert Bergsma	*CE Delft, the Netherlands*
• Nikki Odenhoven	*CE Delft, the Netherlands*
• Nico Polman	*Wageningen University & Research, the Netherlands*
• Aldo Ravazzi Douvan	*Italian Ministry of Environment and Energy Security*
• Kai Schlegelmilch	*Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection Germany*
• *PM (France)*	

Chair for the day:

• Caroline van Leenders	The Netherlands Ministry of Agriculture, Nature and Food Quality

Participants:

• Eveline Nales (OECD)	Organisation for Economic Co-operation and Development
• Jussi Lankosi (OECD)	Organisation for Economic Co-operation and Development
• Will Symes (OECD)	Organisation for Economic Co-operation and Development
• Hugo Valin (OECD)	Organisation for Economic Co-operation and Development

- Maëlie Roger — French Ministry of Agriculture and Food, French delegation to the OECD
- Harry Beeson — Australian Department of Foreign Affairs and Trade, Australian delegation to the OECD
- Andrea De Simone — Permanent Delegation of Italy to the International Organizations
- Marijn Boll — Permanent Representation of the Netherlands to the OECD
- Lisa van den Boogaard — Permanent Representation of the Netherlands to the EU
- Martijn Weijtens — Agricultural Counsellor at the Embassy of the Netherlands in Paris, France
- Alexander Verkerk — Netherlands Ministry of Agriculture, Nature and Food Quality
- Lieke Brackel — Netherlands Ministry of Agriculture, Nature and Food Quality
- Marleen Zanen — Netherlands Enterprise Agency (RVO)
- Sjoerd Schenau — Statistics Netherlands (CBS)
- Koos Biesmeijer — Naturalis Biodiversity Center
- Herman Vollebergh — Netherlands Environmental Assessment Agency (PBL)
- Graciela Luteijn — Netherlands Environmental Assessment Agency (PBL)

Goal:
Discussing the choices in assessing biodiversity impacts of governmental financial flows. The focus will be on assessment methodologies in practice.

Starting point for the workshop is the report by Alan Matthews and Katia Karousakis (2022) 'Identifying and assessing subsidies and other incentives harmful to biodiversity: A comparative review of existing national-level assessments and insights for good practice', OECD Environment Working Papers, No. 206, OECD Publishing, Paris, https://doi.org/10.1787/3e9118d3-en.

The major intent is to achieve/contribute to the ambition target 18 of the Global Biodiversity Framework. For that The Netherlands would like
- to learn from national-level assessments by different countries for the Dutch draft method,
- to learn how the Dutch draft assessment method aligns with the approach of the expert group 'environmental harmful subsidies and polluter pays principle' of the European Commission.

Program:

Time	Topic	Speaker(s)
09.30 *(5 min)*	1. Welcome by the Permanent Representation of the Netherlands to the OECD.	Jasper Dalhuisen – *Permanent Representation of the Netherlands to the OECD*
09.35 *(10 min)*	2. The Netherlands: Ambition target 18 of the Global Biodiversity Framework	Maaike Moolhuijsen – *The Netherlands Ministry of Agriculture, Nature and Food Quality*

9.45 *(20 min) (10 min)*	3. European Commission: Ambition target 18 of the Global Biodiversity Framework - Questions	Frank Laurent – *European Commission, DG ENV*
10.15 *(20 min) (10 min)*	4. Comparative analysis on national-level assessments - Questions	Katia Karousakis – *Organisation for Economic Co-operation and Development (OECD*)
10.45 *(30 min)*	5. Issues in assessing biodiversity impacts of governmental policies: • The process of scoping, screening and assessing in the Dutch concept methodology. • Presentation of the most pressing issues and practical questions.	Geert Bergsma and Nikki Odenhoven – *CE Delft, the Netherlands*
11.15 *(15 min)*	*Short break*	
11.30 *(20 min) (10 min)*	6. Reflection of a practice with the Dutch approach - Questions	Nico Polman – *Wageningen University & Research, the Netherlands*
12.00 *(20 min)*	7. Experiences from Italy on choices made in their national level assessment process – and their reflections on the Dutch most pressing issues.	Aldo Ravazzi Douvan – *The Italian Ministry of Environment and Energy Security*
12.20 *(20 min)*	Reactions and discussion	
12.40 *(60 min)*	*Lunch*	
13.40 *(5 min)*	8. Short reflection on the pre-lunch discussion. Setting goals for the afternoon.	Caroline van Leenders – *The Netherlands Ministry of Agriculture, Nature and Food Quality*
13.45 *(20 min)*	9. Experiences from Germany on choices made in their national level assessment process – and their reflections on the Dutch most pressing issues.	Kai Schlegelmilch – *The German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection*
14.05 *(10 min)*	Clarifying questions	
14.15 *(20 min)*	10. Experiences from France on choices made in their national level assessment	*PM*

	process – and their reflections on the Dutch most pressing issues.	
14.35 *(10 min)*	Clarifying questions	
14.45 *(15 min)*	*Short break*	
15:00 *(90min)*	11. Break-out sessions in two groups to delve deeper into the key questions: **Scoping** - What is meant by 'significant'? - Which financial incentives should be included? Direct subsidies, indirect subsidies, tax cuts, European subsidies, no taxation of externalities, procurement, Regulation? - Which sectors to include? Agriculture, Energy industry, Housing and transport, or more? **Measuring and Scaling** - What is the scale for categorizing the results in different national assessments? With regard to scale, for example, should one use "Positive/neutral/negative" or "2-3 types negative + 2-3 types positive"? - What is the rationale behind this choice? And what is the experience? - How to deal with large incentives schemes with different measures in it: compartmentalize? **Governance** - How to assess biodiversity impacts: through expert judgement (how is that organized), use of data, literature? - How to guarantee an independent assessment with the right experts?	Group 1 Geert Bergsma and Nikki Odenhoven – *CE Delft, the Netherlands* Group 2 Nico Polman – *Wageningen University & Research, the Netherlands*
16.30 *(30 min)*	12. Conclusions and Closing Remarks	
17.00 *(60 min)*	Reception drinks	
18.00	End time	

Welcome by the Permanent Representation of the Netherlands to the OECD
Jasper Dalhuisen – *Permanent Representation of the Netherlands to the OECD*

The Netherlands: Ambition target 18 of the Global Biodiversity Framework
Maaike Moolhuijsen – *The Netherlands Ministry of Agriculture, Nature and Food Quality*

- NL seeks to assess the impact of public (domestic) financial flows and incentives on biodiversity. In the context of harmful incentives, GBF Target 18 has two goals: identify possible harmful incentives by 2025, and reform or eliminate them by 2030. Next to this T18 has the goal of scaling up biodiversity-positive incentives. Our minister for nature and nitrogen policy is committed to study our own financial flows and incentives and requests other ministries to follow. Start point that the NL Enterprise Agency conducted a quickscan based on the OECD (2022) report. The results were that 12 out of 34 subsidies contain elements that are possibly harmful to biodiversity. This analysis took 14 months.
- It took time to get the quickscan done. It took 3 months of discussions to get the whole ministry on board. The draft results resulted in more discussions and again it took 3 months before continuing. It's a sensitive topic. Eventually the quickscan was sent to Parliament, and it reached front pages of big newspaper, but no response from Parliament.
- Now we intend to conduct an actual fully fledged national-level assessment based on financial flows and incentives for 2022 of our ministry. The Netherlands Central Bureau for Statistics (CBS) identifies relevant financial flows and CE Delft is developing a methodology.
- Goal of the workshop is to learn from Germany, Italy and France, that have conducted similar national-level assessments, and to seek feedback from the workshop participants. Issues are on scoping, measuring and governance. So that we can hopefully finalise the methodology in line with the OECD method and future requirements of the European Commission.
- Focus is on biodiversity, but we aim to bring together the work on fossil fuels and environmentally harmful subsidies more broadly.
- Another major intent of the NL-initiative and workshop is how to achieve/contribute to the ambition target 18 of the Global Biodiversity Framework. To this end, all measures implemented should be communicated actively and used to stimulate other Member States to take similar measures since the competitiveness argument is now less relevant. Such an approach could trigger/reinforce such processes also in other member-states (MS).

European Commission: Ambition target 18 of the Global Biodiversity Framework
Frank Laurent – *European Commission, DG Environment (ENV)*

- Works in the unit for strategy, digitalization, better regulation and economic analysis. There is an interest from all corners of the Commission. Knowledge within Eurostat, ECFIN, Environment, etc, are brought together.
- While DG Energy (ENER) works on energy subsidies, DG ENV works on non-energy subsidies. Both work streams will be aligned for a complete overview of environmentally harmful subsidies (EHS).
- 8th Environment Action Programme article 3h says strengthening environmentally positive incentives as well as phasing out EHS, in particular fossil fuels, at Union, national, regional and local level, without delay. Point iii) asks to develop a method in consultation with other MS to identify other EHS and MS report on it regularly and plans to reform them.
- CBD COP15 GBF Target 18 mentions subsidies, which we interpret as all environmentally harmful energy subsidies as well as other EHS. The Nature Restoration Law article 12 also has an obligation. In national restoration plans need to give an indication of EHS.

- Two workstreams:
    a. Energy subsidies: Every 2 years report on energy subsidies in the EU. Last one in 2023, which also looks at environmental impacts, with focus on fossil fuel subsidies. They are harmful if the price or cost reduction they cause, provides an incentive to maintain or increase the availability of fossil fuels and/or the use of fossil fuels. Only 2% are considered not environmentally harmful, e.g. for mine closures. It will become more complicated because look at all energy subsidies other than fossil ones. ENER and ENV will align their methodologies.
    b. Non-energy EHS: Hope to finalise method this year and publish beginning of 2024 and then do a pilot with MS. And then do a collection by 2025. This will happen at the same time as energy subsidies. Aim to align timing, method energy subsidies, fossil fuel subsidies and other EHS. Work has been going, based on previous studies. EHS toolbox is available, as well as a list of subsidies identified in different MS to give an impression. Discuss within Commission and Member States Expert Group, including finance, economic and energy ministries. Gets more traction.
- Guidance for EHS reporting. Working on guidance document, nothing binding yet. Invite MS to provide data on (potential) EHS. GER, ITA, FRA are advanced. Eurostat is doing similar work from a statistical perspective and data collection (focus on fossil fuel subsidies - FFS). We focus on identifying EHS but not quantifying the impact. Responsibility of MS to decide if a subsidy is EHS. Comparability will be improved after first reporting. EHS guidance is living document that will be improved gradually.
- Future revisions consider methodology, feasibility, consistency with other reporting (Eurostat and green budgeting), comparability of info by MS, treatment of tax expenditures and what to consider EHS.
- Definition subsidy based on WTO: government measure that confer an advantage to specific consumers of procedures in order to supplement their income or lower their cost. Active govt intervention. Excludes non-internalisation of externalities for now for pragmatic reasons. Includes explicit and implicit subsidies such as tax exemptions. Includes potential transfers such as State guarantees. Excludes public infrastructure and provision of public goods.
- Definition EHS
    a. Based on OECD: if subsidy results in significantly increased negative environment impacts due to the existence of the subsidy.
    b. More challenging than fossil fuel subsidies.
    c. Reference to the Taxonomy Regulation, which received critique as well, as the Taxonomy was developed for something different. The Taxonomy has elements of significant contribution to the environment as well as Do No Significant Harm (DNSH) to other environmental objectives. A subsidy can be harmful even if it doesn't fulfil Taxonomy DNSH criteria. Causes significant harm to one or more of the environmental objectives of the Taxonomy Regulation. Includes lifecycle impacts.
    d. Question of significance: Excludes minor impacts. Where applicable Article 17 and delegated act of Taxonomy Regulation on DNSH. Some element of judgment. We don't look at how big the impact is.
    e. Counterfactual: what would have happened in the absence of the subsidy. Direct money transfers, tax rate applicable in absence of the reduction/exemption. Counterfactual may vary between MS and sectors. Behavioural responses also play a role.
    f. Example for transport: tax benefits for company cars if internal combustion engine. Tax exemptions for certain types of motor vehicles. The counterfactual is important here (they use it more with the subsidy). Is a subsidy for electric vehicle harmful? What if the fleet was fossil based? Without the subsidy there would be less cars, but less of them would be electric. The impact of such policy is not straightforward.

Comparative analysis on existing national-level assessments
Katia Karousakis – *Organisation for Economic Co-operation and Development (OECD*)

- Katia is biodiversity team lead at the OECD.
- OECD released a report in November 2022 before CBD COP15 comparing the existing national level assessments that identified and assesses subsidies and other incentives harmful to biodiversity. The objective of the report was to provide an in-depth comparative analysis and to provide good practice insights, for any other government that wishes to undertake a similar national-level assessment.
- Besides a mention in the CBD and GBF Target 18 and goal D to align financial flows with GBF (and its Aichi target 3 predecessor), there are similar commitments in SDG12.c and 14.6, WTO, G7, G20, OECD Ministerial Declarations.
- OECD study identified 23 national level studies on EHS across 12 countries (e.g., Austria, Denmark, Finland, France, Germany, Ireland) and 2 regions. Most examine EHS and 8 studies focus on biodiversity (Finland, France, Germany, Italy, Norway, Switzerland).
- The studies vary in terms of sectors covered (agriculture, fisheries, transport, tourism most prominent), types of subsidies and other incentives, and approaches taken (desk research, surveys, interviews, workshops; by academia or consultants mostly).
- National level examples: France EHS including BHS, direct and indirect subsidies, sectors housing, transport, agriculture and energy. Germany has various studies. Norway 2020 did phased approach: look at all subsidies and support schemes quickscan and then a deep dive for particular sectors. Like Switzerland.
- 4 step process:
    a. Scoping to define the types of subsidies and other incentives
    b. Screening to identify subsidies and other incentives
    c. Data gathering
    d. Assessing the extent of harm
- Scoping: most national studies adopted OECD (2005) definition of subsidy. Most countries did not include non-internalised externalities in the scope. Phases: many did in 2 stages: quickscan and deep dive. Measuring and scaling: only France uses 3-2-1 scoring. Most estimated the monetary value of the incentives. Governance: mixed approaches but all conducted in-country and most led by govt.
- There are also other relevant OECD reports (see PPT slide).

Issues in assessing biodiversity impacts of government policies
Geert Bergsma – *CE Delft, the Netherlands*
Nikki Odenhoven – *CE Delft, the Netherlands*

- Follow the OECD method and make it more concrete. Mention financial incentives, term still under discussion. Also whether to use externalities. Can send report later.
- CE Delft knows economics, technology and policy issues. Non-profit consultancy.
- Dutch process. Now developing method for next year. Some ministries still have to start, while we need to know it for all subsidies by 2025.
- Scoping and screening. You can do a minimum of maximum version. Most important: agriculture, fisheries, transport, energy, housing, construction. Only direct and indirect subsidies, including potential transfers (guarantees) and EU subsidies. Art, education and defense, etc. can be considered at a later stage.
- 3 options with increasing complexity
    a. Positive, negative, neutral or mixed, as well as different degrees within such categories, which helps for prioritizing reforms. Expert groups can be big or small.
- Assessment
    a. Determining causality. Decide with the incentives significantly changes IPBES drives of biodiversity loss (IAS and disease, land and sea change, pollution, climate change, overexploitation). Aspects to consider: baseline, supply chain, additionality, lock-in effect, behavioral component, fragility, area and intensity.

Open questions: should other aspects be considered, and what is a significant/minor change?
    b. Assessment decision tree with questions which results in a label: fully negative (stop incentive completely or find mitigating measures), predominantly negative (limit negative effects with conditions or expand positive effects), predominantly positive (introduce extra conditions to prevent negative effects), fully positive (stimulate incentive), or neutral.
    c. Organization of expert group governance. Divided by sector expertise, ecosystem expertise, biodiversity loss driver expertise, etc. Safeguard independence. Should experts include suggestions? Include industry and private sector after the assessment.
    d. Questions for discussion: what sectors, compartmentalization, defining significant change, how nay categories, and how to organize governance?
- Next steps: finalize method, analyze 50-80 incentives, expects quick scans of other ministries and in 2024-2025 complete analysis of all NL financial incentives and streamline OECD approach and Commission guidance.

Discussion
- The WTO definition excludes subsidies that benefit everyone. Words are very important. For EC guidance it would be very helpful to be clear what each word means.
- Incentives are complicated. How to tackle definitions such as market price support? Typology if positive incentives? How to determine the financial size and classify Environmentally Harmful. Ideas about this included:
    a. OECD has defined market price support. This is the definition in the context of agriculture: Market Price Support (MPS): The annual monetary value of gross transfers from consumers and taxpayers to agricultural producers arising from policy measures that create a gap between domestic market prices and border prices of a specific agricultural commodity, measured at the farm gate level.
    b. Have a list including tax exemptions from NL CBS Statistics Office, which we discuss with finance ministry. Food is more difficult to analyze. Then we add EU subsidies. In quick scan we have a starting list, leading probably to 50-80 items for ministry of agriculture and nature. in NL list of 46 billion Euros and NL is only 3% (long list of fossil subsidies will be included).
    c. CBS has all budgetary statistics / national accounts. Screen all expenses larger than 3 million, classify them including where it is going (companies or other govt) and what sector it impacts. Prescreening positive, negative, neutral as input for process.
    d. Data can be provided to expert group to consider counterfactual.
- Whether or not to only look at exemptions but also market price support. Must do estimation to determine mode of transfer. Agriculture should be on top of the list. Question: follow OECD method.
    a. Nikki Odenhoven: Broad one. Wants answer on questions now. Look at specific sectoral guidelines later.
- It was stressed that this is not only a fiscal exercise, as the main goal is to help address environmental problems. Green budgeting colleagues can be brought into the discussion.
- The work of the EC did not develop lifecycle aspects. Reference is made to the Taxonomy which includes lifecycle impacts.
- Question on decision tree. In second step focus on effect on biodiversity, not use that question for the top? Why go to the drivers at all in the first case? Responses included:
    a. Bioenergy is good for CO2 but not for land use. The complete story will be positive effect on environment with small negative effect. Same criteria are used in first and second step. Incentives have both positive and negative effects. Ministries want a scale like France, but it is very difficult and subjective. When there's a mixed result we can have a scale of 4 options.
    b. First step is positive or negative, second step is completely positive/negative.

- EC guidelines says even if it has positive effects but also negative, it is classified as EH. Because it only looks at negative impacts. However, when look at reforming them it also looks at significance and positive effects.

Harmful subsidies in practice: from methodology to assessment protocol
Nico Polman – *Wageningen University & Research, the Netherlands*

- It's a trial project to support the discussion, similar to the process of CE Delft. Made a translation of the OECD report.
- From method to assessment protocol. 3 steps: describe incentive and governance of subsidy. Step 2 look at drivers and objectives. Step 3 look at biodiversity benefits, EH and causality. That leads to conclusion on EH.
- Two examples
    a. CAP investment scheme
        i. Step 1. Investment incentive: investment grant. Type of incentive: direct.
        ii. Step 2. Drivers is context of invasion RUS in UKR. Encourage purchase of sustainable investment for their business. Beneficiaries farmers. Benefits are economic and environmental.
        iii. Step 3a. More sustainable investments get higher points. 26 investments have biodiversity benefits as well as harmful impacts. Counterfactual: transition will not happen without.
        iv. Step 3b. Causality. Baseline not available, supply chains vary, additionality adds to/replaces existing activities in stimulating investments; lock-in effect discourages transition; behavioural component, impact depends.
        v. Many question marks. What level of detail necessary? How many experts are needed?
        vi. Insights. It is necessary to assess whether the benefits of shifting farming practices towards more environmentally friendly and nature-inclusive methods outweigh the harmful effects for biodiversity in the short run. A detailed and time-consuming analysis of specific investments may be required to identify the full extent of potentially negative impacts on biodiversity.
    b. CAP guarantee scheme
        i. Step 1. Guarantee scheme enables banks to lend funds to farmers if their collateral is inadequate for securing loans.
        ii. Step 2. If risk is too high for financial institutions, this scheme permits farms to attract funds. Beneficiaries are farmers. Contribute to social welfare such as young farmers as well.
        iii. Step 3a. Biodiversity benefits depend on type of investment. Can be potentially harmful. Counterfactual is no investments or take more time. Step 3b. Depends on regulation whether it is negative/positive.
        iv. Insights. 3 versions of the scheme that exist simultaneously. Impact on biodiversity depends on requirements of the scheme. Subsidy will allow farmers to remain farmers, but it is intended to encourage environmentally friendly farming. Impact depends on investment category.
    c. Final remarks. Determining causal links and drivers is complex. Feedback loops need to be considered such as CO2. Impact subsidies differ for regions (peat versus sandy soils). Effects change over time. Global versus local aggregation level. Acknowledge complexity of subsidies. Experts with different backgrounds are needed. Focus on policy packages (e.g. to include mitigating measures). Consider transition pathways for impact on biodiversity impact and

investment support (does subsidy contribute to the transition?). Method needs to be further developed to be fully operational.

Discussion

- What are impacts on markets? Sometimes an incentive has different levels of harmfulness. Should include sectors. Have expenditures and inputs/outputs. Consider area. Many specificities. They all determine outcomes.
    a. Participants answered: Yes, we should look at sectors in more detail. Many subsidies are mixed. Renewable energy 4-5 billion for wind, solar and bio. Discussion for each is different so it's better to look at them separately than mixed. Will enhance policy options.
- Not so interested in taxonomy because always subject to discussion. We should go into design of subsidy due to different categories. Counterfactual: not sure. For fossil fuels counterfactual is easy. It is possible to make it easy for biodiversity to classify it as good or bad? Transition means going from harmful to clean system.
    a. Participant: Not much more difficult. Look at transition period, not only current negative/positive effects.

Experiences from Italy on their experiences with choices made in their national level assessment process, and reflections on the Dutch most pressing issues
Aldo Ravazzi Douvan – *Italian Ministry of Environment and Energy Security*

- Followed mainly OECD work, also IMF and WTO; and followed other countries (Fra, Ger).
- Key points:
    a. Biodiversity BHS should be seen in light of EHS.
    b. EHS should be seen in light of environmental fiscal reform.
    c. If remove EHS, we would need much less environmentally friendly subsidies.
    d. National level catalogues by Fra, Germ, Fin, Swe, Swi. In Fra 2011, BHS is converging with EHS.
    e. OECD work: Pine database, FFS-Fishery-Agr Subsidies inventories and companion, BHS, Peer Reviews, Greening Budgets.
    f. Maybe G7-G20 work can help, but confusion in use of "inefficient" fossil fuel subsidies (inefficient is descriptive of FFS, not narrowing the definition).
    g. Certainly BHS in UN-CBD framework T18 are a key reference for policy.
    h. Maybe fossil fuel subsidies in UN-FCCC, even if economic instruments disregarded.
    i. BHS are often fossil fuel subsidies (possible mutual reinforcement CBD-FCCC).
    j. Link to science and global goals: SDGs, IPCC & FCCCC, IPBES & CBD, IRP
    k. BHS, EHS or FFS alone or together?
    l. Single significant measure (e.g. Carbon tax) versus ecological/green or general tax reform. In Portugal and Ireland introduced positive elements in general tax reforms.
    m. We must help the poor and vulnerable citizens, as well as marginal industrial and agricultural sectors, but not by under-pricing the environment. We have instruments such as direct transfers; but under-pricing diesel for truck drivers or farmers is a bad signal. Internalise environmental impacts as much as possible.
    n. Clear compensations: abate distortionary taxes, abolishing EHS, and restore a fair market e.g. abate labour taxes.
    o. Compensation should have a transitionary nature.

p. EU taxation unanimity rule reform needed. Meanwhile we can work on EU enhanced cooperation or coalition of the willing approach (as the Dutch wisely proposed several times).

- In Italy we have catalogue on both EHS and EFS (environmental friendly subsidies). Editions 2016, 2017, 2018, 2019-2020, 2021, prep 2022.
- Figures. Estimated 2021: 22,4 billion € for EHS, it was 18,2 in 2016. Estimates based on effective expenditures when available, if not appropriations in budget and then estimates. 2019-2020 special analysis on BHS; BHS estimated at 36 B€, higher than EHS because general EHS gives priority to climate. In last report, chapter on circular economy.
- For each subsidy prepare a fiche. Example: differential treatment VAT, EU-cofinancing, introduction and end year, restriction VAT on fertilisers, type of subsidy reduction in the rate (4% VAT instead of regular 22%). In motivation provide views of stakeholders, data.
- Open issues: have general approach with focus on climate change (renewable subsidies are positive, while wind and solar can be harmful). BHS are not a subset of EHS as we imagined initially. 6 environmental objectives of EU-taxonomy with DNSH might be a development. Issue of benchmarking: the paradox of diesel/gasoline taxation alignment, do we adopt the price of oil? How to treat emergency subsidies?
- The Dasgupta Review on the economics of biodiversity is important.
- Dutch issues and suggestions from the Italian experience.
    a. Scoping.
        i. What is significant? All measures impact on environment including friendly.
        ii. What financial incentives to include? Have wide definition to include all forms. Offer knowledge to decision-makers and scientific community. All financial incentives should be included, we did not include public procurement and regulations. Would be happy to include externalities (like IMF approach) but might lead to different interpretations. Be clear about methodological problems.
        iii. Which sectors to include? All, including international aviation and shipping. We used: agri, energy, transport, other sectors, Vat (apart, as transversal). It is not a narrow fiscal exercise, it's an economic exercise as it reorients production and consumption.
    b. Measuring and scaling
        i. What scale to use? What is the rationale? Italy uses positive/negative. We abandoned neutral because instead of 180 we would have, say, 1800 subsidies. We also use 'uncertain' because there are mixed effects. In the G20 FFS Peer Review we used 3 types: feasible, to be studied, and to be studied more.
        ii. How to deal with emergency subsidies? Like covid, Russian aggression, world energy process rise. They are temporary and change under time. Amounts are significant.
        iii. How to deal with large incentives with different measuring it is? Compartmentalize it. Applies to EU funds, DNSH is often applied. National programmes can be subject to environmental assessments, cost-benefit analyses, regulatory assessment, impact assessments, etc.
    c. Governance
        i. How to assess biodiversity impacts? The Italian parliament asked the environment ministry to cover all sectors (including agriculture), wide approach. Ministry of environment used team of 15 environmental economists for the first time ever established in the public sector. Ministry of Environment was in lead, wide involvement of other ministries and

stakeholders (e.g. ministry of finance and Inea, the agriculture economics public institute).

ii. How to guarantee an independent assessment? Bring high-level, high reputation, experienced analysis, or involve them in consultations. Plan financial expenditures for consultations.

Discussion

- What is the role of bilateral trade with jurisdictions that might not be fully aligned?
    a. In catalogue we used OECD definitions and approaches.
- Why BHS much higher than EHS?
    a. The country arrived late in using renewable energy subsidies, likely hastle in implementation & monitoring. When supporting e.g. wind energy (EFS), you may make trouble to biodiversity (BHS); for evaluating the subsidy, we used climate priority over biodiversity.
- How long did it take to do first inventory?
    a. Six months equivalent full time for 15 experts.
- One is positive, unfriendly and uncertain. NL has uncertain as well? If you dig and dig, it might be negative but one small element if negative, then still classify as harmful? How to decide if one goes in the one category
    a. Yes we have "uncertain" if it is mixed.
    b. The more distinctions, the more complexity is added.
    c. We try to simplify. EHS can become (can be transformed) often in EFS.
    d. Suggestions are important (behavioural economics). Sometimes much money has little effect, sometimes little money but much effects, so we need to consider both.
- Finished report on FFS (based on IMF/OECD), which is contentious. Important to separate biodiversity and fossil. Fossil is easy to scope and map. Biodiversity is different, as to determine what is harmful.
    a. Look at economic structures, rates, taxes, and if there is a privilege against the environment. Financial measurement easier and quicker, compared to how much biodiversity gets lost/saved. It is a battle on economic field, get finance and economic ministries on board.
- Need to determine net-impact, e.g. through multi-criteria analysis, expert judgment. Policymakers need to know whether measures are positive, negative or neutral. Zero environmental impact is still good to know.
    a. 15 experts no longer there. Aim to follow EU trajectory. Statistical offices are very helpful. But do not be primarily juridically and statistically oriented, it is mainly an economic and environmental work. Political message is that we don't need EHS at all.

Experiences from Germany on their experiences with choices made in their national level assessment process – and their reflection on the Dutch most pressing issues

Kai Schlegelmilch – *German Federal Ministry for the Environmental, Nature Conservation, Nuclear Safety and Consumer Protection*

- Personal opinion, not of the German government
- Timeline already reduced EHS in Germany
    a. 1999-2003 environmental tax reform; 2004 EU energy tax directive; 2005 heavy goods vehicle charge; 2006 abolition of home owner support; 2011 air ticket tax; 2011 nuclear fuel tax; 2018 phase out hard coal subsidies; 2021 CO2 pricing; 2023 HGV charge; 2023; CAP more than 50% payments linked to environmental criteria; 2024 extension of EU-ETS from 40% to 80% of GHG

emissions. Conclusion: sectors affected: transport, energy, housing, agriculture and industry.

- Important sectors have substantial negative environmental impacts; large reduction potentials; some sectors like transport/households cannot escape that easily; all should contribute to fair ambition sharing. Yet, initially it was mostly industry as easiest to regulate/control and its resistance was less strong. Changes should be introduced in predictable small steps to allow for adoption, which keeps costs at a minimum.
- Some successes and reasons:
    a. Hard coal subsidies. Phase out over 50 years was successful, because there was a consensus between unions, employers and governments, but costs were substantial, while alternative energies became increasingly competitive and socially acceptable job reduction was arranged, not at least thanks to the creation of jobs in alternative energies.
    b. Subsidies buying homes. Phase out subsidies for buying homes over a period of 8 years by steady reductions. Increased building costs led to subsidies to building industry, large windfall gains for several stakeholders. Flat vacancies, shrinking population, etc.
- Reducing EHS. Note that energy/climate related measures also have positive impacts on biodiversity. Highly interlinked. Need to reduce both.
- Recent political agreements of the coalition. Transport fuel taxation oriented to env and climate impacts; more investments in railways; public peoples local transport like bike paths extended; synthetic fuels should more intensified and incentivised in short term. EU-Agreement: allow new cars with combustion engine also beyond 2035, if run only on e-fuels.
- NL questions
    a. Scoping
        i. What means significant? Substantial in terms of env impact but also in terms of political implications
        ii. What financial incentives to include? Eventually all but may be easier to start somewhere.
        iii. What sectors to include? At least agri, energy, industry, housing and transport.
    b. Measuring and scaling
        i. What scale to use? 5 digit scale best --/-/0/+/++ because often used in questionnaires and leaves a little room for differentiation but give reasonable clarity.
        ii. How to deal with large incentives? Compartmentation.
    c. Governance
        i. How to assess biodiversity impacts? Check IPCC and IPBES processes: independent expert views and peer-reviewed literature.
        ii. How to guarantee independence? Pay them and use advisory scientific bodies.
- Political initiatives in 2023
    a. Lump sum taxation of agriculture should be more restricted with the so-called growth opportunity act.
    b. For very energy intensive companies some energy and electric tax subsidies will be abolished by 2024
    c. Heavy vehicle charge will have a co2 supplement from 2024
    d. Constitutional court judgment (15.11.2023): Second supplementary budget act 2021: cannot use former credit loans for corona to now use for climate projects and transformation. 17 billion Euros have to be found for 2024. Several options. Hope to include EHS.

- Information after the workshop, yet very relevant as this hope partly came true: In December 2023 the Government decided to start the abolition of environmentally harmful subsidies: Kerosene taxation of inland flights, abolition of two tax subsidies to agriculture, implementation of a plastic tax. Heavy protests from agriculture lobbies followed, led to substantial further changes in January 2024: Annual road tax allowance for agriculture will not be removed, while the tax subsidy for agricultural diesel will only be phased out within three years until end 2026, the plastic tax will only be introduced in 2025. Yet, even these changes triggered heavy protests from agriculture. Now the Parliamentary process starts which is likely to come to a final decision by end February at the latest. It remains to be seen if further changes take place.
- Since the major intent of the NL-initiative and workshop is how to achieve/contribute to the ambition target 18 of the Global Biodiversity Framework, this generally positive decision should be communicated actively and used to stimulate other Member States to take similar measures since the competitiveness argument is now less relevant. Such an approach could trigger/reinforce such processes also in other MS.

Discussion

- May be easy for analysis what works in right or wrong direction. Political conclusion for reform might abuse small negative impacts to abolish the entire subsidy.
- If there's' mixed result you need to explain beyond yes/no or positive/negative. How much detail do you want to have?
- From quickscan we learned if there's a mix and net-effect will be 0 then someone might say we should eliminate the negative effect
- Include political aspects in decision tree?
    a. More precisely: For scientific assessment leave it out, but for political assessment include it.
- Why incremental changes in light of urgency?
    a. Do as much as possible on short notice. If decision-making happens don't do it overnight but phase it out in several steps, announced ahead. Acceptance will drop substantially otherwise.
- What to do with jobs?
    a. Had subsidy for 50 years, so jobs overall were not cut down but transferred to other areas.
- What is the ceiling for the price?
    a. Not decided, it's open. They name it emission trading system instead of a tax, although it is the same, but politically much more acceptable.

Carrousel

1. Scoping

- What is meant by significant? Substantial in terms of environmental impact, how to quantify it? EU-taxonomy defines significant, conclusion it is a relative term in terms of environmental impacts. Can use thresholds of EU-taxonomy and if not available then qualify? EU-Taxonomy is politically agreed so it's tricky. EU-Taxonomy also doesn't cover everything. Idea to generate more examples and explain why something is significant. MS can define significance. Positive and negative examples help. Any subsidy for agriculture is harmful, as causality is established that it affects 4/5 species. First look at direct effects / emissions. There's always a subjective exercise, depends on context of judgment. Most impactful ones like fossil fuel might be most difficult to reform due to resistance. Can also start small and build momentum, e.g. by rallying winners of that reform. If we have idea about values confident studies and benefit transfer methods can be used, we can use them. There are many studies. What can be the margin of error?

Can look at how many environmental domains or drivers of biodiversity loss, you can say something about significance. Significant 1 or 2 drivers?

- Which financial incentives should be included? CBS scope was direct flows all expenses from government to private parties and between govts, including subsidies. Looked at all expenses, and only selected larger ones above 3 million euros (=85% of total budget). Would be worthwhile to look at smaller expenses as well but bigger impacts. Can make one last selection for the last 15%. Quick and dirty first filter might help. Much is neutral. Income support is indirect-indirect but from the money they eat and buy more, which is negative. Start at environmental impact. If it's harmful the social and economic aspects come in later in the policy reform design. We have no lifecycle estimates in report. How to deal with externalities as a form of (implicit) subsidies? No agreement. NL does it for fossil fuels (if effects are not internalised). Maybe do this in a second round. Important to have it descriptively clear.

2. Measuring and scaling

- What is the scale for categorising the results in different national assessments? Difficult if ministries assess things differently: when to place something in minus 1 or minus 3. 7 point scale gives much info. Conclusion: negative, negative mixed, positive and positive mixed. Positive mixed should not be green. 3 problematic scales 1 positive and zero. Based on experts judgment. But who is an expert? Sometimes biodiversity, economic, industry, etc. Pressure factor? We need net-impact also? Who do we make the assessments for? Political decision makers? Ask them what scales we want. Be honest and open about method and shortcomings. Risk of mixed category that everything ends up there. Start small and not too complicated not to scare ministries off. More categories help prioritising. Prioritise 'minus' 'minus' without discussion, and after then 'minus' 'minus' with discussions, and then minus without discussion and then minus. Good to start discussion at least. Assessment is scientific assessment, only give impacts instead of scales. Framing is important. Biodiversity problematic subsidy is less accepted than subsidy with biodiversity problematic aspects. What is the baseline / counterfactual? Free market? Is difficult. For description the baseline is current policy/subsidy. Determining whether something is transitionary is a political assessment.

PLENARY FEEDBACK

1. Scoping

- Significance relates to substantial
- Don't make it too complex
- Do we need the concept at all?
- Get lessons from experiences people
- Start with direct subsidies, then indirect.
- What about market price support?
- What sectors to include? If you leave sectors out, they may not feature ever. So at least do a quickscan.
- National level subsidies most important, but provincial can also be worthwhile.
- What is the baseline? What if the subsidy is not there?
- Add remarks that do not fit in the scoring to keep it transparent.
- Have a one pager per subsidy
- Do it in English for comparability
- Significant versus substantial
- EU-taxonomy is referred to a lot but it specific for investments. Technical criteria and 'Do No Significant Harm' can be used as concept.

- First direct and then at later stage secondary effect.
- CBS list of financial incentives: tax exemptions are not included. Pre-screening is helpful.
- Don't mix up the physical and monetary value.
- EC guidelines will not be very different. Some useful insights. Need to think things over regarding EU-taxonomy.

2. Measuring and scaling

- ++/+/0/-/--. Mixed category is beneficial.
- How will it be used in politics and how do experts use it?
- Look at environment as opposed to biodiversity
- Compartmentation is helpful to avoid mixed categories
- Ideally 7-8 step scale. But need to start easy/workable and add more sectors.
- Be transparent.
- ++/+ used for prioritisation, but keep it apart of the descriptive assessment. Start with minus, minus mixed, 0, plus mixed, plus.
- The less complicated the scale, the less experts needed.
- First EHS. Then GBF BHS. Makes no sense to have HS for each environmental goals. Call it EHS and within that you can focus.
- Difference subsidy and financial flows. Financial flows might be more reasonable to not exclude.

Next steps

- Maaike updates this group about next steps. Participants are encouraged to share experiences and developments.

Date: Paris, 7 December 2023

	Name	*Organisation*
1.	**Caroline van Leenders** (chair for the day)	*The Netherlands Ministry of Agriculture, Nature and Food Quality*
2.	**Jasper Dalhuisen** (speaker)	*The Permanent Representation of the Netherlands to the OECD*
3.	**Maaike Moolhuijsen** (speaker)	*The Netherlands Ministry of Agriculture, Nature and Food Quality*
4.	**Frank Laurent** (speaker)	*European Commission - DG ENVI*
5.	**Katia Karousakis** (speaker)	*The Organisation for Economic Co-operation and Development (OECD)*
6.	**Geert Bergsma** (speaker)	*CE Delft - Research and Consultancy*
7.	**Nico Polman** (speaker)	*Wageningen University & Research*
8.	**Aldo Ravazzi** (speaker)	*Italian Ministry of Environment and Energy Security*

9.	**Kai Schlegelmilch** (speaker)	*German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection*
10.	**Maëlie Roger**	*French delegation to the OECD – French Ministry of Agriculture and Food*
11.	**Harry Beeson**	*Australian delegation to the OECD – Australian Department of Foreign Affairs and Trade*
12.	**Marijn Boll**	*The Permanent Representation of the Netherlands to the OECD*
13.	**Lisa van den Boogaard**	*The Permanent Representation of the Kingdom of Netherlands to the EU*
14.	**Will Symes**	*The Organisation for Economic Co-operation and Development (OECD)*
15.	**Hugo Valin**	*The Organisation for Economic Co-operation and Development (OECD)*
16.	**Jussi Lankoski**	*The Organisation for Economic Co-operation and Development (OECD)*
17.	**Eveline Nales**	*The Organisation for Economic Co-operation and Development (OECD)*
18.	**Koos Biesmeijer**	*Naturalis Biodiversity Center*
19.	**Nikki Odenhoven**	*CE Delft – Research and Consultancy*
20.	**Herman Vollebergh**	*Netherlands Environmental Assessment Agency (PBL)*
21.	**Graciela Luteijn**	*Netherlands Environmental Assessment Agency (PBL)*
22.	**Sjoerd Schenau**	*Statistics Netherlands (CBS)*
23.	**Marleen Zanen**	*The Netherlands Enterprise Agency (RVO)*
24.	**Alexander Verkerk**	*The Netherlands Ministry of Agriculture, Nature and Food Quality*
25.	**Lieke Brackel**	*The Netherlands Ministry of Agriculture, Nature and Food Quality*

26.	**Andrea De Simone**	*Permanent Delegation of Italy to the International Organizations*
27.	**Martijn Weijtens**	*Agricultural Counselor at the Embassy of the Netherlands in Paris, France.*

A.2 Suggestions from the Italian Assessment

A. Scoping:

1.What is meant by 'significant'?

a) Significant are all measures which have an impact on environment: harmful (damaging/noxious/perverse/nuisible/inefficient/…) or friendly (positive/beneficial/…).

2.Which financial incentives should be included? Direct subsidies, indirect subsidies, tax cuts, European subsidies, no taxation of externalities, procurement, Regulation?

b) We were asked by the Parliament to adopt the widest definition: to include all forms we found: "incentives, tax benefits, tax credits and exemptions, …"

c) We are offering knowledge to the decision-makers (Parliament and Government), which will then take the political responsibility to decide, and to the scientific community.

d) All financial incentives should be included: once you launch the exercise, every year we identify new subsidies, we improve the assessment, the € estimate, …

e) So direct subsidies, indirect subsidies, tax cuts, European subsidies, tax rebates, tax exemptions, tax differentiations, are in. We did not include Public Procurement. No regulations. We would be happy to include externalities (IMF approach; ref. Fra/Fin at Jmtee/Epoc/Ifcma), but it opens even more to possible different interpretations.

3.Which sectors to include? Agriculture, Energy Industry, Housing and Transport or more?

f) More. All sectors should be included. International aviation, international shipping ame logic as above, we offer knowledge.

g) We used a) Agriculture; b) Energy; c) Transport; d) Other sectors; e) VAT.

h) It is not a narrow fiscal exercise, it is an economic exercise. We must agree that under-pricing the environment is inefficient. It raises economic & environmental problems, it brings failures in the s/m/l run. It disorients production, consumption and investment.

B. Measuring and Scaling:

4.What is the scale for categorizing the results in different national assessments? With regard to scale, for example, should one use "Positive/neutral/negative" or "2-3 types negative + 2-3 types positive"?

5.What is the rationale behind this choice? And what is the experience?

We use Positive/Negative.

We tended to abandon Neutral because instead of 180 subsidies we would have probably 1800.

We use also Uncertain, because there are subsidies with mixed effects (e.g. positive for climate, negative for biodiversity); and others for which there is no sufficient evidence, we need more research.

For the NIECP and G20 PR FFS, we used 3 types of EHS/FFS: feasible, to be studied, to be studied more (some interpret it as difficult, unlikely, forget it).

f) Issue of emergency subsidies (e.g. due to covid crisis, aggression of Russia to Ukraine, increasing world energy prices): how to treat them? They are generally transitionary subsidies, change rapidly thru time (e.g. 8 emergency decrees for covid). But they have significant amounts (see 2022 FFS data by OECD-IEA, inventory, companion, …)

6.How to deal with large incentives schemes with different measures in it: compartmentalize?

g) First reaction would be yes.

h) Applies to EU Cohesion Funds, EU Agricultural Funds, to NRRPs (National Recovery & Resilience Plans), to NIECP (National Integrated Energy & Climate Plans), …

i) In principle, they all have an environmental assessment, e.g. NRRP should respect DNSH (Do No Significant Harm to the environment).

l) Applies also to major national plans & programmes. In EU we have SEA and EIA, many have CBA, RIA/IA/SDIA.

m) Issue of large incentives for major infrastructures.

C. Governance:

7. How to assess biodiversity impacts: through expert judgement (how is that organized), use of data, literature?

n) In the Italian case, the assessment of environmentally harmful subsidies was asked by the Parliament to the Ministry of Environment (which included in 2015, inter alia, sustainable development, nature, climate change, water, sea protection, waste, soil, circular economy; now since 2021, it includes energy; it does not include agriculture).

o) The Ministry of Environment used a team of 15 environmental economists (first experience of its kind in the Italian Public Administration) preparing the draft report, including measures, data and estimates, significant literature; then consultations with i) other parts of the Ministry; ii) other Ministries; iii) public and private research centres, universities; iv) stakeholders (e.g. business, trade unions, env. NGOs).

p) We tended to include all opinions expressed and keep the responsibility of the exercise with MoE. The Minister of Environment sends to Prime Minister and Presidents of the Parliament Chambers.

q) Key contributor: MEF (Ministry of Economy & Finance), e.g. with updated fiscal data, with its "tax/fiscal expenditures report" (Ceriani, then Marè), where many have an environmental relevance;.

8. How to guarantee an independent assessment with the right experts?

Good question.

Bring in some high level, high reputation, experienced analysts in the area? Or at least involve them in an intense consultation? Plan financial resources to cover costs.

A.3 Suggestions from the German Assessment

Federal Ministry
for the Environment, Nature Conservation,
Nuclear Safety and Consumer Protection

NL-questions I - *Measuring and Scaling:*

What is the scale for categorizing the results in different national assessments? With regard to scale, for example, should one use "Positive/neutral/negative" or "23 types negative + 23 types positive"?

5-digit-scale mostly best: --/-/o/+/++

What is the rationale behind this choice? And what is the experience?

Often used in studies and questionnaires.

It leaves a little room for differentiation in one direction, but gives reasonable clarity.

How to deal with large incentives schemes with different measures in it: compartmentalize?

Compartmentalization appears most reasonable as otherwise there is hardly a focused assessment possible.

10

Intern gebruik

Federal Ministry
for the Environment, Nature Conservation,
Nuclear Safety and Consumer Protection

NL-questions I - *Governance*

How to assess biodiversity impacts: through expert judgement (how is that organized), use o data, literature?

Like the IPCC and IPBES-processes are organized: By independent expert views and peer-reviewed literature/studies citations.

How to guarantee an independent assessment with the right experts?

Peer-reviewed assessments and international involvements.

Use scientific advisory bodies

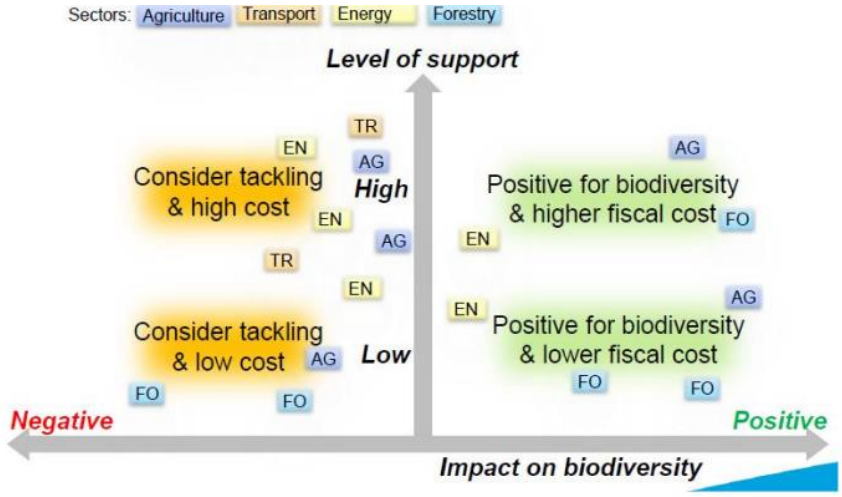
11

B Assessments other countries

B.1 Finland

Finland released a report in 2015 assessing biodiversity harmful subsidies (Ympäristöministeriö, 2015). Building on earlier work done by a French study, the 'Driver, Pressure, State, Impact and Response' (DPSIR) framework is used to assess the link between public sector support and biodiversity. This framework is used to describe the effects of human activity on the natural environment. Each subsidy is assessed for its potential impact on driving forces and pressures of biodiversity. The outcome of this analysis is shown in Figure 11, where each subsidy is mapped according to the level of support (y-axis) and the biodiversity impact (x-axis). The visualisation can point the government to the subsidies that are most important to reform. Importantly, the authors note that the quantity of financial support does not automatically correlate with the magnitude of the impact on biodiversity. Effects are often indirect and manifest over a long period. Support systems do not operate in isolation but are actively guided by regulations and other policy measures influencing natural resource use, land use, and, consequently, biodiversity.

Figure 11 - Mapping of BHS in Finland



Source: OECD 2022.

B.2 France

In 2021 France released their Green Budget (French Government, 2021), which aims to classify environmental impacts of expenditures under six headings: impacts on climate mitigation, climate adaptation, water, waste, pollution, and biodiversity. Each expenditure is assigned a score -1 to 3 depending on its environmental impact. The negative score of -1 indicates that the expenditure has a direct or indirect negative impact on one of the environmental domains. Neutral expenditures are given a score of 0 indicating that they do not have a significant environmental impact. Expenditures with a positive score have a positive impact on the relevant environmental domain but in different ways: (+1) indicates favourable but controversial: meaning short term favourable effects but presence of a long term technology lock-in risk; (+2) indicates favourable: no explicit environmental target,

but indirect positive impacts and (+3) indicates very favourable: environmentally targeted expenses.

For biodiversity this score was determined using existing literature from earlier working groups, also utilising the DPSIR framework.

B.3 Germany

Two studies in Germany examined biodiversity harmful subsidies. The first study was carried out by the Federal Agency for Nature Conservation (Bundesamt für Naturschutz, 2019). In this study the main drivers and pressures for biodiversity loss are grouped in three main categories: land use change, agricultural and forestry practices, and climate change. Subsidies are classified as harmful if they reinforce these drivers. A particular focus of the study is suggestions of how these BHS could be restructured to become beneficial for biodiversity.

The second study was carried out by the 'Forum Ökologisch-soziale Marktwirtschaft' (FÖS Marktwirtschaft, 2021) and focuses in detail on five subsidies. First the damaging extent is determined for these subsidies by classifying each subsidy in one of the following categories:

- completely damaging to biodiversity;
- partially harmful to biodiversity;
- subsidy is harmful to biodiversity depending on implementation.

Second, for the damaging part of the subsidy, the degree of damage is determined. The authors note that quantitative analysis is complex as there are rarely clear cause-and-effect relationships. For these reasons, the impact on biodiversity is qualitatively assessed, similar to the Swiss study. The following factors are determined:

- causality between subsidy and biodiversity loss (direct vs. indirect);
- area effect;
- impact intensity;
- duration of the intervention.

Depending on the outcome of the above factors, the damaging extent of a subsidy is categorised as low – medium – high. The results are shown in Figure 12. Compared to the other countries discussed in this chapter the German and Swiss (discussed later) studies are unique in that they try to separate the damaging share of subsidies. This tackles the issue that the majority of subsidies are complex, having both negative and positive effects on biodiversity.

Figure 12 - Overview of five BHS in Germany

Subsidy	Subsidy volume	Biodiversity damaging share		Extent of the damaging effect
	Billion euros p.a.		Billion euros p.a.	
Discounts from the extraction levy	0.63	completly	0.63	medium
Common Agricultural Policy (CAP), first pillar*	4.85	predominantly	3.39 – 4.85*	high
Reduced VAT rate on animal-based products	5.2	completly	5.20	high
Travelling allowance	4.8	partially	2.40 – 3.36	high
"Baukindergeld"	1.0	partially	0.265**	high

Source: own representation * The environmental and nature-damaging effects of CAP subsidies, especially of the first pillar, have repeatedly been the subject of numerous studies and are therefore not considered in detail here. The biodiversity-damaging share is given as a range without and with greening measures (no own quantification). ** proportionate funding volume divided by duration (10 years)

Another German study that analysed biodiversity harmful subsidies as part of a bigger analysis of environmentally harmful subsidies was done by Umwelt Bundesamt in 2021 (Umweltbundesamt, 2021). In this study the starting point of the screening is the identification of environmentally harmful activities like use of fossil fuels for energy, the intensive use of fertilisers in arable farming, or construction activities on open land based on specific criteria. Only the subsidies that do not have mitigating measures in place and where there are no obstacles to reforming identified are selected.

B.4 Italy

In Italy, the 'Italian Catalogue of Environmentally Friendly and Harmful Subsidies' was developed by the Ministry of Environment, Land and Sea. In 2019 a chapter on biodiversity was included, providing a conceptual framework for subsidies harmful to biodiversity (MATTM, 2019). The logic framework for the analysis was constructed based on the following set of assumptions (summarised by (OECD, 2005)):

a Production and consumption choices, influenced by input and output prices, impact on the pressures affecting the conservation status of biodiversity.
b The causal relationship between the subsidy and biodiversity is due to changes induced by the subsidy in production and consumption behaviour by households and businesses relative to a business-as-usual baseline without the subsidy.
c The changes in individual behaviour can either exacerbate or ease the pressures on biodiversity.
d The impact of the subsidy is assessed in terms of conservation or reduction of biodiversity as an indicator of the state of 'health' of ecosystems and the variety of species living in them.
e The potentially harmful or favourable impact of a subsidy is assessed on a ceteris paribus basis, i.e. without taking into account interactions with all other economic and/or social variables and therefore keeping the latter constant.
f The subsidy is assessed solely based on its environmental impact and does not account for impacts on economic growth, equity or other stated objectives of the subsidy.

The biodiversity chapter in the report also describes the state of biodiversity in Italy and identifies the principal pressures affecting its status, which are:
- climate change and greenhouse gases;
- change in land use;
- pollution;
- over-use of resources;
- standardised preferences (this refers to the impacts on agricultural biodiversity due to the fact that consumers demand only a limited range or variety of crops and animal breeds, thus leading to the disappearance of traditional crops and varieties);
- invasive alien species.

The chapter then continues to map the most important drivers for each of these pressures. Part of the mapping is a qualitative description of the link between the driver and the pressure based on the ceteris paribus assumption. As an example (as described by OECD), the cell combining Population growth (a driver) and Land use change (a pressure) indicates that with the same technology, consumer preferences, per capita quantity consumed, etc., a subsidy that stimulates population growth leads to a change in land use from natural to agricultural land (to feed that population or to produce materials for their consumption). This results in consequences for biodiversity associated with that specific pressure.
Using this same logic the impact on biodiversity was determined for the most relevant subsidies in the catalogue. For each subsidy the following is described:
- the pressure triggered by the driver (change in land use; Pollution; Over-exploitation of resources; Standardised Preferences; Invasive alien species);
- whether this pressure is increased or decreased;
- a brief description of the association and impact;
- whether the subsidy is environmentally friendly harmful and for which different levels of biodiversity (Ecosystem; Species; Genetics).

Important to note is that any energy-related subsidy that increases greenhouse gas emissions is assumed de facto to have an adverse impact on biodiversity.

B.5 Norway

In Norway, a 2021 study by Menon economics and the Norwegian Institute for Nature Research identified subsidies harmful to biodiversity (Magnussen, 2020). In this study only few schemes were identified to have significant, direct negative effects on biodiversity. The sixteen schemes considered most likely to be harmful to biodiversity are under:
- the Ministry of Agriculture and Food: seven schemes across agriculture, forestry and reindeer husbandry;
- the Ministry of Transport: five schemes that provide support for road, rail, sea and air transport;
- the Ministry of Climate and Environment: two schemes, across predators and climate measures;
- the Ministry of Petroleum and Energy: one scheme; flood and landslide prevention;
- in addition, the study assessed the tax benefit scheme ‘lower limit for ground rent tax’.

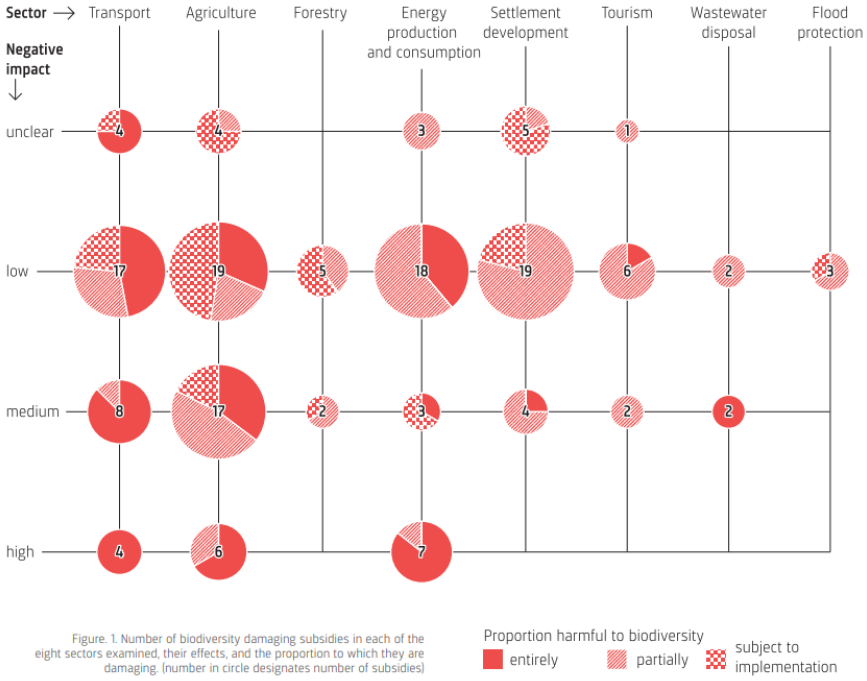
B.6 Switzerland

In Switzerland an assessment of harmful subsidies was carried out in 2020 (Gubler et al., 2020). Like the Italian study, the starting point of this analysis was identifying the current status of biodiversity and main sources of degradation in Switzerland through existing literature and an expert workshop. A second expert workshop then identified over 150 drivers of these degradation pressures. Drivers where there was no evidence of a link to subsidies were discarded. The remaining drivers were linked to subsidies through literature review and expert judgment. The biodiversity impact of the subsidies was then split into different classes based on:

- strength of the linkage between biodiversity and negative impact: not significant, minor, medium and strong;
- damaging extent: entirely damaging to biodiversity, partially damaging to biodiversity, subject to implementation, internal conflict between ecological goals;
- difficulty of reconfiguring: low, medium, high, excessive (the latter meaning the subsidy should be eliminated).

The outcomes are shown in Figure 13. The ranking system enabled the researchers to highlight the subsidies that are highly damaging and which are easy to reform, those being the ones where government action is required first. According to the OECD a feature of the Swiss study (like the German study) that makes it stand out is the assessment of the damaging extent. For example, the agricultural sector has a higher total number of very damaging subsidies than the transport sector. However, the majority of these are classified as only partially harmful to biodiversity unlike those in the transport sector which are all classified as fully harmful. This makes it easier for the government to prioritize reforms. A next step of this analysis is to provide a further breakdown of the damaging part of the partially damaging subsidies, so that these can also be reformed.

Figure 13 - Overview of BHS for Switzerland



Source: (Gubler et al., 2020).

C Quantitative assessment methods (financial sector)

Throughout the course of writing this document the quantitative progress of measuring biodiversity impact within several sectors, particularly the financial sector has been discussed. In this Annex we shortly describe the progress made by several initiatives within this sector and the main accounting approaches. For a more comprehensive overview of methods available for biodiversity quantification see Benchmark Biodiversiteit - CE Delft and more recently Critical review of methods and models for biodiversity impact assessment and their applicability in the LCA context (sciencedirectassets.com) from 'EU Business and Biodiversity framework' series (Critical review of methods and models for biodiversity impact assessment and their applicability in the LCA context (sciencedirectassets.com) and from an 'EU Business and Biodiversity' perspective Assessment of biodiversity measurement approaches. For the methodology described in this document the quantification of biodiversity impact of incentives is not required. In the future it might become valuable to assess specific cases quantitatively (especially for mixed homogenous regulations).

Notably, financial institutions have made strides in measuring their impact on biodiversity through financing and investments. The 'EU Business and Biodiversity framework', under the 'Finance for Biodiversity pledge', involved 153 financial institutions in developing a comprehensive guidance document on methodological approaches for biodiversity impact measurement.

The most common used metrics for biodiversity accounting are MSA (Mean Species Abundance) and PDF (Potentially Disappeared Fraction). MSA measures 'intactness' by comparing the actual abundance of native species to their estimated abundance in an undisturbed state. PDF measures the percentage of species lost due to environmental pressures in a specific area over a specified time, providing insights into the impact on species persistence.

Commonly, biodiversity accounting approaches[15] follow a consistent logic with three key steps: first the scoping of economic activities and products, followed by linking economic activities to pressures and then finally linking pressures to biodiversity impacts. This process involves obtaining coefficients for linking pressures to impacts and acquiring data on biodiversity in the affected areas. Steps 2 and 3 often rely on shared models or data sources. Specifically, for Step 2, the Exiobase matrix-based input-output model is often utilised. For Step 3, the GLOBIO (global estimates of biodiversity abundance) and ReCiPe (Life-Cycle Assessment) models are used to link pressures to impacts alongside other resources for assessing biodiversity values, like GLOBIO, IUCN Red Lists, and IBAT.

There are some shortcomings in the biodiversity accounting approaches in the financial sector. For example, there is much uncertainty in linking pressures to economic activities through Exiobase. Moreover, sector averages are used to represent the impact of investments (in some cases real company data can be added) meaning the biodiversity footprint calculations of investments are not actual measurements but models. Furthermore, some weaknesses of the particular models include that they are biased toward well-studied species and ecosystems, lacks consideration for marine biodiversity,

[15] Common footprinting tools in the financial sector include BFFI, BIA-GBS, CBF, GBSFI, and GID.

and neglects factors such as overexploitation, invasive species, chemical pollution, and soil degradation. Furthermore, GLOBIO is not species and habitat-specific.

D Interviews

Table 8 gives an overview of the interviews that were conducted as input for writing this report. Full interview reports are available on request

Table 8 - Overview of interviews

Organisation	Person(s)	Focus
BZK	Corine de Zeeuw	Potential harmful subsidies: challenges and opportunities and the quickscan development
BuZa	Dana van der Zee Felix Lomans	Policy evaluation and biodiversity measurement
CREM	Wijnand Broer	Biodiversity measurement in the financial sector
LNV	Ruben Post Alexander Buitenhuis Coen Bot	Policy evaluation
LNV	Niels van Houten Fedor den Elzen	Biodiversity measurement
Naturalis	Koos Biesmeijer	Biodiversity measurement
RVO	Marleen Zanen	LNV quickscan: challenges and opportunities
Swiss Federal Institute for Forest, Snow, and Landscape Research	Sascha Ismael Lena Gubler	Swiss assessment: challenges and opportunities

E Other guidance documents biodiversity harmful subsidies

This Annex provides further insight on proposed guidelines for assessing (broader) environmental impacts and biodiversity as provided by a number of organisations. A summary of these guidelines can be found in Table 9.

Table 9 - Overview of the existing guidance documents for the identification of harmful subsidies

Topic Organisation	Scoping (type of financial public incentives)	Screening (sectors)	Assessing (environmental or biodiversity damage)
OECD[a]	OECD definition of subsidies	Agriculture, Construction & Housing, Energy, Fisheries, Forestry, Infrastructure, Transport and Water	Subsidies with positive, negative and mixed effects to one of the drivers of biodiversity loss are included
EU EHS	WTO definition of subsidies	Arts, entertainment and recreation, Civil engineering , Construction and real estate, Disaster risk management, Education, Energy, Environmental protection and restoration activities, Financial and insurance activities, Forestry, Human health and social work activities, Information and communication, Manufacturing, Professional scientific and technical activities, Services, Transport Water supply, sewerage, waste management and remediation	Only subsidies included with a significantly negative effect on biodiversity with reference to the Taxonomy Regulation
Green budgeting[c]	All budgetary items	All budgetary items	Each incentive on the budget list should be assigned a tag with the positive or negative impact on biodiversity.

[a] Here the general recommendations of OECD are presented, there may exist differences between countries in the way they have implemented these guidelines.

[b] The link between fossil fuels and environmental damage is clear and established. Most pregnant are the greenhouse gas emissions.

[c] *Green budgeting* is the process whereby the environmental contributions of budgetary items and policies are tagged according to whether it is helpful or harmful to green objectives. Green objectives may relate to climate or other areas of the environment, such as biodiversity, air and water challenges. By covering all budgetary items, green budgeting also includes environmentally harmful subsidies. The tagging of green budget and this analysis can therefore be executed in parallel. The French government included the assessment of biodiversity harmful subsidies as part of their green budget (French Government, 2021).

Source: Green budgeting in the EU (europa.eu)