

The Nature of Subsidies

A step-by-step guide
to repurpose subsidies
harmful to biodiversity and
improve their impacts on
people and nature

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1 Introduction

Our economic systems are not separated from but embedded within our natural ecosystems.

Our natural world is out of order. Nearly a million species are at risk of extinction due to human activity. The Amazon rainforest, the world's coral reefs and the boreal forest biomes are all fast approaching the cusp of irreversible tipping points. It is time to ensure that efforts help reverse and not accelerate the looming planetary crises – climate change and nature loss – while also boosting sustainable job opportunities for communities.

An aerial photograph of a dense, vibrant green forest. A wide, calm river flows through the landscape, curving from the top left towards the bottom left. The forest is thick and extends to the horizon under a clear sky. The lighting is bright, highlighting the various shades of green in the canopy.

While many governments and businesses realize that this presents a critical window of opportunity to take action, there is a need to increase the evidence base to enable governments to determine which pathways truly help the economic recovery process while equally addressing the global environmental agendas, helping to reduce nature loss and limit climate change, or at a minimum, not exacerbate them.

For decades, addressing the negative environmental impacts of subsidies has remained at the bottom of action agendas in most countries, even as their governments made formal commitments and agreed on global targets to do so. Despite the urgent need to liberate funding to remedy recurring crises and finance response measures, countries have taken little action to redirect finances from environmentally harmful subsidies by reducing or redesigning them, even though there are small amounts of finance that provide positive incentives to biodiversity, they remain marginal.



Click/scan to watch the introductory video "The Nature of Subsidies".

Increasing evidence demonstrates that well-intended subsidies and government support that target socio-economic goals (food security, energy security, etc.) may have unintended negative and costly effects on the environment, including biodiversity. These effects, in turn, negatively affect societies and economies at the local and national level. Common examples are found in the agricultural sector. The Organisation for Economic Co-operation and Development (OECD) estimated that the support to agricultural production in 54 countries (of around US\$500 billion) is considered potentially harmful to the environment.¹ This can result in habitat destruction, land degradation and nutrient pollution. In many cases, the support has distortive effects, which are unequally distributed and harmful for both humans and the environment.² Similar examples are found in the fishery sector, where subsidies worth between US\$7 billion and \$35 billion per year are considered harmful to the marine environment, mainly due to pollution and overexploitation. The fossil fuel sector receives very significant subsidies. For G20 countries, production subsidies average US\$290 billion per year, and consumption subsidies, US\$320 billion.³

These examples highlight some of the inefficiencies in current policy frameworks such as the lack of solid screening processes for negative impacts on nature, resulting in a significant loss of species and irreparable damage to ecosystems. Repurposing this ineffective and unsustainable support could lead to significant fiscal savings. Realigning current expenditures could serve the dual goals of generating considerable savings while helping to achieve the Sustainable Development Goals (SDGs) and the global goals of the Rio Conventions. These efforts could equally contribute to building more resilient, sustainable food production systems.

In the past decade, the Convention on Biological Diversity Aichi Target 3,⁴ which aims to reform incentives, including subsidies harmful to biodiversity, has remained among the most underachieved target.

In December 2022, at the 15th meeting of the Conference of Parties (COP) to the United Nations Convention on Biological Diversity, the Kunming-Montreal Global Biodiversity Framework was adopted and included Target 18.

Target 18



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 United States dollars per year by 2030, starting with the most harmful incentives, and scale up positive incentives for the conservation and sustainable use of biodiversity.⁵

¹ OECD (2022a).

² UNDP, UNEP & FAO (2021).

³ Urpelainen & Elisha (2021).

⁴ Target 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio-economic conditions.

⁵ CBD (2022).



This needs to be remedied in the coming decade as a matter of priority. To facilitate this process, The Biodiversity Finance Initiative (BIOFIN) of United Nations Development Programme (UNDP) has developed these step-by-step guidelines to examine, repurpose and monitor major subsidies to make them fiscally responsible and nature-positive. Since biodiversity is geographically specific and remains, to a large extent, unmeasured and undocumented, such an analysis is a complex task. These guidelines are a first attempt to facilitate the assessments of the impacts on nature from subsidies, using a broad definition encompassing all types of public support provided by governments. Using the guideline, countries can scan the full spectrum of their subsidies to determine to what extent they may be at risk of harming nature and create plans to redesign them to become more nature-positive. A people-centred approach is applied to prevent negative impacts on beneficiaries and enhance any positive impacts for both people and climate.

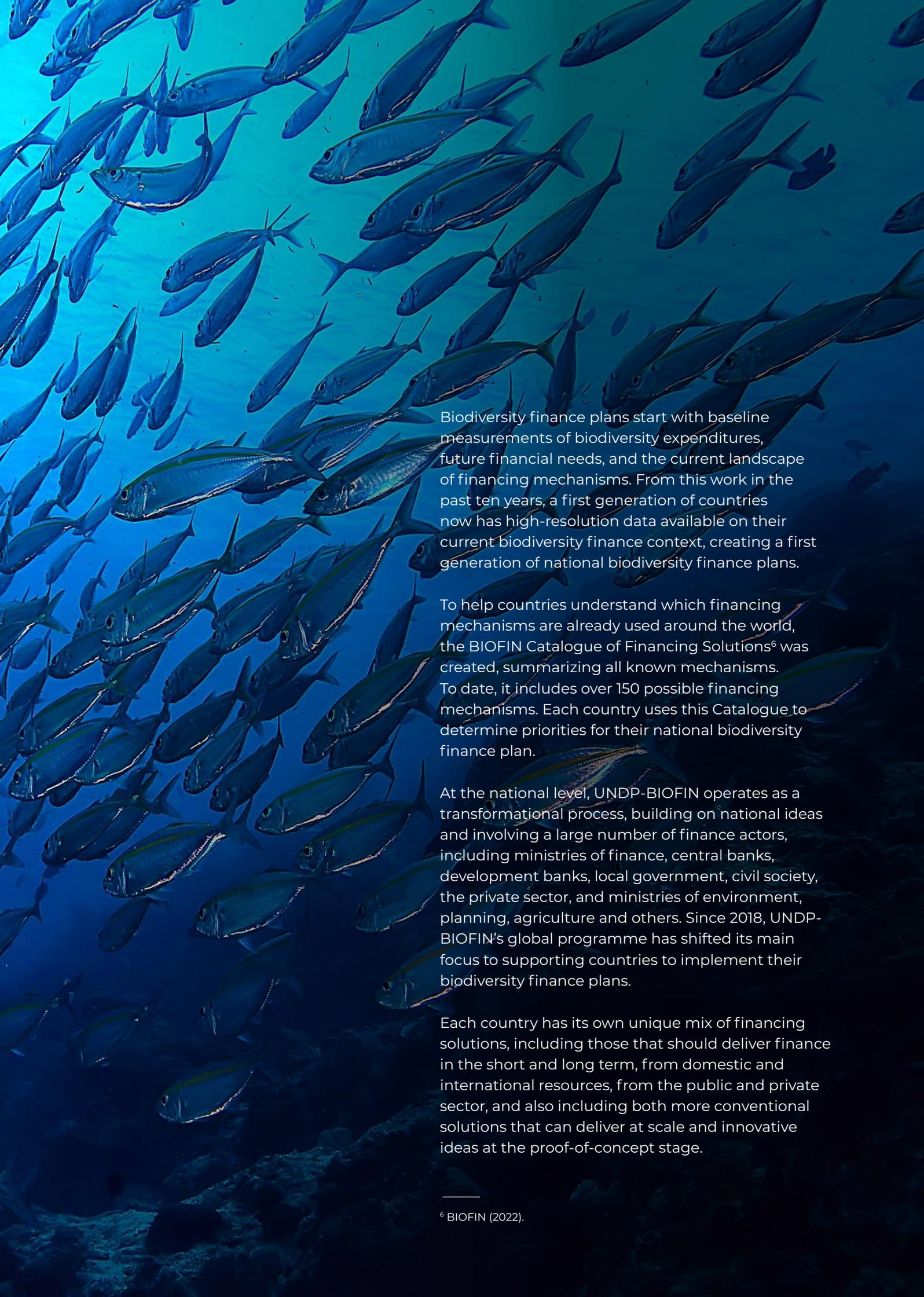
2 The UNDP-BIOFIN approach



Click/scan to read the
BIOFIN Workbook 2018

UNDP-BIOFIN was initiated in 2012 to develop a methodology for countries to design national biodiversity finance plans and country action agendas to align finance flows with national biodiversity goals and divert them from causing harmful impacts while generally improving the effectiveness of spending. This methodology has culminated in the publication of the BIOFIN Workbook.

It has since grown into a global initiative, which has engaged 41 countries to date.



Biodiversity finance plans start with baseline measurements of biodiversity expenditures, future financial needs, and the current landscape of financing mechanisms. From this work in the past ten years, a first generation of countries now has high-resolution data available on their current biodiversity finance context, creating a first generation of national biodiversity finance plans.

To help countries understand which financing mechanisms are already used around the world, the BIOFIN Catalogue of Financing Solutions⁶ was created, summarizing all known mechanisms. To date, it includes over 150 possible financing mechanisms. Each country uses this Catalogue to determine priorities for their national biodiversity finance plan.

At the national level, UNDP-BIOFIN operates as a transformational process, building on national ideas and involving a large number of finance actors, including ministries of finance, central banks, development banks, local government, civil society, the private sector, and ministries of environment, planning, agriculture and others. Since 2018, UNDP-BIOFIN's global programme has shifted its main focus to supporting countries to implement their biodiversity finance plans.

Each country has its own unique mix of financing solutions, including those that should deliver finance in the short and long term, from domestic and international resources, from the public and private sector, and also including both more conventional solutions that can deliver at scale and innovative ideas at the proof-of-concept stage.

⁶ BIOFIN (2022).



Several countries have already demonstrated tangible results:



In the **Philippines**, UNDP-BIOFIN helped fill a gap in protected area legislation (2018) and supported the formulation of a new budget proposal, contributing to a budget increase of US\$ 53 over multiple years for protected areas, which was adopted in late 2019 for the 2020 budget. A new app 'GCash Forest' was launched with the tpayment platform GCash/Alipay, combining subsidies for sustainable behaviour with payments for tree planting, resulting in over 1,000,000 trees planted.



New legislation was formally adopted on multiple finance solutions in **Kazakhstan** in 2017,⁶ and a new Environmental Code followed in 2021, including a host of mechanisms that will help protect and restore the country's nature: biodiversity offsets, voluntary payments for ecosystem services, principles of sustainable ecotourism, and the development of methods and approvals for calculating greenhouse gas emissions, including in the forestry sector.⁷ These led to finance results exceeding US\$ 30 million.



Mexico successfully re-designed two major environmental funds:

1. a national climate fund, which previously was not operational nor focused on biodiversity) and that since redesign saw a turnover exceeding US\$3 million, with US\$2 million directed to nature-based solutions for ecosystem resilience; and
2. a green fund for Mexico City, resulting in US\$3 million per year in savings through identified efficiencies and a better defined focus on nature.



Sri Lanka adopted a sustainable finance sector policy and sustainable tourism certification in 2019, followed by significant new investments.



Zambia enacted a national framework for green bonds in 2020, followed by a tax break for any organization issuing a green bond in 2022.



The **Seychelles** Parliament formally adopted all of the finance solutions proposed in its biodiversity finance plan and launched the first-ever Biodiversity Finance Unit in 2019.



In **Botswana**, the system of protected area fees was updated, resulting in multiple updated fees adopted in 2022, resulting in a US\$ 3.6 million increase in revenue the first year.



Koh Tao island in **Thailand** adopted a new visitation fee in 2022, set to raise more than US\$200,000 per year in revenue for coral restoration and waste management.

⁶ BIOFIN (2017).

⁷ BIOFIN (2021a).

The identification and analysis of potentially harmful as well as positive subsidies are an integrated part of the BIOFIN methodology⁹ to design national biodiversity finance plans as part of the Policy and Institutional Review. However, among the first cohort of these plans, few countries opted to work on environmentally harmful subsidies. Collecting credible data on harmful subsidies and the impact on biodiversity proved to be a substantial challenge.

Some recent global estimates of environmentally harmful subsidies across sectors (e.g. fossils fuels, hard rock mining, agriculture, marine capture fisheries, forestry, transport, water and construction) indicate that they can be as high as US\$1.8 trillion¹⁰ per year, or 2 percent of global GDP. This

makes a compelling case for stepping up efforts in this area. Unless significant action is taken, these increased negative expenditures may ultimately outdo our efforts to raise finance for nature positive investments. Without a substantial change, it will be arguably impossible to achieve the Goals of the Kunming-Montreal Global Biodiversity Framework,¹¹ including Target 18, which focuses on positive and potentially harmful incentives, including subsidies.

To accelerate progress in this area, studies in 27 BIOFIN countries are underway to examine the harmful impacts of subsidies on biodiversity, and create action plans to rethink and redesign them. These guidelines can be used to support this work, and will draw on emerging lessons from these countries as a basis of these studies.



⁹ BIOFIN (2018).

¹⁰ Earth Track (2022).

¹¹ CBD (2022).

3 The aim of these guidelines

Recently, the Convention on Biodiversity (CBD) adopted the Kunming-Montreal Global Biodiversity Framework – a global agreement on the best way forward to save our nature by 2030; incentives, including subsidies harmful to biodiversity, are a key topic. Target 18, one of the 23 targets, calls for countries to address negative impacts from subsidies, as well as create positive incentives to drive change.

⁹ BIOFIN (2018).



If countries want to make more progress than in the last decade, they need to start by identifying subsidies that are, often inadvertently, having negative impacts on nature, and then find ways to address this. To this end, the objective of these guidelines is to help countries **assess to what extent subsidies and government support are having harmful impacts on biodiversity, and create action plans to rethink and redesign them.**

It will provide guidance, in addition to the BIOFIN workbook, for countries to:



Identify and assess subsidies and government support that are likely to be having a harmful impact on nature, and where possible, quantify the extent of the negative impact and the cost of the subsidy.



Define multiple redesign options through a multidimensional analysis that adequately weighs social, gender equality, environmental, economic and political economy concerns throughout the re-design and transition process.



Develop action plans to redesign prioritized subsidies, outlining multiple scenarios.



Implement the action plans to redesign subsidies in order to reduce their negative impacts on nature while also reducing other negative impacts and enhancing positive attributes for all of the SDGs.



Identify institutional gaps that have caused subsidies to become adopted without sufficient consideration for nature and define actions to fill existing gaps.

These guidelines are primarily intended for national stakeholder groups in developing countries, examining the issue of harmful subsidies in a comprehensive manner.

4 Definitions of subsidies and scope of the assessment

Different definitions of subsidies are used in different contexts, depending on the specific nature of discussions. It is important that each country clearly define the term 'subsidies', which will be the basis to determine the scope of the assessment. These guidelines aim not to be prescriptive with regard to the definitions, but rather to simply provide guidance.





The WTO defines a **subsidy** as “a financial contribution by a government, or agent of a government, that confers a benefit on its recipients” for the purposes of the Agreement on Subsidies and Countervailing Measures.¹² When considering **environmentally harmful subsidies**, OECD defines the scope as “all kinds of financial support and regulations that are put into place to enhance the competitiveness of certain products, processes or regions, and that, together with the prevailing taxation regime, (unintentionally) discriminate against sound environmental practices”.¹³



The CBD refers to **harmful or perverse incentives** to biodiversity as “economic, legal and institutional incentives that emanate from policies or practices that induce unsustainable behaviour that destroys biodiversity, often as unanticipated side-effects of policies designed to attain other objectives”.¹⁴ Subsidies are considered a subset of incentives.



The IMF considers the non-internalization of externalities or government inaction an implicit subsidy¹⁵ when examining subsidies.

Any definition adopted should enable countries to meet their objective of identifying and repurposing harmful subsidies and government support, and ideally facilitate countries in working towards and reporting on Target 18 of the CBD Kunming-Montreal Global Biodiversity Framework.

In many countries, government support is not aligned with national biodiversity goals. Many subsidies remain ineffective, even for their intended purpose, and/or no longer support the development trajectory of the country, including sustainability goals.¹⁶ These should ideally be phased out or redirected to support the SDGs, including nature-positive outcomes. In other cases, subsidies achieve the intended outcome (e.g. food security) but have additional unintended harmful impacts on nature. These should be reformed, so that the intended outcome is still achieved, but with a nature-neutral or nature-positive impact.

¹² Agreement on Subsidies and Countervailing Measures (Subsidies Agreement) of the World Trade Organization (WTO).

¹³ OECD (2005).

¹⁴ CBD Secretariat (2011).

¹⁵ TEEB (2009).

¹⁶ OECD (1998).

Table 1: Type of subsidies

 Type of subsidy	 Examples
Direct transfers of funds	<ul style="list-style-type: none"> • Targeted spending through government budgets at different levels. For example, funding for research and development programmes. • Government-owned enterprises (at varying degrees of ownership), if the transfer of funds is carried out on the terms and conditions that are more favourable for business compared to private ownership. For example, an equity injection in chemical fertilizer distribution from the government's budget.
Indirect transfers: income or price incentives	<ul style="list-style-type: none"> • Price interventions that increase or depress domestic prices generate incentives or disincentives. • Price incentives that mainly consist of border measures, including tariff and non-tariff measures such as import tariffs or quotas, export bans, or subsidies that lead to unfair advantages, and/or market price regulations (e.g. domestic price fixation policies above the market rate for producers).
Fiscal incentives	<p>Fiscal support such as special exemptions, deductions, rate reductions, rebates, credits and deferrals that reduce costs. This includes:</p> <ul style="list-style-type: none"> • Subsidies based on output, which include transfers made according to the production output. • Subsidies based on input, which entail transfers made by lowering the price of variable inputs, fixed capital, or credit, for example, VAT exemption for chemical inputs. • Subsidies based on factors of production, using two kinds of criteria: (i) commodity criteria, for example, in the agriculture sector, area planted, animal numbers, revenues, or farmer's income; or (ii) non-commodity criteria, such as subsidies tied to environmental or landscape outcomes (e.g. to encourage alternative use of agricultural land or land conservation practices) or lump-sum payments to all farmers subject to cross-compliance conditions.
Other foregone government revenue	<p>Foregone government revenue from government-owned resources (natural resources, land, infrastructure), goods and services. No charge or below-market rate.</p>
Transfer of risk to government	<ul style="list-style-type: none"> • Credit support: Government loans and guarantees below-market rates. • Insurance: Government insurance at below-market rates, risk-shifting to the government, and caps on commercial liability. • Transfer of environmental costs to the government: Transfer post-project (closure and long-term monitoring costs) or during operations (waste and environmental management costs).

Source: TEEB (2009).

Subsidies can include **direct transfers of funds** and **indirect transfers**. Some subsidies are sectoral on-budget (i.e. clearly visible in government budgets or can be estimated from budget accounts), while others are **off-budget** (i.e. not accounted for in national

budgets). Some of the on-budget subsidies have been traditionally used by governments in developing countries to support local livelihoods, reduce poverty, and promote economic and productive activities.

Type of harmful impacts

Some subsidy types are important drivers of activities harmful to biodiversity, resulting in losses of ecosystem services. These typically impact the environment negatively in two ways:

1 **Subsidies aimed at underpricing the use of natural resources** lead to overconsumption beyond sustainable levels.

2 **Subsidies aimed at increasing production** can lead to an increased usage of polluting inputs, damaging production methods, or an unsustainable transformation of ecosystems, in turn aggravating the risk of long-term environmental damage.

The monetary **size of a subsidy does not necessarily correspond to the extent of its harmful effect**;¹⁷ even relatively small subsidies can have major negative impacts. The opposite is also true: a large subsidy, whether it is effective or not in achieving its stated primary goal, might not necessarily have a substantially negative impact on biodiversity. A basic understanding of the extent of the impact on biodiversity will be important in prioritizing subsidies for reform.

A detailed quantification of **the impacts on biodiversity may be difficult** due to the complexity of the analysis. There are often several contributing factors, making it very challenging to identify the direct causality between subsidies and the exact extent of their biodiversity harmful effects. In addition, biodiversity is location-specific, and most areas lack specific data on the presence of the majority of species, as well as spatial data. **These guidelines recommend using**

a precautionary approach and not waiting for detailed proof of biodiversity impacts assessments.

Biodiversity impacts could consist of: the loss of species (e.g. pollinators due to pesticide use, overfishing or damaging fishing practices); the loss of biodiversity-rich farmlands, including soil, and impacted water runoff (e.g. from increased fertilizer use, increased grazing densities and stocking rates, or conversion to monocultures); and reduced habitat diversity (e.g. weaker physical boundaries between different agricultural, forest, residential and commercial lands). Subsidies may also exacerbate drivers of biodiversity loss such as habitat loss, the introduction and spread of invasive species, overexploitation of natural resources, pollution and climate change.

Table 2 illustrates some potential negative biodiversity impacts of subsidies in key sectors.

¹⁷ OECD (2013).

Table 2: Potential negative biodiversity impacts of subsidies in key sectors

Sector	Subsidy objective	Effects	Potential biodiversity impacts
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Agriculture</p> 	<p>To support an increase of production</p>	<p>Intensification with an increased use of chemical inputs, mechanization and irrigation.</p>	<ul style="list-style-type: none"> • Loss of non-target species, including pollinators, due to direct and indirect effects of pesticides. • Eutrophication of freshwater, marine and terrestrial ecosystems from fertilizers. • Loss of natural habitats due to drainage, irrigation, extension of agricultural land into natural habitats, or consolidation of holdings. • Soil degradation and erosion due to cultivation techniques and reduction in the fallow period.
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Fisheries</p> 	<ul style="list-style-type: none"> • To increase fishing effort by reducing operating costs (e.g. fuel subsidies, tax exemption) and enhancing revenue (guaranteeing a fixed price for catch). • To implement programmes that increase capacity by reducing the cost of capital for fleet expansion and modernization (e.g. through vessel buy-back schemes, low interest loans, loan guarantees, grants) . 	<ul style="list-style-type: none"> • Increased fishing capacity and effort by encouraging longer fishing ranges and the purchase of larger vessels. • Increased consumption by reducing prices. • Increased fishing effort by supporting non-viable businesses. 	<p>Unustainable fishing level¹⁸ leading to:</p> <ul style="list-style-type: none"> • increased mortality of target and by-catch species; • an important physical impact on the habitat of benthic organisms caused by bottom trawling. <p>the direct effects of fishing also have indirect implications for other species. Fisheries remove prey that piscivorous fishes, birds and mammals would otherwise consume, or may remove predators that would otherwise control prey populations.</p>

¹⁸ For more guidance on biodiversity impact of fisheries support, see OECD. (2022b).

Sector	Subsidy objective	Effects	Potential biodiversity impacts
Transport 	To subsidize fuel	Increased travel and vehicle use	<ul style="list-style-type: none"> Increased GHG emissions that directly and indirectly impact biodiversity. Increased carbon dioxide, which causes acidification of the ocean, affecting fauna and flora that are sensitive to pH imbalances. Increased habitat losses and fragmentation, increased deforestation in remote areas.
	To build roads	More roads built	
Energy 	To subsidize fuel	Increased use	Increased GHG emissions, which directly and indirectly impacts on biodiversity. Increased carbon dioxide causes acidification of the ocean, affecting fauna and flora that are sensitive to pH imbalances.
Water 	To provide water price subsidies and indirect water subsidies	Water overuse and wastage due to below-cost pricing.	Falling water tables, erosion and loss of biodiversity due to water stress situation or a lack of available water and food for wildlife.

Source: TEEB (2009).

5 Available global data



According to a 2020 OECD report, governments allocate approximately US\$500 billion per year in support that is potentially harmful to biodiversity, i.e. five to six times more than total public spending on biodiversity, which is estimated at \$78–92 billion by OECD (2020),¹⁹ and at \$121 billion per year on average by Seidl et al. (2020). According to a follow-up OECD (2021)²⁰ report, government support that is harmful to the environment is estimated at \$800 billion a year. This estimate was based on updated data and many countries reporting to OECD (and IEA) databases. Each year, governments in large and emerging economies provide \$345 billion in potentially environmentally harmful agricultural support, according to the OECD.

¹⁹ OECD (2020b).

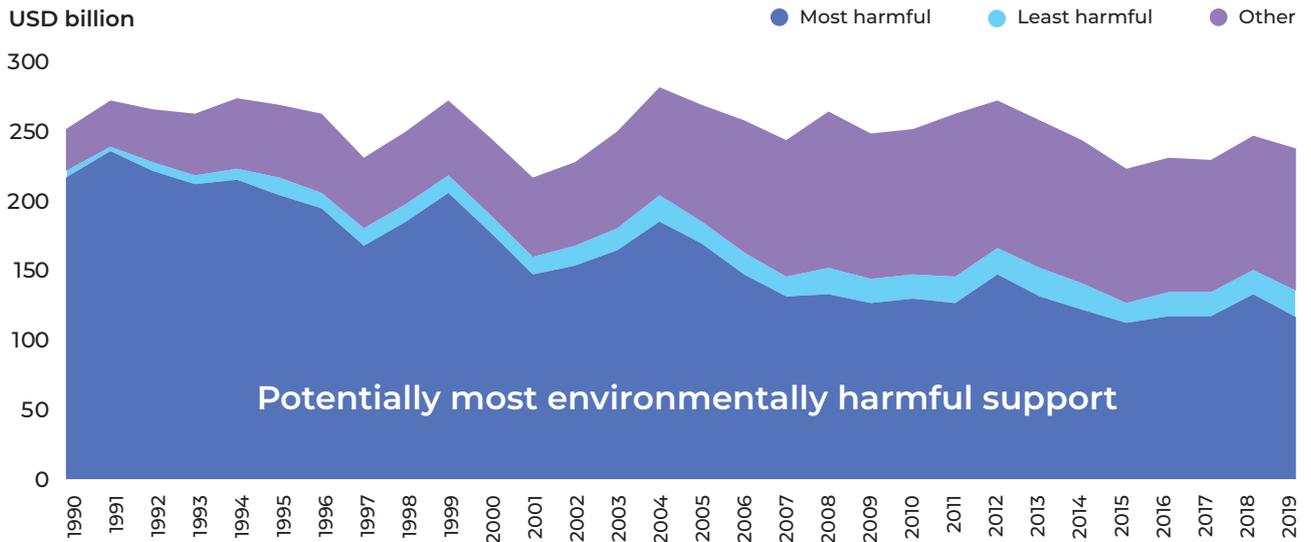
²⁰ OECD (2021).



According to OECD, across 54 economies, US\$345 billion per year in agricultural support (2017–2019 average) was provided in ways that undermine the sector’s sustainability.²¹ While the percentage of overall support to farmers that is potentially most environmentally harmful has declined considerably since 1990,

it has remained relatively constant over the past decade, as indicated in Figure 1.²² For the European Union (EU), agriculture spending for 2021 to 2027 is projected to be EUR387 billion, with some payments depending on environmentally friendly practices.²³

Figure 1: Evolution of producer support in OECD countries by potential environmental impact



Note: Support to agricultural producers considered potentially most environmentally harmful consists of: market price support; payments based on commodity output, without imposing environmental constraints on farming practices; and payments based on variable input use, without imposing environmental constraints on farming practices. Support considered potentially least harmful (or beneficial) consists of: payments based on area/animal numbers/receipts/income with environmental constraints; payments based on input use with environmental constraints; and payments based on non-commodity criteria. "Other" refers to the remaining support that does not fit in either of these categories (i.e. miscellaneous). For explanation of the methodology, see Chapter 4 of OECD (2013), Policy Instruments to Support Green Growth in Agriculture, OECD Green Growth Studies, OECD Publishing. <http://dx.doi.org/10.1787/9789264203525-en>

Source: OECD Secretariat calculations based on OECD (OECD, 2021^[203]) "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-pcse-data-en>

Global subsidies to fisheries have been estimated at US\$50 billion per year, US\$20 billion of which is support for fuel.²⁴ Support that reduces the cost of fuel and other inputs purchased by fishers tends to result in the greatest increase in fishing effort, with associated risks of overfishing. Over the period 2018–2020, the 40 countries and economies covered by the OECD Fisheries Support Estimate (FSE) database, which together

accounted for 90 percent of world landings over the period, provided average annual support of US\$10.4 billion to the fisheries sector. This support amounted to around 11 percent of the average value of landings over the period, down from around 14 percent in 2012–2014.²⁵

Other estimates of subsidies harmful to biodiversity in a range of sectors are indicated in Table 3.

²¹ Ibid.

²² OECD (2019).

²³ EU (2022), pp. 2023–27.

²⁴ Sumaila et al. (2016), pp. 143–146.

²⁵ OECD (2022).

Table 3: Potentially harmful subsidies to biodiversity per sector

Sector	Region	Estimates size of potentially harmful support to biodiversity (US\$ billion, 2021)	Sources and comments
 Agriculture	GLOBAL	520	FAO, UNEP and UNDP (2021) based on total support estimates also developed by OECD
 Fisheries		50	<ul style="list-style-type: none"> • Sumaila & Skeritt (2021) • World Bank (2021)
 Energy (fossil fuel)		640	<ul style="list-style-type: none"> • OECD (2019) • IEA (2021)
 Forestry		155	<ul style="list-style-type: none"> • Interpol (2020), • World Bank (2021)
 Water		350	World Bank (2019)

Source: Adapted from Earth Track (2022).

There are still little or no subsidy data available for environmentally significant sectors such as mining, manufacturing and infrastructure. There tends to be less data available for developing countries than for developed countries. Developing countries require more intensive support to fill these gaps and a methodology tailored to their context.

6 Existing methodologies, guidelines and tools

A number of guidance materials have been developed over the years to help decision makers to identify potentially harmful subsidies to biodiversity that can be redesigned.

OECD (2005) developed an integrated assessment framework including a checklist that assists governments and analysts in identifying those subsidies whose removal would benefit the environment.²⁶ More recent OECD (2022)²⁷ work has developed good practice on insights to identify and assess subsidies and other incentives harmful to biodiversity. It draws on 23 national-level studies that have been undertaken to date across 12 countries. Key steps to undertake such as an evaluation include: (i) scoping; (ii) screening; (iii) data gathering; and (iv) assessment.

²⁶ OECD (2005); and OECD (2007a).

²⁷ Matthews & Karousakis (2022).

The work of the CBD Secretariat²⁸ and The Economics of Ecosystems and Biodiversity (TEEB)²⁹ have laid the foundation for the Institute for European Environmental Policy (IEEP)³⁰ to develop a tool to assess subsidies harmful to biodiversity that consists of the following four phases:



Screening of subsidies

This screening phase serves to identify those subsidies that have clear potential to harm biodiversity and that are politically more viable to redesign.



Assessing the need to redesign current subsidies

This phase assesses whether there is a strong need for and benefit from redesigning one or more subsidies, outlining clear options to significantly reduce negative impacts. A proposal for redesigning a subsidy needs to be greenlighted by political decision makers if it is likely to bring significant environmental benefits; if so, the assessment should be carried forward, looking at social and economic impacts explored in the next phase.



Analysis of repurposing options

Here, concrete redesign options are developed. This phase should help to prepare the political decision-making for the redesign or the removal of biodiversity harmful subsidies and should help to identify whether redesign is advisable and/or likely to be successful when considering social and economic impacts.



Identification of opportunities for action

This phase identifies whether there are practical windows of opportunities and champions who could foster, facilitate and advocate for the redesign of current subsidies, as well as the due public and political support to enable progress. This would help in the timing and prioritization of redesign actions.

²⁸ CBD (2011).

²⁹ TEEB (2009).

³⁰ Institute for European Environmental Policy (2012).



These guidelines add a fifth step to provide additional guidance that can be used during the actual redesigning or repurposing of subsidies, and the relevant monitoring and evaluation (M&E) process.

Subsidy redesign always faces political challenges and needs to be based on a comprehensive analysis of potential positive and negative socio-economic impacts.

It is critical to explore multiple possible scenarios whose goal is to reduce negative impacts on nature:



Greening and repurposing subsidies

These approaches often retain the payment structure of the subsidy but adjust the purpose, conditions, regulations and incentives to reduce negative environmental impacts, for example, maintaining fisheries subsidies while not allowing the use of certain hooks and nets that harm fish and other species. Harmful subsidies may even be turned into a biodiversity-neutral or -positive subsidy. Another example is excluding ecologically sensitive areas for the use of chemical fertilizers or excluding areas where a certain level of pollution in water is observed.



Reducing the value of subsidies

The budget allocation for the subsidy is reduced, which can lessen impacts that are harmful to biodiversity while saving significant public funds. For example, a 5 percent reduction in a large subsidy can help save millions of US dollars.



Eliminating subsidies

In a first scenario subsidies are completely cancelled only after a detailed analysis of potential socio-economic and environmental implications. In a second scenario through a phased approach, subsidies are gradually reduce over a number of years.



Making minor modifications of the most harmful elements

Only the most harmful elements can be taken out, such as a particularly harmful chemical fertilizer, without requiring a major overhaul of the subsidy.



The application of sound M&E frameworks for each subsidy is imperative to ensure that they achieve their set objectives and measure financial and non-financial performance. Each subsidy repurposed should include an M&E plan, with clear finance targets and milestones to identify potential areas of improvement. Regular monitoring is required given the constantly changing landscape.

7 BIOFIN's guidelines for identifying and repurposing harmful subsidies





Much of the learning is derived from a multi-country study undertaken in 2021–2023 by UNDP’s Biodiversity Finance Initiative (BIOFIN) in 27 developing countries, with the financial support from the Governments of Canada, Belgium, Flanders, Germany, Norway, Sweden (Swedish International Development Cooperation Agency, Sida), Switzerland, the United Kingdom, UN Partnership for Action on Green Economy (PAGE) and the European Union. This study aimed to assess how subsidies and policy instruments are harmful to biodiversity, resulting in action plans on how to rethink and redesign them.

These guidelines were developed based on relevant literature, including the 2018 BIOFIN Workbook and other sources such as OECD and TEEB. As part of the Policy and Institutional Review of the 2018 BIOFIN Workbook, each country creates an inventory of subsidies that may potentially have adverse impacts on biodiversity as per the template shown in Table 4.

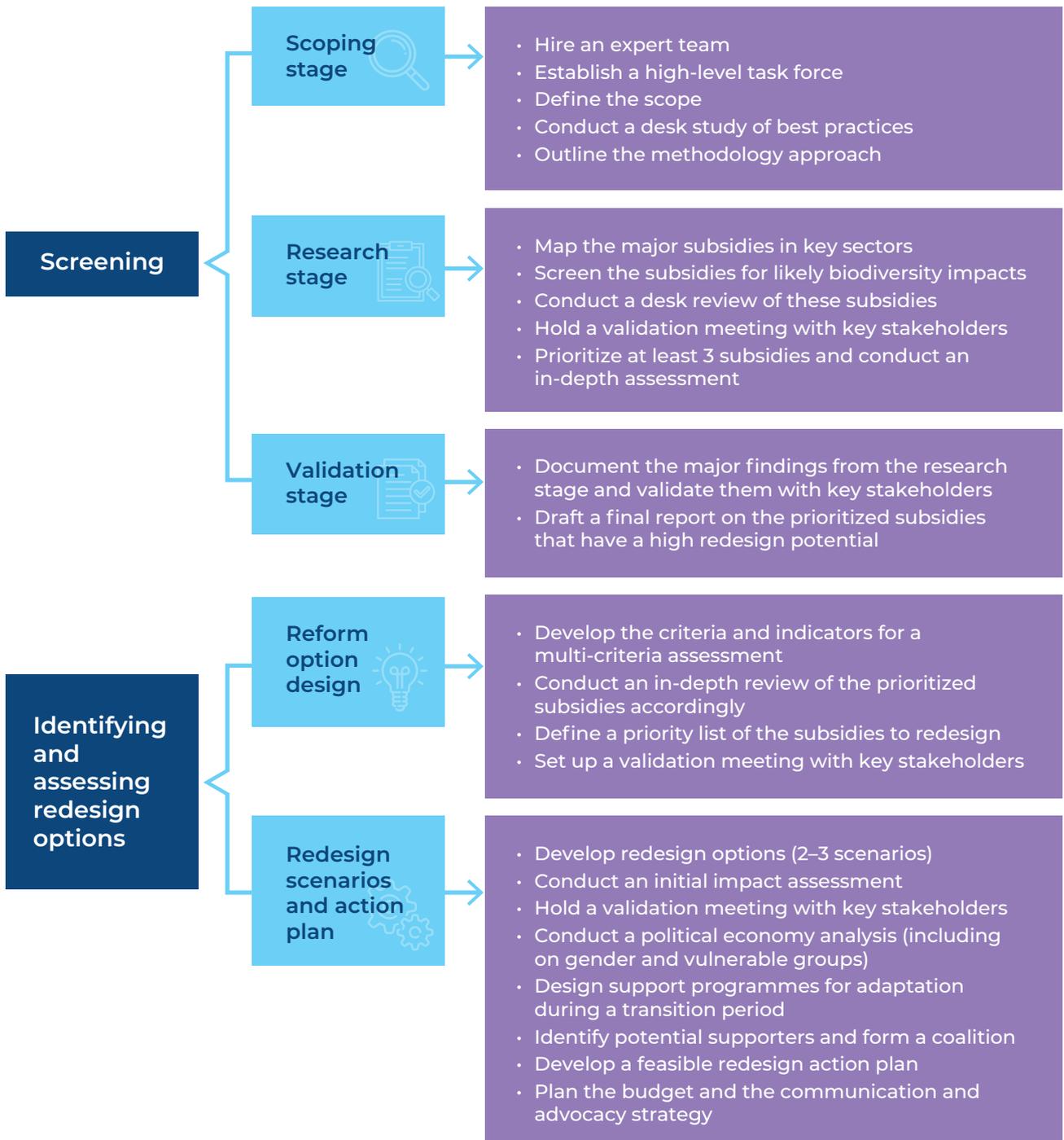
Table 4: Template to map subsidies that are potentially harmful to biodiversity

Heading	Description
Existing subsidy	Name of the subsidy analysed
Responsible stakeholders/ organization/agency	Stakeholders, organization and agency involved or related to the subsidy
Sector	Relevant sector(s)
Drivers	Describe the motivations explaining the introduction and continuation of the subsidy
Direct or indirect	Is it a direct or indirect subsidy?
Financial value	Financial value of the subsidy (if this information is already available)
Description – intended objective and beneficiaries	Describe the main objectives of the subsidy and the intended beneficiaries
Benefits (social, environmental, economic)	Describe the different benefits that the subsidy has and will have on social, environmental and economic aspects, for example, an agricultural subsidy to support rural employment
Biodiversity benefits	How does the subsidy benefit biodiversity?
Biodiversity-harmful impacts	What harmful impacts on biodiversity, ecosystems, ecosystem services or endangered species can be expected or are known?
Is this potentially a harmful subsidy?	See definition of potentially harmful subsidies in section 4 (<i>Definition of terms and scope</i>)
Describe related legislation	Describe the main laws and regulation defining the subsidy
Additional notes	Additional notes
Links to related studies and resources	List the different sources of analysis related to the subsidy (e.g. any economic justification)

Building on this initial inventory that provides a full national overview, the National BIOFIN teams examined all major financial subsidies in key sectors that may adversely impact biodiversity, and developed redesign scenarios (eliminating, reducing, or greening and repurposing) for prioritized mechanisms with an action agenda. The scenarios proposed can vary by focusing on particular harmful

practices including in the subsidy framework, such as a specific type of chemical fertilizer or fishing practice, or by proposing a more comprehensive restructuring, repurposing or even elimination approach if there is an indication that the subsidy does not achieve its purpose or is particularly harmful (e.g. towards endangered species).

Figure 2: An overview of the approach



The approach proposed included phases described below.

A Screening

The aim of this phase is to produce an initial inventory of subsidies at the national level.



1 Scoping stage

- a. **Assemble a team of experts to carry out the assessments.** This should be a multi-disciplinary team that is able to take into consideration social, environmental, and political and economy concerns at the micro and macro levels, as well as other potential positive and negative impacts throughout the repurposing process. Depending on the country context, the team could include experts from the fields of biodiversity, public finance, economics, agriculture, fisheries, social studies and gender. Ideally, a communications specialist is engaged to design tailored messaging and advocacy strategies.
- b. **Establish a task force** of high-level representatives and experts from key government and private sector counterparts (or build on existing inter-sectoral groups) to oversee and guide the process. The task force could include representatives from the Ministry of Finance, the Ministry of Environment, and relevant sectoral ministries, as well as stakeholder representatives from the private sector in priority sectors and technical experts from a range of areas. This task force could act as a formalized reference group or an informal advisory group.

Box 1

Intergovernmental working group on repurposing biodiversity harmful subsidies in Kyrgyzstan

Agriculture is an important contributor to Kyrgyzstan; in 2020, it employed over 18 percent of the working population and accounted for 13.5 percent of the GDP. Subsidies in the agriculture sector represented 2 percent of GDP in 2019. Subsidies from the public budget are not always effective in terms of economic growth, poverty reduction and safeguarding the environment. Six out of nine fiscal subsidies in the agriculture sector were found to be harmful to biodiversity, three of which are now targeted to be repurposed, whereby farmers are encouraged to switch to green or organic practices and supporting technologies, thus creating new business and employment opportunities. The three subsidies are: irrigation subsidies, value-added tax (VAT) exemption on mineral fertilizers and imports of pesticides, and subsidized interest rates for loans to agricultural producers and exporters.

Often controversial, changing any subsidy, particularly in the agricultural sector, can create strong resistance among certain stakeholders. One important barrier can be the misperception among stakeholders and government entities on the impact of a subsidy and the very human and understandable fear of change. To overcome this barrier, advocates must closely inform stakeholders and the public of the objective and intended effects of the work. The target groups included line ministries of agriculture, finance, economy, water resources management, and environment protection, development partners, academia and the business sector. Obtaining strong political intergovernmental support is key to gain traction; one of the objectives of instigating this redesign was to achieve an understanding of the impacts of agricultural subsidies and to agree on a way forward among all stakeholders.

One of the core challenges with subsidies is that they may encourage the creation of lobbying and create vested interest groups. The group that benefits from the subsidy tends to be well-organized and very vocal, while the group that is negatively affected may not even know that it is the subsidy that creates the negative impact.

In this regard, Kyrgyzstan set up an intergovernmental expert group to decide and agree on the way forward in implementing reforms. This created important alliances between economic and environmental interest groups, which may allow to overcome any barriers that may arise when reforms are implemented.



- c. **Define the scope** (i.e. priority sectors, geographic focus and working definition) of the assessment. Analyse evidence of the importance of a biodiversity-dependent or -impacting sector to inform the prioritization of sectors for the scope of this assessment. At this point, it is also important to revisit international definitions of subsidies and harmful subsidies. The task force will adopt one definition tailored to the national context.
- d. **Develop a stakeholders' consultation and engagement plan**, including key communication messages tailored to the national context to support this process.
- e. **Conduct a desktop study** of all available international best practices on options for repurposing biodiversity harmful subsidies relevant to national context (e.g. publications, databases, web articles). The sources of information could include: [FAOSTAT](#) , [OECD Data](#)  and [the global subsidies initiative from the International Institute of Sustainable Development](#) . If the assessment includes an analysis of the impact on biodiversity, gather existing evidence of the economic value of nature including cost-benefit analyses and environmental impact studies.
- f. **Decide on a detailed methodological framework** and **draft an outline** of the final report.



2 Research stage

- a. **Map** major subsidies in key sectors:

Conduct a rapid mapping of all major subsidies in the country in key selected sectors. Biodiversity-positive subsidies should be included because they can guide repurposing efforts, or might even have their own unintended adverse impacts on nature. Both production and consumption subsidies should be considered. Some preliminary information may already exist in the BIOFIN Policy and Institutional Review (PIR) and the Biodiversity Expenditures Review (BER) methodology.



Output: This step results in an initial list of subsidies in the country with possible adverse impacts on biodiversity.

- b. **Conduct an initial screening** of subsidies likely to have a significant impact on biodiversity:

Prepare an initial inventory of subsidies that may be harmful to nature using the template provided in the BIOFIN Workbook 2018; refer to Table 4 as guidance to describe the subsidies. General questions to guide the screening and assessment

process of the subsidies are found in Annex 1. For many studies, it may be challenging to pinpoint the exact impact on nature since subsidies are often part of a wider package of measures, or data may be absent; in such cases, a prediction can be made based on international examples of similar studies.



Output: The list from Step a is expanded with a review of the potential negative impacts on biodiversity for each subsidy, combined with the decision on whether or not there is need to investigate further.

c. Conduct a more detailed review of these subsidies covering at least the following:

- subsidies policies;
- the legal and institutional framework;
- objectives and results;
- the total annual government financial costs;
- estimated financial impacts of these subsidies on the different categories of households and producers;
- impacts of the subsidy, and if possible, related economic costs.

This review can be conducted as a desktop review, supplemented by expert input and spatial analysis. Potential sources are the national statistics institution, government analytical reports, scientific data, and findings from scholars and NGOs, newspapers, and local media. Evidence of the economic value of nature, including cost-benefit analyses and environmental impact studies related to subsidies, are important sources of information. A source of information could include an international database on environmental economic valuation, such as the [Ecosystem Services Valuation Database \(ESVD\)](#).¹⁶

For the desktop review, analysis can be supported by a spatial analysis and/or expert assessment (Delphi method, semi-structured interviews, etc.) to identify the most affected areas and better understand the drivers of biodiversity impact. The analysis should mention instances where multiple drivers, including a subsidy, might result in negative biodiversity impacts. Studies or technical reports that support these claims are the ideal source of information, but in their absence, anecdotal information from expert can be useful. Broad accuracy will be sufficient at this stage to support the prioritization process. Guiding questions to be answered for this research stage can be found in Annex 1.



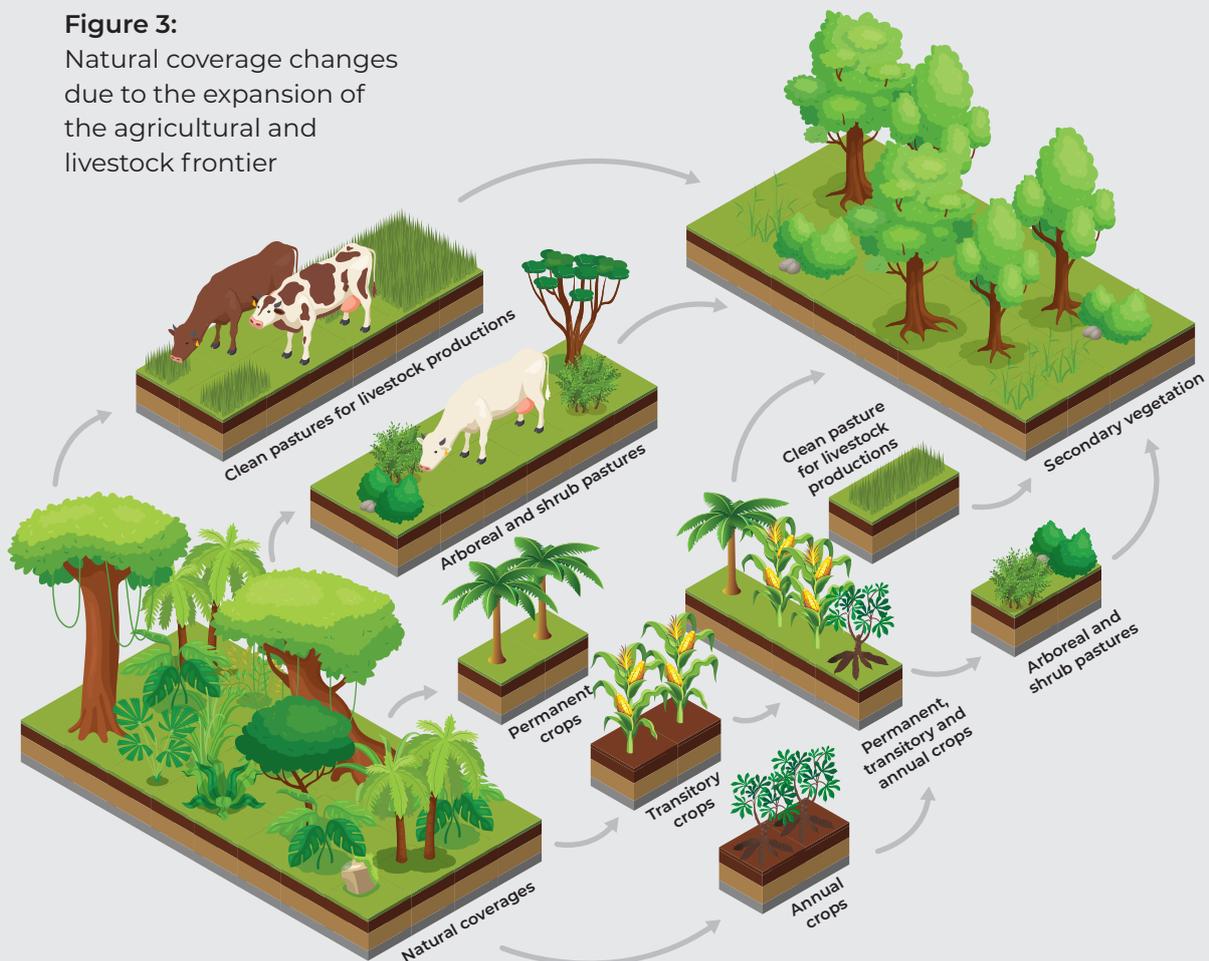
Output: Detailed profile studies are completed for a selected number of subsidies from the list under Step b. These are used for the validation process in Step d.

Spatial analysis in Colombia – Using GIS data to assess trends of the impact of subsidies on biodiversity

In Colombia, it was highly challenging to attribute biodiversity impacts to specific subsidies due to the lack of data and information available. To overcome this barrier, geospatial analysis was used to establish patterns of changes in land coverage associated with agricultural production systems, where support was provided through financing that was expected to have negative impacts on nature.

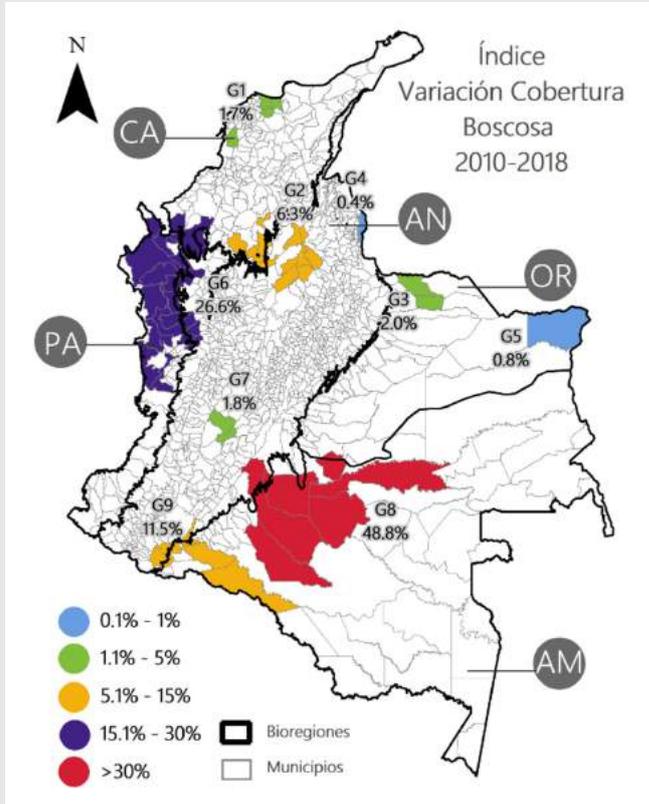
Natural coverage changed due to the expansion of the agricultural and livestock frontier, as shown below.

Figure 3:
Natural coverage changes due to the expansion of the agricultural and livestock frontier



Patterns identified indicated that natural coverage is mostly converted first for livestock expansion, which is then converted into heterogeneous agricultural areas and secondary vegetation. The GIS information was also used to identify land use trends in the different areas of Colombia. The results shown in Figure 4 indicate the expansion of agriculture and livestock productive systems by territories.

Figure 4: Expansion of agriculture and livestock productive systems by territories in Colombia



During 2011–2018, the main expansion occurred in the bioregions of the Amazon and the Pacific. The predominant production systems were pastures for livestock production, bananas, corn, rice and cassava. Livestock and rice production systems have benefited the most from subsidized agriculture loans for which important expansion of land coverage was also recorded. Recommendations are being made to green the subsidized agriculture loan scheme by strengthening the monitoring and evaluation system of the scheme with the integration of biodiversity and climate risks management criteria.

d. Validate findings

Validate findings with key stakeholders, including representatives of academia, civil society groups, business associations, local communities and local governments. Stakeholders' involvement at the early stages of the process is important to obtain all relevant information, and also to understand and assess all intended and unintended effects of the subsidies on different types of stakeholders.



Output: The detailed subsidy profiles are understood by a wider group of stakeholders, enabling a better base of support for follow-up actions.

Challenges in collecting comprehensive data sets on potentially harmful subsidies to biodiversity: Lessons learned from Kyrgyzstan and Nepal

Most developing countries do not have readily available comprehensive data on subsidies and related biodiversity impacts. Often, a comprehensive monitoring and evaluation system of subsidies at the national and subnational levels is not in place, which can severely constrain this assessment. This assessment should be seen as an opportunity to establish a comprehensive and transparent monitoring and evaluation (M&E) system of subsidies at the national level.

The following approach has been used in Nepal and Kyrgyzstan to reduce the above data gaps:



Obtain an overview of available data at the national level by collecting information available from different sources such as the national statistics service, international research, organizations, newspaper articles, academia, and analytical reports from government agencies.



Conduct direct interviews with the officials within the Government and government agencies, including the Ministry of Economy and Finance, the Ministry of Agriculture, relevant associations of producers and Parliament.



Some Information may be available in international databases organized per country including:

- *FAOSTAT*
- *OECD Data*
- *The Global Subsidies Initiative from the International Institute of Sustainable Development*



Pilot studies can be undertaken to evaluate social and biodiversity impacts in selected areas.

e. Prioritize between 1 and 10 subsidies for an in-depth assessment

Prioritize subsidies for an in-depth assessment, considering the biodiversity, financial and economic impacts following the desktop review and consultative validation processes. Specific selection criteria should include:

a) Impact on biodiversity

 Overall	Threats to endemic species and/or ecosystems; invasive species, wildlife habitat, pollution
 Agriculture	Land use change, soil degradation/desertification, balance of nutrients, use and misuse of herbicides and pesticides, effects of production system on agricultural biodiversity
 Water-related	Eutrophication, overuse of groundwater
 Fossil fuels/energy	CO ₂ emissions, land use change
 Fisheries	Physical or other damage to ecosystems (e.g. bottom trawling, disrupting the food chain), threats to threatened species, overuse of the fishery stock
 Forest management/forest concessions	Soil erosion, damage to aquatic ecosystems, land use change.

b) Impacts on financial, economic, and social aspects, for example, costs or revenue loss for the public sector, financial impacts on different socio-economic groups.

c) Potential to improve the effectiveness of the subsidy

- Potential to improve the effectiveness of an existing governance system in terms of value for money, transparency, target groups reached and access to subsidy improved.

d) Feasibility, including political feasibility, and opportunities for action

- Public momentum exists or can be created
- Political willingness
- Partners can be found.

Other implementation criteria could be considered, such as geographic distribution and accessibility to site to assess opportunities for action.

For the in-depth assessment, use the checklist in Annex 1 for guidance.

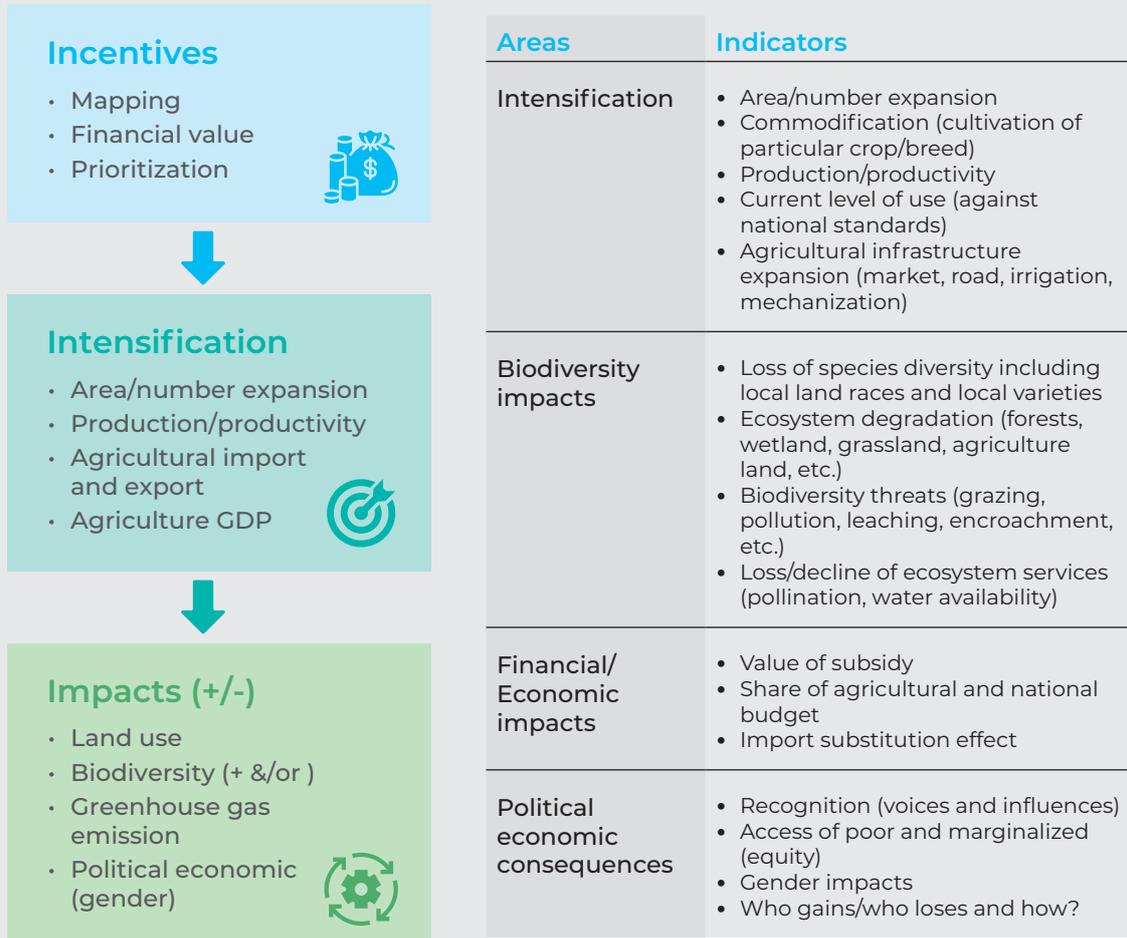
Output: An in-depth assessment of a prioritized set of subsidies.

Box 4

Nepal: A comparison and prioritization of the different subsidies and subsequent in-depth research

Nepal identified 12 subsidies potentially harmful to biodiversity in the agricultural sector. The prioritization methodology proposed was based on a set of 11 criteria assessing biodiversity, financial and social impacts, the impact of agriculture intensification, and likelihood of success for redesigning a subsidy. For each criterion, a score from 0 to 4 was attributed as per the assessment framework below.

Figure 5: The assessment framework used in Nepal



The scores were assigned during an expert meeting, relying on their specific knowledge. The results of the prioritization of subsidies to be redesigned are shown in the figure below:

Figure 6: Results of the prioritization of subsidies to be redesign in Nepal

Prioritization Criteria

11 criteria set
(44 maximum score)



Biodiversity Impact (3)

- Species diversity and population
- Biodiversity threat (grazing, conversion, etc.)
- Impact on ecosystem and its services



Financial/Economic Impact (3)

- Value of subsidy
- Share of agricultural and national budget
- Import substitution effect



Intensification (3)

- Geographical spread (provinces)
- Spread/expansion of area/number
- Increment on productivity



Gender and social impacts (1)

- Women, youth and poor



Likelihood of success for reform (1)

Scoring Method:

Expert consultations and review

Subsidies	Score	Rank
Chemical fertilizer	35	I
Agriculture credits	32	II
Insurance	31	III
Irrigation	29	IV
Commodity promotion	28	V
Agriculture implements/ Machinery	26	
Seed subsidy	25	
Fishery	25	
MSP	23	
Import tariff machinery	21	
Import tariff commodity	18	
Information technology	16	

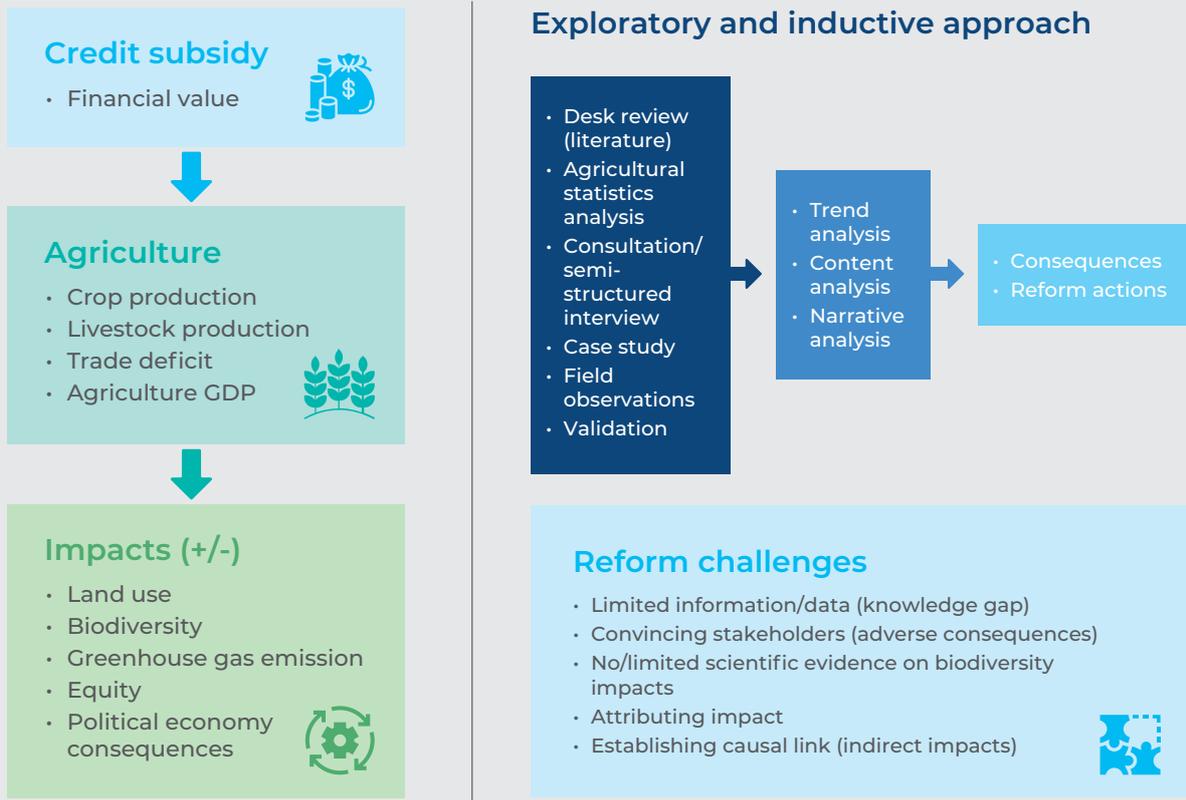
Scoring rule: 0 to 4, where 0 for no impacts, 1-less, 2-moderate, 3-high and 4- very high for likely adverse impacts.

Based on this scoring, five subsidies were selected, based on the likely impact on biodiversity, financial value and general social impact. Subsequently, one-to-one meetings were held with key stakeholders to narrow the selection down to the three main subsidies for the further analysis and reform design.

Once the subsidies were prioritized, the in-depth review started. For the Agriculture Credit Interest Subsidy, an exploratory and inductive approach was used to tackle the key challenges, such as limited information and data, no or limited scientific evidence, and difficulties of attributing impacts and establishing causal links. Since the subsidy was only introduced in 2016, stakeholders aimed to have all the necessary information to compare the pre-subsidy situation with the post-implementation phase.

The financial analysis showed increased spending on the Subsidy with nominal or no contribution to achieving the original purpose of addressing trade deficit and by generating significant unintended negative impacts on biodiversity and soils.

Figure 7: Exploratory and inductive approach used in Nepal

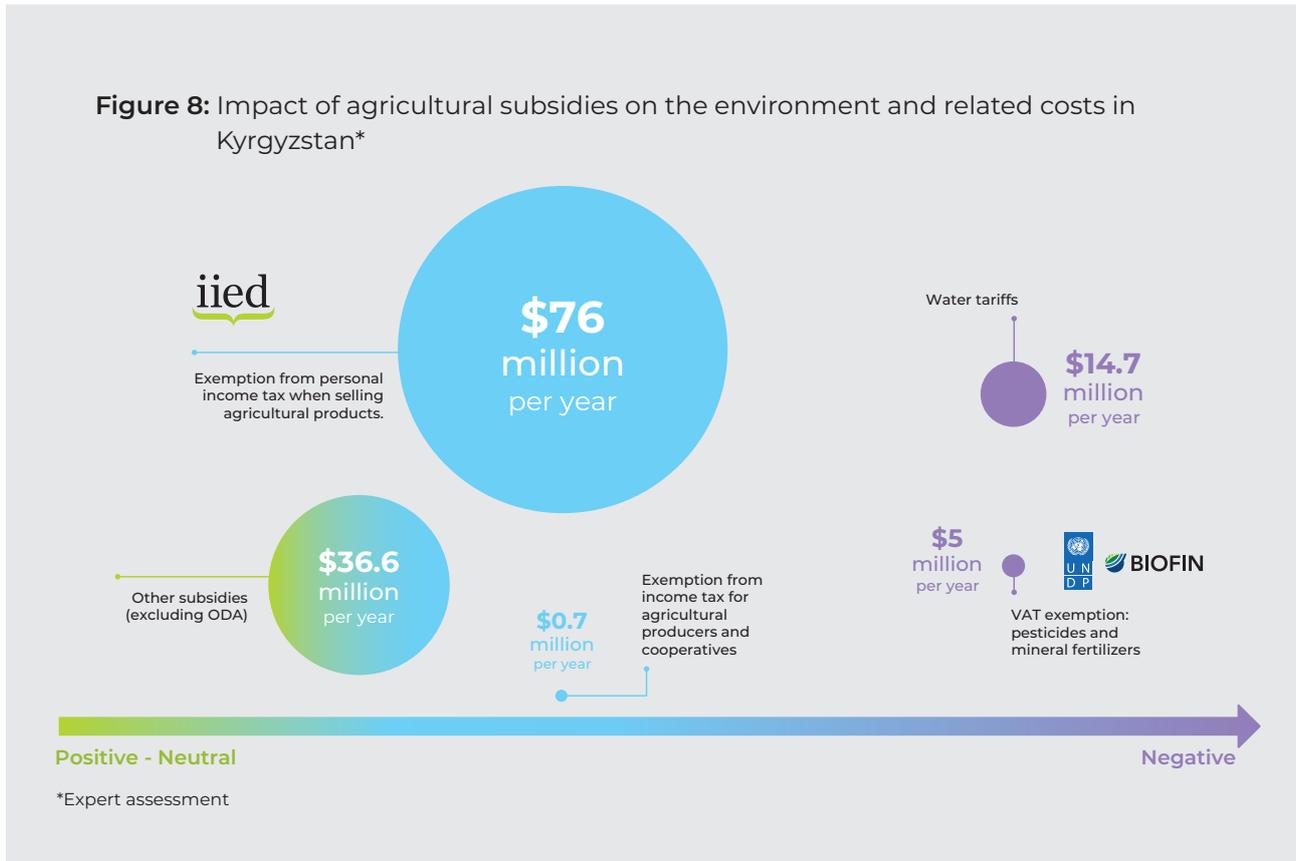


Box 5

Kyrgyzstan: An analysis of subsidies and the value-added tax exemption

The analysis in Kyrgyzstan showed that the value-added tax exemption on imports of pesticides and chemical fertilizers, as well as subsidized water tariffs, had the most significant negative impacts on biodiversity. The financial costs of these two subsidies for the Government are relatively low compared to the cost of the exemption from personal tax for the sales of agriculture products. The impact from the subsidy on agricultural production was considered limited.

Figure 8: Impact of agricultural subsidies on the environment and related costs in Kyrgyzstan*



3 Validation stage

a. Documentation of major findings and validation

Prepare a draft report with the final national inventory of subsidies of key sectors that are likely to harm biodiversity, together with the prioritization of at least three subsidies for redesigning. Validate these findings through engagement with key stakeholders, including representatives of relevant civil society groups, business associations, local communities and local governments, etc.

b. Optional additional section on systemic gaps

Include in the report an additional section with major gaps identified within the national system of designing subsidies and their potential impact on nature, and proposed institutional improvements. An improvement may be the strengthening of the procedures of strategic environmental assessments (SEAs) with a clear focus on biodiversity, or an improved M&E system for subsidies.

c. Final report

Validate suggestions of prioritized subsidies with high redesign potential (at least three major subsidies).



Output: National report detailing subsidies that have a harmful impact on nature.

B Identifying and assessing redesign options

Develop subsidy redesign options for the prioritized subsidies by following the stages below:



4 Review the potential for redesign options

- a. **Develop criteria and indicators** for a multi-criteria assessment of the potential of redesign options identified: These may include financial/economic and biodiversity impacts, as well as the expected political, economic and social consequences. These could be the basis of an M&E system for the proposed redesign options.
- b. **Conduct an in depth-review** of initially prioritized harmful subsidies, with detailed information on the objectives, size, nature and impact of the subsidies. Case studies and/or field observation might be an option to obtain better data, especially when only scarce ground evidence is available. Also consider whether there are other policy measures (including taxes) that counteract the objective of the subsidy. Guidance questions to be answered are provided in Annex 2.

Box 6

Nepal: Overcoming knowledge gaps – a case study approach

To overcome data gaps while still being able to obtain the necessary information to create a convincing narrative, Nepal conducted intensive case studies in the Morang and Sunsari districts of Province 1; Saptari district of Province 2; and Kavrepalanchowk district of Bagmati Province.

Based on the literature, two to six indicators were developed* each for the following objectives:

- Document the process of insurance premium distribution.
- Collect evidence on biodiversity impacts.
- Collect existing evidence on gender impacts of the subsidy.
- Assess environmental and social safeguard measures, including problems/ challenges.
- Make recommendations for reducing harmful impacts to biodiversity.

With the developed indicators they then prepared semi-structured interviews with subsistence and commercial farmers, municipality and wards, provincial and federal ministries, and insurance companies. The findings from the interviews were also validated by visual observations during field visits.

*A more detailed overview can be found in the section on Nepal case study.

- c. **Define the final list of prioritized subsidies to redesign** (at least two or three major subsidies) and make a strong case for change.
- d. **Hold validation meetings with the task force**, which consists of representatives of relevant civil society groups, business associations, local communities and local governments, etc.



5 Redesign the scenarios and action plan

- a. **Develop redesign options aligned with national priorities within the sector**, with two to three scenarios that can be compared to the business-as-usual scenario for selected subsidies, including potential for avoided costs, perceived effectiveness, other climate/environmental impact. A cost-benefit analysis could be a useful tool to compare the different options and scenarios proposed. Redesign options can consist of eliminating, reducing or greening the selected subsidy (e.g. by introducing biodiversity safeguards) or redirecting savings to support positive biodiversity outcomes. Also, consider how the scenarios can be implemented, included in the operational design, and how the effects of the new scenarios can be monitored and evaluated; it is crucial to establish baseline reference points to make before-after analysis possible.

Kyrgyzstan: Comparing scenarios for the personal income tax exemption on income from the sale of agriculture produce

The personal income tax exemption on income from the sale of agricultural produce is a subsidy that reinforces established conventional agriculture practices, contributing to land degradation as a result of excessive pressure on the land and non-compliance with crop rotation. The soil structure and fertility are deteriorating. Rangeland degradation has led to the disappearance of grazing-sensitive plant species, the depletion of biodiversity, soil compaction and erosion. About 70 percent of winter pastures have suffered from soil degradation, and about 45 percent of the total area of agricultural land is now exposed to water and/or wind erosion.

For the redesign of the personal income tax exemption on income from the sale of agricultural produce, Kyrgyzstan considered three main alternatives and calculated what the Government's revenue would be if they were implemented.

Scenario 1

Income tax exemption is completely removed without compensation.

Scenario 2 A

Income tax exemption is removed only for wealthier livestock owners.

Scenario 2 B

Tax exemption is removed for all wealthy farmers. Potentially, this measure can be combined with a simplified tax regime.

Scenario 3

Based on Scenario 2, additional measures are taken to compensate food price increases for the lowest income groups.

The wealth of the farmers is defined based on the number of livestock and hectares of land owned. The size of lowest income group was defined based on the survey carried out on the poverty line, which estimated that 23.2 percent of the population were under the poverty line in 2019.

Table 5: Estimated net government revenue gained

Net revenues (KGS million/y):	Scenario 1	Scenario 2		Scenario 3	
		Option A	Option B	Option A	Option B
Minimum	3,314	1,118	2,332	1,021	2,132
Maximum	6,752	2,929	6,202	2,695	5,705

Despite the administrative costs for tax administration, all three scenarios can help gain additional public revenue that could be redirected to increase government support to more sustainable agriculture (exchange rate: US\$1 = KGS84.79, 2021).

Source: International Institute for Environment and Development, UNEP & PAGE (2021). Study on Fiscal Policy Reform for Sustainable Agriculture.

- b. **Carry out an initial impact analysis** that identifies which part of the economy and society will be affected directly and indirectly by different redesign options over time.
- c. **Hold validation meetings with the task force**, which includes key stakeholders, including representatives of relevant civil society groups, business associations, local communities and local governments, etc. Explore options of partnership and support to gain political momentum for the redesign of the subsidy.
- d. **Carry out a detailed socio-economic analysis** including gender dimensions and with a focus on vulnerable groups and poverty and health impacts.
- e. **Design support programmes** that ease the path of adaptation for companies or consumers, or ease the path of transition away from harmful practices and provide possible targeted compensation, or exemption to low-income groups, certain groups of workers, and other households affected by the proposed change. A robust monitoring and evaluation system can ensure that the targeted groups and impacts are achieved during implementation (monitoring), and with regular evaluations, necessary adjustments can be made (evaluation).

Box 8

The importance of a monitoring and evaluation system and its key elements

A monitoring and evaluation (M&E) system for subsidies aims to:



Inform the implementing institution whether the results of measures are aligned with the objectives and rationale for the subsidy (e.g. reaching the right target group, changing behaviour).



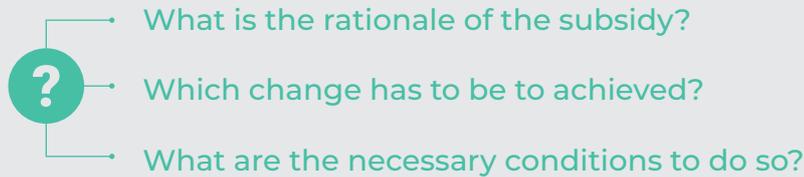
Provide the necessary evidence to analyse the unintended and intended impacts of the subsidy and thus enable necessary adjustments. The ultimate goal is that the subsidy will result in a zero loss or a net gain to biodiversity and ecosystem integrity.



Allow for an analysis of the usefulness of the subsidy in relation to the intended outcome (e.g. evaluating whether the right assumptions were made during the design phase).

Continued on next page

In order to carry out the M&E, the following questions should be answered:



Based on the answers to these key questions, define the objectives and the target groups, and how the subsidies impact can be assessed and documented. It will be important to establish a baseline to characterize the ecosystem and biodiversity concerned, drivers for ecosystem loss and options for net improvements.

Monitoring: The system should allow for a constant analysis of the impact and flag necessary adjustments. Clear and measurable biodiversity conservation outcomes are identified, benchmarked and periodically assessed. In order to inform the design, monitoring and assessment of subsidies, biodiversity targets should be established. For each subsidy, the type of target may differ; for example, the target could be the percentage of ecosystem area restored or the return of a keystone species.

Evaluation: In regular intervals, the subsidy should be more thoroughly analysed for biodiversity-related impacts, the fulfilment of the rationale, and financial and social implications on the countries' budget. Alternatives to the subsidy should be explored and justification should be provided as to why the subsidy should be preferred over the alternative.

European Union M&E for agricultural subsidy programmes

A 2006 financial regulation requires the adequate ex-post disclosure of the recipients of all European Union (EU) funds, with agricultural spending transparency to begin in the 2008 budget.

The EU M&E for agricultural subsidy programmes includes:

- multi-level and multi-type indicators;
- explicit links to legal and regulatory instruments of the policy;
- an M&E Framework aligned to the agricultural subsidy policy;
- relevant actors and their responsibilities defined;
- data requirement and sources clearly defined
- reporting and evaluation elements defined (quality and frequency);
- guidance on the use of M&E results.

- f. **Assess political opportunities for action**, including options for repurposing savings generated to strength resilience, and reduce future risks.
- g. **Identify potential supporters**, such as parliaments, government members, associations of the involved sectors and NGOs to form a broad coalition. One-on-one meetings help to create a shared vision of the subsidy redesign process.
- h. **Develop a feasible redesign action plan** including the objective, indicators, intended effects, inevitable effects and strategies to avoid possible negative consequences. Implement a M&E system to strengthen transparency and therefore ensure that the objectives are met and that the actions are effective and cost-efficient.
- i. **Develop a budget and communication and advocacy strategy.**



Box 9

Developing a communication and advocacy strategy

Informing and educating key decision makers, current and potential partners, as well as the public on harmful subsidies are an important pathway to change. As such, creating a robust communication and advocacy strategy to engage target audiences is a key component of any strategy to redesign harmful subsidies. The plan should provide for a thorough mapping of the key players in the field, and actions that can be taken to engage, inform and educate them on the topic. The strategy may include:



Target audiences: who are the key players and how do you want them to change?



Messaging: what kind of messages are appealing, and where are the entry points to deliver them?



Activities: what kind of strategies and activities can be used to engage them?



Measurement: what does success look like and how can it be measured?

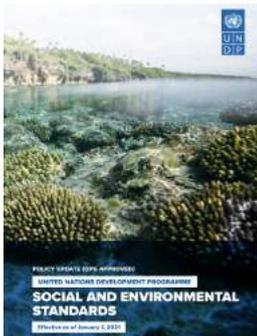
C Guidance for the implementation of redesign action plans

A number of aspects needs to be taken into account during the repurposing process in order to achieve the planned objectives:



Application of social and environmental safeguards

To prevent adverse social and environmental impacts resulting from repurposing or removing harmful subsidies, social and environmental safeguards should be in place. The proposed approach aims to: maximize social and environmental opportunities and benefits; avoid adverse impacts on people and the environment; minimize, mitigate and manage any adverse impacts where avoidance is not possible; strengthen partner capacities for managing social and environmental risks; and ensure full and effective stakeholder engagement. If any unexpected adverse impacts are reported, a further refinement of the repurposing plan may be needed. For any vulnerable groups that may be affected negatively, adequate compensation mechanisms need to be created.



The key principles are: (i) leave no one behind; (ii) human rights; (iii) gender equality and women's empowerment; (iv) sustainability and resilience; and (v) accountability.

UNDP developed a system of screening and managing social and environmental impacts that can be applied during the design and the implementation of options identified. See [UNDP Social and Environmental Standards](#).



Ongoing communication with key stakeholders

The redesign of a subsidy could well be introduced gradually. A wide range of stakeholders may be affected by the introduction of a redesign option. As such, it is important to ensure that the views of all key stakeholders continue to be taken into account and that they are informed on progress and challenges through discussions and consultations on selected communication platform. This will ease implementation and enforcement. The established task force could act as a formalized reference group or informal advisory group, and facilitate this process.



Monitoring and evaluation

The application of a sound M&E framework is imperative to ensure that the set objectives will be achieved, and to measure financial and biodiversity performance. The M&E plan should include clear biodiversity, finance targets and milestones.



Adaptive management

To achieve the objectives of repurposing subsidies, it will be necessary to adopt an adaptive management process based on the knowledge gained to update models of developed scenarios, and review and revise implementation strategies if necessary.



Knowledge sharing

The knowledge-sharing process for implementing reforms provides a mechanism for interaction to improve the implementation of new policies. It ensures continuous dialogues with actors within a country and collaboration with experts and their different but complementary knowledge. It creates opportunities to learn and improve the implementation of reforms.



Addressing institutional barriers

If gaps are identified in the country's institutional structure when analysing the adverse impacts of subsidies on nature and other environmental and socio-economic aspects, they could be addressed by establishing a separate workstream, for example, by introducing or strengthening procedures for strategic environmental assessments, or enhancing the M&E system for subsidies in the country. This can help prevent the design of future subsidies from being nature-blind.

8 Case studies



Colombia

Agricultural sector policy
management

A The national context

A case study in Colombia began in 2021. Its unique approach consisted of starting from a key driver of biodiversity loss, to then examining which subsidies are at risk of contributing to this driver. For its conceptual and methodological development, UNDP-BIOFIN Colombia partnered with the Latin American Center for Rural Development in Colombia (RIMISP) and had the support of the Center for Research and Development in Sustainable Agri-Food Systems of the Universidad de los Andes – ISA Center.

UNDP-BIOFIN's 2016 Policy and Institutional Review for Colombia was the starting point for the development of the case study. This study identified the productive sectors and their policy instruments that pose a risk of causing biodiversity loss. The report outlined how various sectoral policy instruments in Colombia

have the potential to unintentionally cause harm to biodiversity and ecosystem services. Some of these instruments lack the inclusion of environmental and social safeguards.

In recent years, the agricultural sector in Colombia has been playing a key role in productive development, the generation of employment, growth and income, and in the provision of food, contributing between 5.4 percent and 7.5 percent of the GDP. This sector, like other economic sectors, employs management instruments designed to encourage or discourage certain economic behaviours to foster growth and sectoral stability. However, in their efforts to achieve this purpose, they may inadvertently create negative environmental effects.

B Methodology and analysis

The study was carried out in three parts. In the first part, an evaluation was carried out of existing agricultural management instruments, such as subsidies, tax incentives, market incentives, provision of goods and regulation of the territory, from which 42 instruments were selected. These instruments were directly related to the five drivers of biodiversity loss defined by the National Policy for the Integral Management of Biodiversity and its Ecosystem Services of the country.

In the second part, using a GIS-type spatial analysis (Corine Land Cover Methodology) at the municipal level for the entire national territory for the 2001–2018 period, it was possible to identify linkages between changes

in natural habitats and changes in agricultural production systems, as well as the dynamics of occupation of the territory in these areas, through indices of changes at the municipal level for relative deforestation, expansion of the agricultural frontier, and intensification due to improvement in crop yields and changes in forest cover.

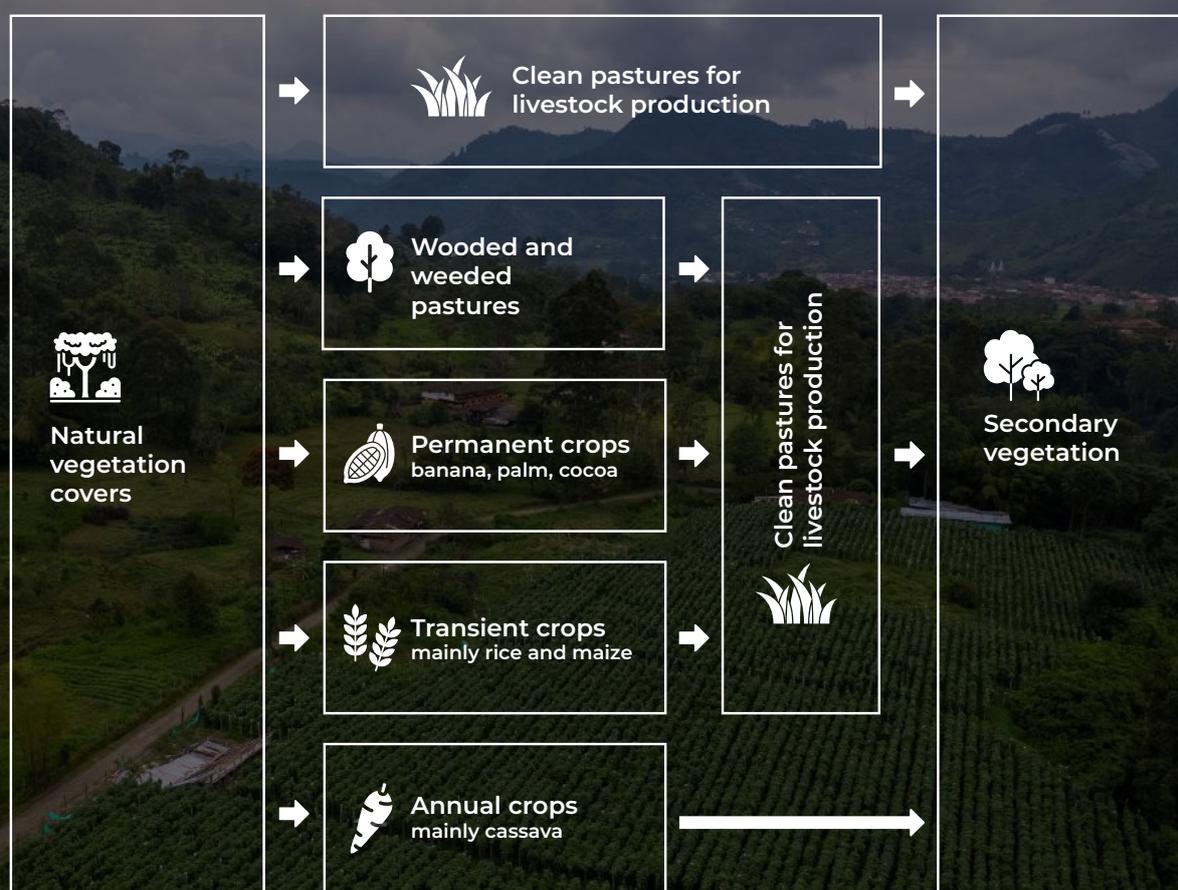
In the third part, an analysis was carried out of changes in land use, agricultural production systems, land occupation and sectoral policy management instruments, with the aim of disseminating these findings among a group of experts to prioritize the first four instruments for repurposing in order to reduce the negative impacts on biodiversity.

C Results and proposed solutions and options

In Colombia, the extension of the agricultural surface to new lands is known as the 'expansion of the agricultural frontier'. The traditional method of growth is achieved through the colonization of new lands and the change in land use. In contrast, the growth of high-yield intensive production systems is a method for increasing productivity, in response to the limited availability of land for agricultural use and technological development.

As explained in Figure 9, one of the most important findings of geospatial analysis was verifying that a pattern of change in the coverage associated with agricultural production systems exists, where it is evident that the transformation of natural covers cannot necessarily be explained by the presence of a single productive system, for example, livestock, but responds more to a model of occupation of the territory, where some policy instruments facilitate or promote this model of occupation, resulting in potential processes of biodiversity loss.

Figure 9: Pattern of change of vegetation covers



Source: BIOFIN (2021b).

The analysis of geographic information resulted in the following conclusions:

From 2001 to 2010, **50 percent of the changes in natural coverage** due to the expansion of the agricultural frontier in Colombia mainly occurred in **96 out of 1,103 municipalities** located mostly in the bioregions of the Amazon and the Orinoquía. The predominant production crops were rice, maize, palm and banana, while the crops whose yields increased the most were rice and corn.

Between 2010 and 2018, **75 percent of the change in forest cover occurred mainly in 54 out of 1,103 municipalities**, concentrated in the bioregions of the Amazon and the Pacific. The predominant production systems were pastures for livestock production, bananas, corn, rice and cassava.

The expansion of the agriculture area and related change in natural coverage of biodiversity-sensitive areas is the unexpected result of the combination of policy support instruments designed to promote agriculture production.

The prioritized instruments associated with production systems in the areas of greatest natural coverage change are characterized by: (i) some condition of restriction or order within the agricultural frontier; (ii) a disconnection between the agricultural and environmental sectors; and (iii) exclusion of environmental criteria, good environmental practices, restrictions on the use of natural resources or conservation measures.



As a result of the prioritization of management instruments and their potential reforms, the following instruments were suggested to be reviewed more in depth to reduce their negative impacts on nature:

1. Special lines of credit and development credit in the agricultural financial system, for which priority recommendations include:

- Extend the environmental criteria of zoning by aptitude throughout the credit system focused on primary production.
- Establish and issue criteria for the evaluation of agricultural credit, which include elements of biodiversity management such as location and access.

2. The National Policy for the Improvement of the Competitiveness in the Dairy Sector, for which the following reforms are recommended, among others:

- Update the prioritized areas for the targeting of the policy, under the criteria and guidelines of the Dairy Productive Management Plan.
- Complement the current policy guidelines for the dairy chain with access and operation criteria that favour:

(i) the conservation and restoration of soil and water resources; and (ii) the implementation of sustainable natural resource management practices.

3. Demarcation, recovery and administration of communal *playones*, commonly known in Colombian legislation as vacant lands that are periodically flooded with swamp waters that form them, or with the avenues of the rivers, which have been traditionally and commonly occupied by the residents of the place. Key recommendations include:

- Raise awareness of the systems of use on acquired rights that overlap with areas of environmental interest.
- Identify areas of environmental interest that are classified as “playones” for demarcation processes to increase levels of biodiversity protection

4. Allocation of wastelands to natural persons, for which it is recommended that, among others, the implementation of the instrument be subject to the availability of land in accordance with environmental zoning, the agricultural frontier, and other limitations of use.

D Lessons learned

Based on the work implemented by UNDP-BIOFIN Columbia, the following steps were identified to redesign instruments mentioned above to a more nature-positive model:



Identify and make visible the probable losses or actual/potential deterioration caused to biodiversity by projects that benefit from the instrument with statistical and spatial information.



Make an approximation of the economic value of the impact of the subsidies on natural habitats compared to the costs and benefits of the productive system, establishing an opportunity cost relationship with sustainability criteria.



Based on the risks of biodiversity loss and territorial particularities, include the relevant regulations to prevent the gradual but accelerated loss or deterioration of biodiversity in the design and implementation of policy instruments.



Organize a system of government that is appropriate to the instrument. A permanent line of research on perverse subsidies must be maintained, strengthening the capacity of relevant actors in decision-making in the productive sectors.

E Follow-up steps

A number of critical next steps was identified:

1. The second phase consists of moving from the national scope of the case study to its **regional application**, evaluating the behaviour of agricultural production systems with their management instruments and their impact on biodiversity loss. The diversity of ecosystems in Colombia generates differentiated economic and social development conditions. Agriculture supports have a different impact in each ecosystem; for example, sensitive areas of the country such as the Mojana Region experience the most negative impacts of the agricultural production policy support in Colombia. This regional study will aim to fully understand and demonstrate the unexpected negative biodiversity impacts of selected agriculture supports in a specific ecosystem for a particular agricultural production system. It will strengthen and reaffirm the identification of possible scenarios.
2. This phase will **continue to generate recommendations for the inventory of management instruments** identified in the first phase (four management instruments prioritized in the first study).
3. Based on the results of the study at the national and regional levels, this phase will present relevant **recommendations to government agencies to redesign instruments that have a negative effect on biodiversity**, which can be incorporated into the next National Development Plan 2022–2026, currently being developed. This approach will ensure that the Government officially adopts a strategy for identifying, characterizing and repurposing perverse subsidies that will be identified during this process and after in the agricultural sector.

Kyrgyzstan

Redesigning a subsidy
for mineral fertilizers
and pesticides

A The national context

In 2008, as part of the country's efforts to maximize yield and reduce rural poverty, the value-added tax (VAT) on the import and supply of mineral fertilizers and chemical plant protection products was abolished. As a subsidy policy, this increased the impacts on the natural environment, such as the rate of soil degradation, the water quality, and on the living organisms at all levels, as well as on human health. The subsidy was not designed as a transfer provided directly to farmers as a reimbursement for the purchase of mineral fertilizers and pesticides, but rather, to the distribution and sales networks, such as the importers and the suppliers.

Redesigning subsidies is an important policy priority, highlighted in multiple national policy documents:

- 1 The National Development Strategy of the Kyrgyz Republic for 2018–2040
- 2 The Concept of Kyrgyzstan as a Green Economy Country
- 3 The Green Economy Development Programme 2019–2023 in the Kyrgyz Republic
- 4 The Decree of the President of the Kyrgyz Republic of 9 February 2021 “On measures to develop the agro-industrial complex of the Kyrgyz Republic”
- 5 The Concept of the development of organic agricultural production in the Kyrgyz Republic for 2017–2022
- 6 The Concept for Soil Fertility Conservation and Improvement of the Kyrgyz Republic for 2017–2020.

In these documents, the President of the Kyrgyz Republic, the Jogorku Kenesh (Supreme Council) and the Government of the Kyrgyz Republic declared their commitment to the transition to sustainable development through various elements of ‘green’ development, one of which is the ‘green’ fiscal reform, with a clear focus on environmentally harmful subsidies. The subsidy for mineral fertilizers and pesticides is not aligned with the stated strategic objectives of the country. The subsidy policy also comes with financial consequences for the state budget due to the loss of tax revenues. According to estimates, the State loses KGS 386.4 million (US\$4.5 million) because importing companies that can pay this sum are exempt from VAT on agrichemicals.



Biodiversity impacts

Agricultural losses incurred by the State from harmful pests have forced agricultural producers to carry out larger-scale plant protection activities, such as using different types of pesticides, which poses certain threats to the environment. The high levels of persistent organic pollutant (POP) pesticides in the soils surrounding landfills may have been the source for the high contamination of livestock around the landfill. Pesticide residues also occur in lakes and rivers: Son-Kul Lake is polluted with pesticides, most of which are hazardous chemicals belonging to the group of POPs whose products and use are currently prohibited by the Stockholm Convention. Due to their stable nature, these substances can be easily absorbed by environmental elements (soil and water) and subsequently transmitted through the food chain, accumulating in aquatic organisms such as hydrobionts, fish, molluscs and crustaceans; for example, the threshold concentration of trichlorobiphenyl that changes the organoleptic properties of water is 0.13 mg/l. Being stable compounds, PCBs accumulate in environmental objects and are transmitted through food chains. Aquatic organisms – hydrobionts, fish, molluscs, crustaceans – accumulate PCBs. The content of chlorinated hydrocarbons, in particular polychlorinated biphenyls (PCBs) in fish meat and liver, can reach several tens of mg/kg.³¹ These substances represent a serious threat to human health and environmental safety.

Not only pesticides but also mineral fertilizers cause environmental issues in Kyrgyzstan. Organic matter or humus content in soil is the main indicator of soil quality; however, when the soil becomes oversaturated with minerals, its nutritional properties are reduced, which in turn leads to poor plant growth. Crop productivity in the country decreased by 35 percent in 2021 due to inappropriate irrigation practices, desertification and low humus content in the soil. Mineral fertilizers are water-soluble and can be taken up by plants almost immediately. While this enables a quick intake of nutrients,

farmers must reapply synthetic fertilizers regularly to keep the good results in yields. Synthetic fertilizers contribute very little to the ecosystem or structure of the soil because they stimulate excessive microorganism growth, which, over time, depletes the organic matter in the soil.

Mineral fertilizers can leach or run off into waterways. The quick results of synthetic fertilizers can come at a cost; when too much is applied, it may burn the plants. One of the disadvantages of synthetic mineral fertilizers, in addition to their high cost and the fact that they destroy soil fertility, is their high solubility in water. They are heavily washed out of the soil and pollute nearby reservoirs. This is especially evident with excessive application of synthetic nitrogen fertilizers in Kyrgyzstan.

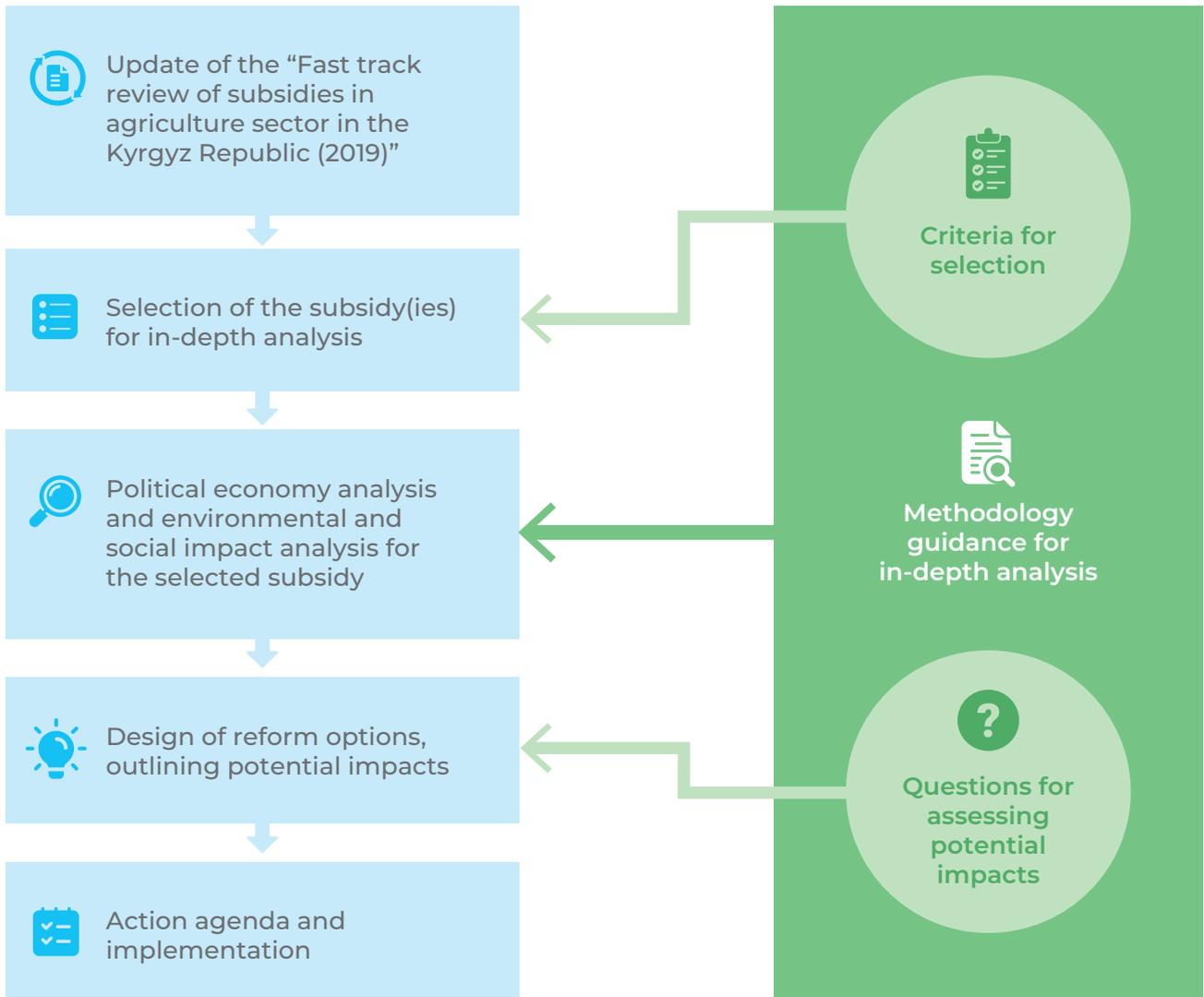
According to the National Statistical Committee of Kyrgyzstan, the use of chemical fertilizers is only increasing year after year. Over the past ten years, the use of pesticides and other agri-chemicals to combat harmful organisms has increased by 82 percent, while the share of organic fertilizers has decreased by 36 percent. This trend harms the environment and biodiversity.

According to the United Nations Convention to Combat Desertification (UNCCD), in Kyrgyzstan, as of 2010, 1.2 million people had been living on degraded agricultural lands for over ten years. Today, this situation has worsened, with 33 percent of the total rural population living on degraded land, an increase of 16 percent compared to 2010.³² Partially unsustainable agricultural practices, including the overuse of agrochemicals, have led to this situation.

The use of pesticides and fertilizers has adverse effects on the environment, which leads to degradation and acidification of the soil and pollution of groundwater sources. This can be a direct threat to humans and to many types of living organisms, and can generally negatively affect biodiversity and its functions and services as a whole.

³¹ Ministry for Agriculture, Food Security and Land Reclamation of the Kyrgyz Republic (2018).

³² Global Mechanism of the UNCCD (2018).

Figure 10: Methodology and assessments conducted in Kyrgyzstan

B Results and options proposed

A comparative analysis of the main foreign trade data on mineral fertilizers and pesticides, and the actual use of such substances showed the lack of appropriateness and effectiveness of this subsidy. There is no stable correlation between the use of mineral fertilizers and pesticides, and the growth of crop production; the introduction of a subsidy did not greatly affect the stimulation of the use of subsidized fertilizers and pesticides.

It can be argued that the subsidy does not achieve its goal to stimulate production

growth. The main beneficiaries of this subsidy are importers and suppliers of subsidized mineral fertilizers and pesticides, who sell them to neighbouring countries under grey schemes.

In general, it should be noted that the rationale for reform in the area of pesticides and mineral fertilizers is to reduce the quantity of toxic pesticides and fertilizers used, redirect funds released from the subsidy reform to accelerate the transition to alternatives with low toxicity, and develop organic production.

C Redesign options

1 Scenario 1

The complete abolition of the tax benefit in the form of VAT exemption for the import and supply of pesticides and mineral fertilizers (except organic), with the simultaneous abolition of the VAT registration threshold for suppliers of pesticides and mineral fertilizers.

2 Scenario 2

The complete abolition of the tax benefit in the form of VAT exemption for the import and supply of pesticides and mineral fertilizers (except organic ones) for private use, with the simultaneous abolition of the VAT registration threshold for suppliers of pesticides and mineral fertilizers. In addition, it is proposed to maintain the exemption from VAT on the import of pesticides for the State.

3 Scenario 3

The application of a reduced VAT rate of 6 percent for suppliers of pesticides and mineral fertilizers (except organic), with the simultaneous abolition of the VAT registration threshold for suppliers of pesticides and mineral fertilizers.

D Lessons learned



Increasing transparency is an important step and a critical pre-condition for identifying and redesigning environmentally harmful subsidies. The Government, Parliament and the Ministry of Economy and Finance, when granting subsidies, must introduce the requirement to ensure transparency.



Greater transparency is needed in the allocation of subsidies to assess how the allocation of funds affects farmers, yields and biodiversity loss, and to mobilize support for subsidy reform. It can also help ensure that subsidies are efficient and cost-effective, and minimize environmental impacts.



Research and performance monitoring are needed to ensure that a subsidy is targeted to avoid or mitigate unforeseen results, such as the emergence of interest groups that seek to profit from subsidies. The assessment of subsidies and their impacts should not only address the environmentally harmful effects, but must also be based on a multi-criteria and holistic approach that also considers their economic and social effectiveness.



More detailed data and analysis of these data are needed, including more comprehensive assessments of the complex interactions between different subsidy programmes and other policies.



Redesigning subsidies requires strong leadership and a broad coalition and stakeholder engagement combined with a well-structured process.



Better communication and coordination are needed between policymakers, decision-makers and relevant stakeholders to demonstrate the potential benefits of subsidy reform and/or ensure that it is applied consistently at the government level.

Special policy measures may be a major obstacle to effective subsidy reform. Repurposing subsidies is also an issue that needs to be considered carefully, especially regarding their social impact. Consideration should be given to the interrelationship of instruments and the conditions for the elimination of subsidies (i.e. availability of viable alternative instruments).

E Next steps

Changing the subsidy system or even a single subsidy is a complex, politically difficult and long-term process. The experience demonstrates that careful policy development is not enough to make fundamental changes. Political will is what drives initial change, which is often associated with significant tax pressures and is supported by key reform leaders and an informed public. Public and institutional awareness drives the acceptance of the reform process.

Changing subsidies is not a matter of technical analysis, but rather a political process. Continuous communication using different channels including media, social networks, direct negotiations and awareness raising among the supporters must be achieved before implementing the reform.

In this regard, the state could consider ways to:

1. create favourable conditions for the development of organic agriculture, allocate financial resources, strengthen the bio-productive potential of organic agriculture, provide subsidies and benefits for producers of organic products, and incentivize the import of organic fertilizers and biological plant protection products;
2. strengthen the value chain;
3. tighten measures to control the quality of imported fertilizers and plant protection products;
4. train and inform rural producers on the use of mineral fertilizers and pesticides.

Nepal

Redesigning agriculture
incentives and subsidies
harmful to biodiversity

A The national context

In Nepal, nearly 70 percent of the population depend on agriculture, which contributed to more than one-fourth of the GDP in 2019/20. Inclusive agriculture development has been a national priority to ensure food security and reduce dependence on agricultural imports. However, the country struggles to produce an adequate food supply, mainly due to: small and fragmented farming; migration of youth and population growth; leaving land fallow due to high production costs, erratic weather patterns, inadequate supply of chemical fertilizers, and poor seed quality further exacerbates the problem. Agricultural growth cannot keep pace with population growth. Consequently, the Government of Nepal introduces different subsidies and incentives to the farmers to boost agricultural production and productivity.

An agricultural subsidy (also called an agricultural incentive) is the Government's financial support to agribusinesses, agricultural organizations and farmers to supplement their income or reduce the cost of production. Agricultural subsidies can positively or negatively impact biodiversity and ecosystems in various ways, depending on how they are designed and implemented. Despite being well-intended, subsidies often have adverse unintended and costly effects on the environment and biodiversity. However, the consequences of the agricultural subsidies (agriculture, livestock, forestry, and fisheries) on the environment in general and biodiversity are poorly documented. Hence, this case study documents the processes and approaches followed for the mapping and prioritization of agricultural subsidies; summarizes the harmful impacts of the agricultural subsidies, including reform actions; and draws lessons learned during the assessment processes.

B Methodology

The study followed the framework (Incentives, Agriculture growth and Impacts) to understand the consequences of the agricultural subsidies on biodiversity (Figure 11). This entails mapping different agricultural subsidies provided by the Government and assessing how they support agricultural intensification. Agricultural growth is reflected in the extent of improvement on the key agricultural indicators, which are measured in terms of increment of cropped area and cultivated land, livestock population, improvement in the productivity of crops

and livestock commodities, and import and export of agricultural commodities. After understanding the impacts of the subsidy on agricultural growth, the case study examined how the subsidy is affecting land-use conversion (i.e. ecosystem changes), biodiversity resources (e.g. agricultural diversity) and biodiversity threats, including political-economic consequences. The study followed an exploratory and inductive approach to understand the effect of agricultural subsidies on biodiversity.

Figure 11: An exploratory and inductive approach to understand the effect of agricultural subsidies on biodiversity in Nepal



The before-after approach

For the study, in-depth interviews were conducted with the stakeholders, in particular, farmers, agricultural extension workers, conservation scientists, researchers and academics, to understand the impacts of subsidies on agricultural intensification and biodiversity impacts. The study: (i) mapped the agricultural subsidies, including financial value; (ii) prioritized three subsidies harmful to biodiversity for an in-depth assessment;

(iii) assessed in depth the prioritized subsidies through a desk review, stakeholder consultations and field observations; and (iv) prepared and validated the reform options and action plan. The case study findings were shared with the stakeholders in a group to validate the findings and explore the reasons for the observed situation. In addition, an in-depth case study was conducted to explore the adverse impacts on biodiversity.



C Results and options proposed

1. Agricultural subsidies in Nepal

In Nepal, subsidies are often built within agricultural programmes, and their financial value is not specified. Hence, a study was conducted to identify subsidies, which including a desk review of the annual development programme (2018/19) of the Government of Nepal, and of the Ministry of Finance Report and Annual Report of Nepal Rastra Bank (Central Bank of Nepal). The study identified four different subsidy categories within the federal government programme (Box 10).

In the fiscal year 2019/2020, the Federal Government of Nepal indicated 18 different categories of subsidies in the agricultural sector, most of which were related to the indirect transfer of funds for agriculture inputs, i.e. the provision of goods or services at prices below the purchase price, or the cost followed by grants or incentives on cost-sharing arrangements for agriculture business promotion and infrastructure construction.

Box 10

Different types of agricultural subsidies in Nepal



Indirect transfer

A reduction in the price of the production inputs in the market, such as price subsidy for chemical fertilizer, seeds/seedlings, equipment, insurance premium, credit interests and livestock breeds.



Direct transfer

Grants or cost-sharing for the market infrastructure construction, cattle shed construction, agribusiness promotion, purchase of seeds, machinery and equipment. This also includes output-based payment to agricultural commodities, based on certain volume or yield of the products.



Minimum price support

Minimum price guarantee by the Government for the purchase of agriculture commodities such as sugarcane and paddy.



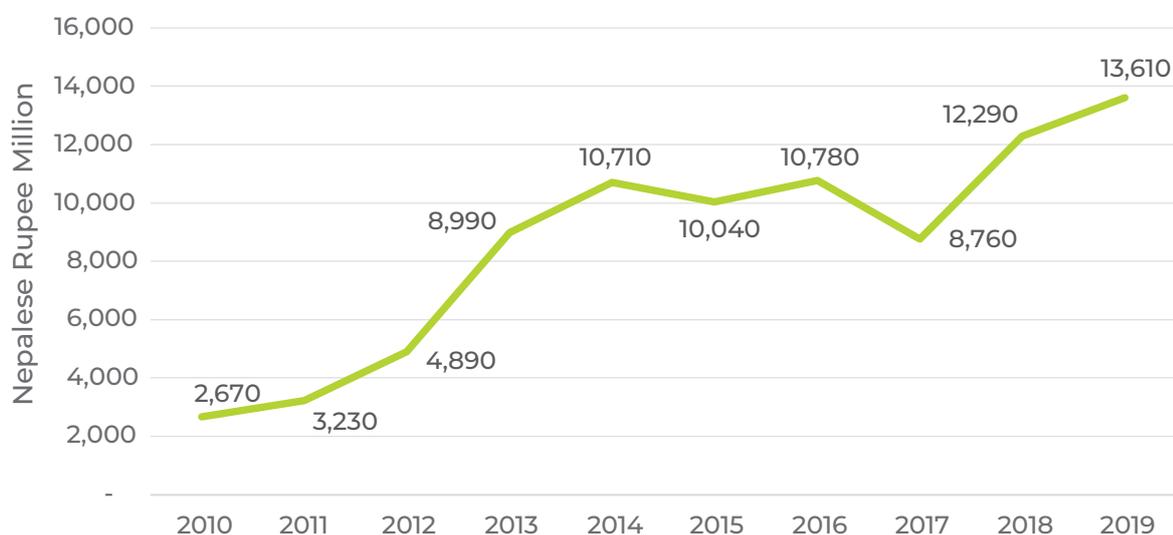
Off-budget support

Exempted tax on export of the agriculture produce; imposition of import tariffs for agricultural commodities; reduced costume tariffs for agricultural machinery and equipment.

The review of the records reveals that the Government is providing agricultural subsidies amounting to NPR 8,597 million per year (US\$73.4 million), which is 1.2 percent of the agricultural GDP, or 0.3 percent of the national budget of 2019/20. The agricultural subsidies increased by almost five-fold in ten years, from NPR 2,670 million in 2010 to NPR 13,610 million in 2019 (Figure 12). During this period (2010–2019), agricultural subsidies increased by 13.1 percent (nominal price) per annum. In 2019, the value of agricultural subsidies was

69.6 percent of the Ministry of Agriculture and Livestock Development budget, or 223.6 percent of the Ministry of Forest and Environment budget. In addition to the direct agricultural subsidies, the Government of Nepal provided off-budget support of NPR 11,650.6 million in 2015 as a tax exemption on agricultural produce and machinery. In 2020, out of the total agricultural expenditure, the official development assistance (ODA) was 24.6 percent, which was often distributed to farmers as agricultural subsidies.

Figure 12: Agriculture subsidies in Nepal



Source: Collated from Auditors' General Office Report, 2018, 2020.

2. Prioritized agricultural subsidies to be redesigned

Agricultural subsidies may not have adverse consequences on biodiversity. Hence, the study first explored how the particular subsidy would impact biodiversity adversely, focusing on both direct and indirect adverse impacts.

1 Direct impacts are the result of the activities that are realized immediately and have effects in the short term. These activities can usually be easily identified; for example, the extensive use of chemical fertilizer leads to the degradation of the soil health and microbial activities, or eutrophication of water bodies.

2 Indirect impacts are the result of activities that have second-stage effects and the impact of changes in behaviour triggered by the initial short-term effect. Their negative consequences for biodiversity are often substantial in the long term. For example, providing subsidies on livestock insurance premiums increases the risk-bearing capacity of the farmers. The farmers then started rearing more improved varieties, which created pressure on forest and rangeland resources and led to the loss of the local breeds.

Of the 18 subsidies mapped in the agricultural sector, the study shortlisted 11 agricultural subsidies with direct or indirect adverse impacts on biodiversity (Table 6). Direct impacts of the subsidies may be the loss of pollinators and genes, habitat loss,

degradation, and/or fragmentation. In contrast, indirect impacts may be the overexploitation of natural resources and ecosystems services, pollution, and/or the likelihood of promoting unsustainable land-use practices.

Table 6: List of shortlisted agricultural subsidies with direct or indirect adverse impacts on biodiversity

SN	Subsidies	Nature of subsidy	Finance	Likely adverse biodiversity impacts
1	Chemical fertilizer	Indirect	National budget	Yes, direct
2	Seed	Indirect	National budget	Yes, direct
3	Organic fertilizer production	Direct	National budget	Limited, indirect
4	Agriculture insurance premium	Indirect	National budget	Yes, indirect
5	Agriculture equipment	Indirect	National budget	Limited, indirect
6	Agrobiodiversity local landraces/breed conservation	Direct	National budget	No, but positive
7	Interest premium subsidy for agri-business	Indirect	National budget	Yes, indirect
8	Technology support access	Direct	National budget	No limited
9	Infrastructure development support	Direct	National budget	Yes, indirect
10	Subsidy/inventive for agribusiness operation and enterprises (farm construction, production improvement, or any infrastructure)	Direct	National budget	Yes, indirect
11	Minimum price support for agriculture commodities	Direct	National budget	Yes, direct
13	Commodity promotion	Direct/ indirect	National budget	Yes, direct
14	Research grants	Direct	National budget	No limited,

SN	Subsidies	Nature of subsidy	Finance	Likely adverse biodiversity impacts
15	Reduced import tariff on agricultural equipment and chemicals(i.e. subsidized tax)	Indirect	Not included in the national budget	Yes, indirect
16	Agriculture commodities import taxes	Indirect	Not included in the national budget	Yes, indirect
17	Support from development partners	Direct	Partially included in the national budget	Limited, direct and in-direct
18	Subsidy for electricity and irrigation	Indirect	Not included in the national budget	Yes, indirect

After shortlisting these subsidies, the study further prioritized three subsidies based on five criteria: adverse biodiversity impacts, gender and social considerations, economic impacts, agricultural impacts, and potential political challenges. The case study identified 11 indicators against the five criteria. The score for each indicator was based on a 0–4 scale, where 4 represents an adverse situation (the highest score) and 0 is where there is no adverse situation (Annex 2). The following sequential steps were followed for prioritization:

- Criteria, indicators and scoring were discussed among the study team and UNDP-BIOFIN team members, and were finalized.
- Stakeholder consultation were carried out to validate the scoring rule, including its applicability. The scoring and indicators were finalized.
- The study team, UNDP-BIOFIN team members and key stakeholders organized a ‘brainstorming workshop’ to assign scores against each indicator. The Delphi method was followed for scoring, where

each participant assigned the score for each indicator based on their past experiences and knowledge. The scoring and its rationale were then discussed among the team. The group reached a consensus on a score.

- The study team summed the score and selected three subsidies as the candidate subsidy, obtaining the highest score (Annex 3). The selected subsidies were further validated with the stakeholders’ consultations and the steering committee meeting.

Three selected subsidies were: (i) a chemical fertilizer subsidy (ii) an agriculture insurance premium subsidy; and (iii) an agriculture credit interest subsidy. Over three-fourths (77.4 percent), of the agricultural subsidies are allocated for chemical fertilizers, followed by the agricultural credit interest subsidy (7.3 percent) and the agricultural insurance premium subsidy. These three subsidies account for more than four-fifths of the financial value of the agricultural subsidy in Nepal.

Table 7: Financial value of shortlisted subsidies in Nepal

Prioritized subsidy	Financial value (NPR million)	Financial value (US\$ million)*	Percent (%)
Chemical fertilizer price subsidy	10,529	84.23	77.4
Agriculture insurance premium subsidy	886	7.09	6.5
Agriculture credit interest subsidy	1,000	8.00	7.3
Other subsidies	2,095	16.76	15.4
Total	13,610	108.88	100.0



3. Effects of the prioritized subsidies on agricultural growth



Agriculture cropped area expansion and productivity growth are low, despite massive investment in chemical fertilizer subsidy.

The Government is providing the price subsidy on chemical fertilizers to boost agricultural productivity and improve the country's food security situation. In 2019, the Government provided the chemical fertilizer price subsidy amounting to NPR 10.6 billion. During the 2015–2019 period, the chemical fertilizer subsidy increased by 17.6 percent per annum at nominal prices, i.e. from NPR 5.7 million in 2017. Despite the rapid increase in chemical fertilizer subsidy, the area under cereal crops declined due to the scarcity of chemical fertilizers for major crops, i.e. paddy, wheat and maize. However, cereal productivity increased following the implementation of the subsidy, The area under vegetable crops and the productivity continued to increase slightly after the implementation of the subsidy, but less than during the period without the subsidy. Despite the large amount spent on agricultural subsidies for chemical fertilizers by the Government, agriculture production has only increased marginally. Chemical fertilizers price subsidies often result in a supply constraint since subsidies are not allocated according to the demand for fertilizers. Consequently, farmers often faced shortages during paddy cultivation.

Table 8: Average annual growth rate (%) of agriculture crops before and after subsidies on chemical fertilizers in Nepal

Cereal		Vegetable	
Area		Area	
-0.1 Before subsidy (2000-2009)	-0.1 After subsidy (2010-2019)	4.6 Before subsidy (2000-2009)	1.2 After subsidy (2010-2019)
Productivity		Productivity	
0.8 Before subsidy (2000-2009)	2.3 After subsidy (2010-2019)	2.1 Before subsidy (2000-2009)	0.8 After subsidy (2010-2019)

Source: Collated from the Office of Agricultural Statistics of Nepal.



Agricultural insurance schemes increase farmers' risk-bearing capacity, thereby transforming farming practices and contributing to agricultural commercialization.

The Government of Nepal introduced agricultural insurance schemes in 2014 to secure farmers' investment and thereby contribute to agricultural commercialization. In 2019/20, the Government provided a subsidy of NPR 886.3 million to farmers and insured crops and livestock for an amount of NPR 26,380.2 million. More than nine-tenths (93.0 percent) of the total subsidy disbursed are provided in the livestock sector. Over the 2014–2020 period, the insurance premium subsidy increased by 37.4 percent per year at a nominal price. Insurance increased the risk-bearing capacity of farmers and will also be available to commercial livestock farming. The standard livestock unit increased marginally after the subsidy (1.5 percent per annum). Milk, meat and egg production increased at a higher rate after the subsidy. This production increased because farmers now rear improved breeds and conduct breed improvement practices.

Table 9: Average annual growth rate (%) of livestock production before and after the introduction insurance price subsidy in Nepal

Livestock standard unit		2.3 Before subsidy (2008-13)	1.5 After subsidy (2014-19)
Milk production	Meat production	Egg production	
5.0 Before subsidy (2008-2013)	3.7 Before subsidy (2008-2013)	5.0 Before subsidy (2008-2013)	
10.6 After subsidy (2014-2019)	5.5 After subsidy (2014-2019)	9.6 After subsidy (2014-2019)	

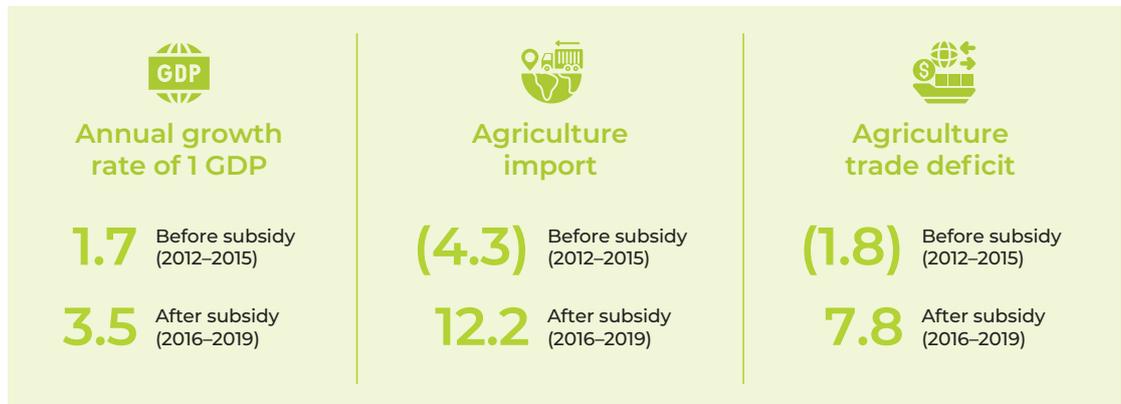
Source: Collated from the Office of Agricultural Statistics of Nepal.



Despite massive investment in agricultural credit subsidies, the country’s agricultural growth has fallen behind targets.

The Government of Nepal introduced an agriculture credit interest subsidy in 2016, aiming to increase production through agriculture and livestock business promotion, and to create employment opportunities for youth to engage in the agriculture sector. Bank and financial institutions (BFIs) provide loans to farmers, farmer groups and agricultural enterprises at subsidized interests for a maximum period of five years, with loan amounts not exceeding NPR 50 million (US\$500,000). Although the interest rate varies by BFI, it is generally less than 5 percent, nearly half of commercial lending. As of 2019, 46,507 farmers/enterprises benefited from agricultural subsidies and invested NPR 106,908 million in the agricultural sector. Over the 2016–2019 period, the number of agricultural entrepreneurs accessing subsidies and agricultural investment increased by 51.6 percent and 62.5 percent annually, respectfully. Despite an enormous increment in agricultural investment over these four years, the performance of the agricultural sector is not encouraging; the agricultural trade deficits and imports increased annually by 7.8 percent and 12.2 percent, respectively. Although agricultural GDP increased marginally, by 3.5 percent, the total share of the agricultural GDP is declining

Table 10: Average annual growth rate (%) of key agricultural indicators before and after the introduction of the interest subsidy in Nepal



Source: Collated from the Office of Agricultural Statistics of Nepal.



4. The effects of the prioritized subsidies on farming practices

There is a dearth of information on the impact of the agricultural subsidies on the environment in general and biodiversity in particular. Hence, the case study aimed to understand how a subsidy has changed farming practices, primarily through field observation and interactions with stakeholders. Subsequently, the study explored how these practices have impacted biodiversity.

Subsidies have created a conducive environment or motivated farmers to change their farming practices; they are encouraging farmers to shift towards unsustainable farming practices. For example, farmers applied a higher quantity of chemical fertilizers and pesticides haphazardly and often used high

nitrogen-originated fertilizers. Similarly, they shifted towards the improved breeds because the agriculture credit and insurance premium subsidy increased their investment and risk-bearing capacities. They often shifted towards high-yielding varieties that demanded high agricultural inputs, especially chemical fertilizers and pesticides. In addition, farmers often extracted groundwater to irrigate farms. The study also observed a fringe encroachment of the forest area, especially for livestock rearing, to collect grasses and fodder from adjoining forest areas or even expanding the boundary. All of these practices result in adverse biodiversity impacts. It is challenging to establish a causal link between subsidies and farming practices.

Table 11: Farming practices and subsidies in Nepal

SN	Farming practices	Chemical fertilizers subsidy	Agriculture insurance premium subsidy	Agricultural credit subsidy
1	Haphazard application of chemical fertilizer (not by recommended dose and soil quality)	Yes		Yes
2	Unbalanced use of chemical fertilizers, especially with nitrogen content	Yes		
3	Cultivation of high-yielding varieties/hybrids seeds/ improved seeds	Yes	Yes	Yes
4	High use of water/water-demanding varieties/ extraction of groundwater	Yes	Yes	Yes
5	Wide use of pesticides and growth hormones		Yes	Yes
6	Rearing of improved breeds		Yes	Yes
7	Increase in livestock number/cultivation area, shifting to commercial farming		Yes	Yes
8	Cultivation of exotic grasses/crops		Yes	Yes
9	Fringe encroachment of forests area/boundary		Yes	Yes
10	Intensive use of inputs (seeds, pesticides)	Yes	Yes	Yes
11	Land improvement, especially of terraces			Yes
12	Poor farm waste management		Yes	Yes
13	Intensive farming (more cropped per area)	Yes		Yes
14	Low preference for the cultivation of local landraces/ rearing local breeds	Yes	Yes	Yes
15	Poor compliance with safeguard measures	Yes	Yes	Yes

Biodiversity impacts

Biodiversity impacts of the agricultural subsidies are not adequately documented; there are very few scholarly works in the country and elsewhere. While the chemical fertilizers subsidy directly or indirectly impact biodiversity, the agricultural insurance premium and credit subsidy indirectly affect biodiversity. The major biodiversity impacts are shown in Table 10.

Table 12: Major biodiversity impacts of agricultural subsidies

Subsidies	Biodiversity impacts
 <p>Chemical fertilizers</p>	Land degradation and desertification, especially soil compaction/hardening, loss of soil microbial activities and soil fertility
	Disappearance of local species
	Spread of invasive species on agricultural land due to high nutrition loading
	Eutrophication of water bodies
	Loss of wildlife habitats, especially nesting places for birds
	Increased greenhouse gas emissions
	The wide use of pesticides promoted, resulting in the death of pollinators
Contaminated water supplies and damaged aquatic biodiversity	
 <p>Agriculture insurance premium subsidy</p>	Reduction of cultivation or disappearance of local species
	Local species/breeds are genetically modified either through artificial insemination or cross-breeding
	Cultivation of exotic grasses in forests and agricultural fields
	Loss of forest biodiversity and removal of trees for forage/grasses cultivation
	Pollution of water bodies and chemical discharges
Increased greenhouse gas emissions from livestock farming	
 <p>Agricultural credit insurance subsidy</p>	Land-use conversion, especially agricultural field converted for other purposes such as cattle sheds, fishponds and livestock farming
	Increased risk of erosion, landslides and sedimentation
	Eutrophication and pollution of water bodies
	Habitat and land conversion, primarily the use of marginal lands for farming

In addition to biodiversity, impacts are mainly observed either due to poor integration of environmental safeguard measures during the planning and implementation of these subsidies, or poor monitoring of the adverse consequences. Although the Environment Protection Act, 2019 requires that a strategic environmental assessment (SEA)

be conducted before introducing the policy and programme, this has yet to be enforced in the country. Although some agricultural enterprises have prepared an environmental plan, the implementation has been limited. There is no mechanism to monitor and document the environmental impacts of agricultural subsidies.

D Redesigning subsidies

1. Political and economic consequences of reforms

The case study explored who benefited from the subsidies and what the implications would be were they to be abolished. It emerged that large farmers, especially those cultivating crops for commercial purposes, benefited from subsidies, whereas small-scale and subsistence farmers had limited information or awareness about them. The study also observed that most farmers did not use agricultural credits for the intended objectives or agri-business. The subsidized agricultural loans were often used for other purposes, such as land purchase, the construction of houses, and meeting the household cash requirements. The misappropriate use of agricultural credit is very high due to poor monitoring of these funds by the bank and financial institutions.

The subsidy reforms might increase the production cost of the agricultural products and thereby reduce market competitiveness. Imports of agricultural commodities are

increasing rapidly, which might further increase in the country. In Nepal, most farmers are smallholders, with a relatively strong tendency to leave agricultural land fallow. Abolishment of the subsidy might increase this tendency, which might support the spread of invasive species on agricultural land. Since subsidies have attracted youth to commercial farming, their motivation might decrease if abolished. Considering that the country had already started to face farm labour shortages, this situation may be worsened. In 2020, the country imported agricultural products worth NPR 243 billion, of which NPR 79 billion was for food commodities. Even though a large majority of the population are involved in the agricultural sector, its contribution to the national GDP is declining. Hence, some form of incentive might be required in order to sustain farmers in agriculture and reduce dependency on imports.

2. Redesign options

The three re-design priority options are: (i) continuing the subsidy in the current form; (ii) greening the subsidy (i.e. incentivizing and mitigating adverse consequences to biodiversity); and (iii) removing the subsidy due to its negative biodiversity impacts. The case study recommends 'greening agricultural subsidies', mainly for the following reasons:



Biodiversity impacts are poorly monitored and with limited scientific evidence. The impact is not due to a single subsidy, but the combined effect of several subsidies.



Most of the farmers are smallholders; agricultural land fragmentation is increasing rapidly; and youth are abandoning farming. Some form of subsidies or incentives might be required to engage youth in agricultural activities. Hence, abolishing the subsidy might not be an option for reform.



There are problems of unsustainable agriculture practices, such as excessive use of production inputs, loss of local landraces and breeds, increasing biodiversity threats and exploitation of ecosystem services, especially water resources.

The greening of subsidies will primarily focus on: avoiding adverse consequences on biodiversity and incentivizing agrobiodiversity conservation. Areas of intervention are: (i) generating knowledge on biodiversity impacts; (ii) enforcing environment and biodiversity safeguard provisions; (iii) promoting sustainable agricultural practices, (iv) incentivizing farmers/agricultural enterprises to employ sustainable farming practices; and (v) sensitizing and building capacity of stakeholders.

E Lessons learned



Subsidy-related information is not readily available and needs continuous follow-up and consultations with the concerned stakeholders, including a review from multiple sources. Stakeholder consultations supplemented by case studies and validation are the best approach when there is limited ground evidence available.



Convincing stakeholders to opt for redesign options is challenging, especially those directly responsible for delivering subsidies. Stakeholders often demand scientific evidence on the harmful effects. It is hard to convince them in a group where they use the knowledge gap as a privilege for justifying the need for subsidy. One-to-one consultations with higher-level authorities, including concerned persons, support developing a shared vision for repurposing options.



It is a major challenge to attribute biodiversity impacts of a particular subsidy or the combined effect of many subsidies. Hence, it is first necessary to understand how the subsidy impacted the farming practices as a consequence of the biodiversity impacts.



The subsidies might bring positive as well as negative consequences to biodiversity. However, the magnitude of impacts should be assessed before repurposing options. Rather than pushing for abolishing the subsidy, greening options might create a win-win scenario among stakeholders and contribute to conservation-friendly economic growth.



F The way forward

The recommended future actions are:

(i) validating the study findings, including the action plan at the national and provincial levels; (ii) developing a monitoring mechanism with the Ministry of Forests and Environment, including carrying out a strategic environmental assessment; (iii) collaborating with academic and research institutions on research; and

(iv) building a partnership with the Ministry of Agriculture and Livestock Development to engage it in the greening of Agricultural Subsidies in Nepal, especially on incentivizing conservation-friendly agriculture practices.

Some of the priority areas and actions are shown in Table 11.

Table 13: Priority areas and actions

Priority areas	Actions
 <p>Building partnership for the greening of agricultural subsidies</p>	<p>Create awareness among stakeholders</p> <p>Organize periodic dialogues and communication among stakeholders, which include raising awareness among the media</p>
 <p>Generating knowledge on biodiversity impacts</p>	<p>Build partnerships with academia and research institutions</p> <p>Monitor adverse impacts (e.g. through environmental auditing)</p>
 <p>Developing monitoring mechanism and enforcing safeguard provisions</p>	<p>Conduct a strategic environmental assessment of subsidies prior to their execution</p> <p>Introduce environmental and biodiversity screening criteria</p> <p>Prepare and enforce environmental good conduct of agricultural enterprises and industries</p>
 <p>Incentivizing farmers and agricultural enterprises on conservation-friendly practices</p>	<p>Incentivize farmers to cultivate local landraces and local breeds, and adopt water-efficient technologies and low-input agriculture</p> <p>Promote conservation agriculture and sustainable farming practices</p>

9 Other international experience

In recent years, a number of stories have provided learning opportunities for future assessment and repurposing of subsidies harmful to biodiversity. Valuable lessons can be learned from these experiences, some of which are described in these guidelines.



For the preparation of the guidelines, the team examined seven countries that widely vary in motivations and strategies for reform of different type of subsidies: Malawi, Viet Nam, Indonesia, Ecuador, France, Switzerland and Austria. In each case, the authors described the reform implementation process, the results and lessons learned. The sample includes high-income countries (Austria, France, Switzerland), middle-income countries (Ecuador, Indonesia, Viet Nam) and a low-income country (Malawi).

All of these case studies highlight examples and opportunities for countries to implement the Kunming-Montreal Global Biodiversity Framework, and more precisely, activities related to Target 18.³³ The alignment of these case studies with Target 18 and its two indicators (18.1 "Positive incentives in place to promote biodiversity conservation and sustainable use" and 18.2 "Value of subsidies and other incentives detrimental to biodiversity that have been eliminated, phased out or reformed") is highlighted in Table 12.

Table 14: Alignment of the case studies with target 18 indicators

	Indicator 18.1	Indicator 18.2
 Malawi case study Redesigning the Farmer Input Subsidy Programme (FISP)		
 Viet Nam case study Repurposing agricultural subsidies to green coffee production		
 Indonesia case study Redesigning pesticides subsidies		
 Ecuador case study Redesigning energy subsidies		
 France case study Developing the fiscal framework to reduce pesticides use		
 Switzerland case study Repurposing agricultural subsidies to support biodiversity		
 Austria case study Removal of subsidies for wetland drainage		

³³ Target 18: 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.

Case
study

Malawi

Redesigning the Farmer Input Subsidy Programme





During the 2004/2005 season, as a result of a food shortage of more than 700,000 metric tonnes, which affected more than 4 million people, the Government of Malawi established the Farmer Input Subsidy Programme (FISP), a flagship programme aimed at achieving food self-sufficiency and increasing the income of poor households by raising agricultural production and yields. Its main goal was to provide fertilizers and high-yield seed subsidies for maize, targeting poor smallholder farmers through vouchers. On average, the programme targets on average 1.5 million poor households each agricultural season.

FISP has had positive effects on maize productivity due to increased fertilizer use. Studies show an increase in maize yields of up to 500 kg/ha and higher production after the first year of implementation (from 1.2 million tonnes in 2004/2005 to 2.6 million tonnes in 2005/2006), reaching a record production level of 3.7 million tonnes during 2011/2012.³⁴

Although the FISP has helped to achieve food security at a national level, its emphasis on maize production, which may not be feasible in areas where maize is not the staple food, has to some extent failed to achieve nutrition security at the household level³⁵ across the country. It contributed in some areas to a net reduction in the cultivation of other crops, which compromised nutritional diversity.

³⁴ Schiesari, Mockshell & Zeller (2017); Piñeiro et al. (2020).

³⁵ Centre for Environmental and Policy Advocacy (2010).

The FSIP has well contributed to negative impacts on biodiversity, such as the expansion of maize crop areas to fallow or virgin land, which has implications for soil health. In Malawi, up to 45 percent more land is cultivated under improved maize, while less land is farmed under traditional varieties of maize and other crops, contributing to the loss of biological diversity. Focusing on maize to the detriment of diversity, which includes drought-tolerant crops such as cassava and sweet potato, leaves farmers vulnerable to drought, pests and diseases, and markets;³⁶ this has increased the use of chemical fertilizers and water resources, which has had a negative impact on ecosystems. Monocropping with maize has resulted in a large-scale loss of soil nutrients in the soils, particularly nitrogen.³⁷

In addition, the programme accounted on average for 60 percent of the total budget for food and agriculture, and 8 percent of Malawi's total budget, during 2005–2017. Its total cost

increased nominally until 2016, mainly driven by the devaluation of the national currency and hyperinflation starting in 2012. These factors raised the cost of inputs, which are almost all imported.

All evidence indicates that the Malawi FISP has a substantial positive effect on agricultural productivity and food production. However, the gains come with negative impacts on biodiversity, reducing ecosystem and farmers' resilience, and at a massive cost to the Malawi Government budget, which could alternatively be used for investing in sustainable farming and land management practices.

Since 2015, in the context of the fiscal constraints caused by the rising cost of imports and interest on debt repayment, the FISP programme has been undergoing some reforms with the aim of making FISP more cost-efficient, effective and biodiversity positive.

The reforms consisted in:



Piloting the targeting of productive farmers since the FISP programme targets the poor



Increasing tonnage allocation for private retailing of fertilizer with the aim of increasing private sector participation in the procurement and distribution of subsidized inputs, and reducing government costs



Increasing farmers' contribution by setting a fixed coupon value



Promoting crop diversification by including other cereals (sorghum and rice)



Decreasing the number of beneficiaries to 900,000

³⁶ Ricker-Gilbert et al. (2013).

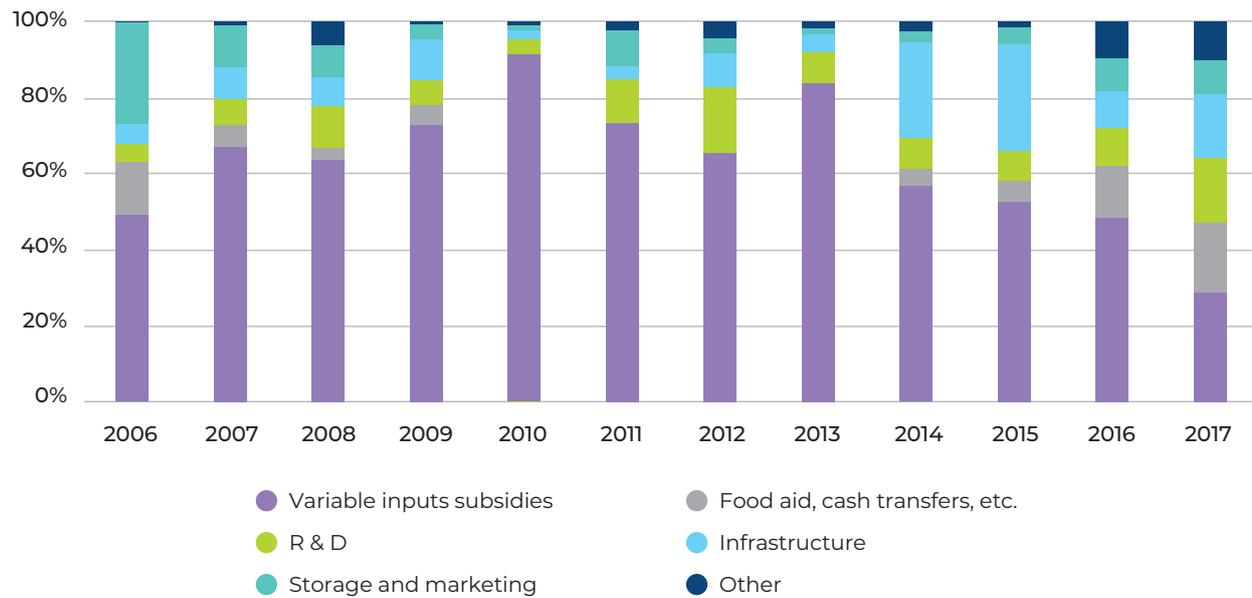
³⁷ World Bank Group (2019), p. 56.

In 2017, the FISP budget was halved, dropping to 27 percent of food and agricultural spending.

The fiscal savings were mainly redirected towards public goods, such as irrigation, agricultural research and technology transfer,

as well as social protection measures, for example, in cash-for-work and -food programmes. These measures enhanced the resilience and capacities of farmers to cope better with the negative externalities generated by harmful agricultural support.

Figure 13: Breakdown of spending in the food and agricultural sector, Malawi, 2006–2017



Source: Pernechele et al. (forthcoming).

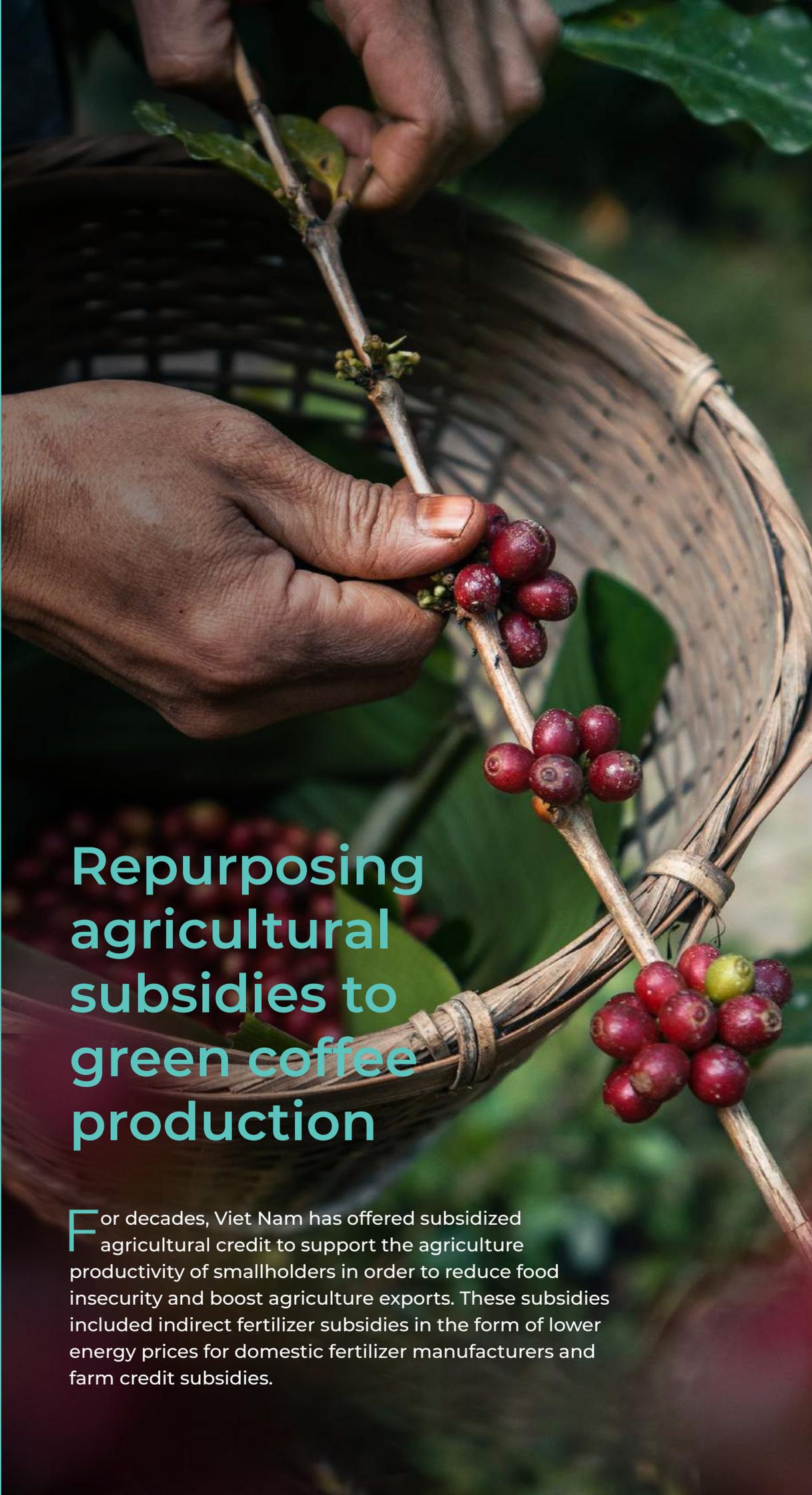
However, further targeted subsidies reform may be required to scale up sustainable land management practices by strengthening land tenure security. Improved land tenure security will reduce land degradation and increase productivity.

Case
study

Viet Nam

Repurposing agricultural subsidies to green coffee production

For decades, Viet Nam has offered subsidized agricultural credit to support the agriculture productivity of smallholders in order to reduce food insecurity and boost agriculture exports. These subsidies included indirect fertilizer subsidies in the form of lower energy prices for domestic fertilizer manufacturers and farm credit subsidies.



In 1993, the Government legalized the provision of commercial credit to farming households and allocated households land-use rights that could be used as collateral. At the same time, to ease the transition to the commercial provision of financial services, loans were offered with government support on preferential terms.

In 2003, the Government took measures to phase out partial agricultural credit subsidies as a result of the privatization and liberalization process of the agricultural sector. It decided to continue to support lending to farming households with lowered interest rates, but only on a targeted basis to support specific policy objectives. For example, in 2009 and 2010, the Government responded to the food price spike by providing agricultural producers with short-term concessional loans, with low-interest rates and a long payback window, to procure machines, mechanical equipment, facilities and farming materials, including fertilizers and pesticides.

In 2014, Viet Nam recognized the need to develop agriculture more sustainability, and adopted the Agriculture Restructuring Plan (ARP), which integrates environmental sustainability as an objective recognizing environmental degradation of the previously implemented output-oriented agriculture strategy. The ARP responded to the need to address the environmental consequences of Viet Nam's agricultural development that were adversely impacting both productivity and the international position of its commodities. The ARP aims to generate more economic value, and ensure farmers' and consumers' welfare, using less natural and human capital, and less harmful inputs. Agricultural sector growth is based on increased efficiency, innovation, diversification and value addition.

Coffee production in Viet Nam provides an example of the transformation of the agriculture system by repurposing subsidies for more sustainable practices. Most of the coffee growing area was planted during the 1990s and early 2000s in the central highlands. Farmers benefited from existing agricultural

subsidies, and plantations produced high yields. However, in 2013, coffee production in Viet Nam was characterized by: over-irrigation practices, which led to groundwater depletion, the overuse of nitrogen-based fertilizer contributing to soil degradation and pollution; and the expansion of coffee plantation areas on land unsuitable for coffee due to the land's soil type and slope, climatic conditions, and water availability, which sometimes encroached into forestland³⁸ resulting in habitat destruction and loss. This mismanagement of soil and water resources resulted in reducing productivity and farmers' earnings but also had negative impacts on ecosystem services such as the provision of clean air, water, and soil resulting in biodiversity losses and human health issues.

The productivity of coffee plantations usually starts declining after just 15 years. In order to maintain their plantations' productivity, coffee growers needed to start replanting the next generation of trees, which required financing for most farmers with public sector support.

In this context, the Government established a programme that provides farmers with access to credit with the condition that it incentivizes greener farming practices among coffee growers. It also stipulated that the farmers had to train in green production methods, and plant on suitable land. In addition, they gained access to higher quality planting materials and credit for higher efficiency irrigation equipment with ODA support. Participating farms saw their profits increase by an average of 23 percent from the baseline.³⁹

Lessons learned from this experience showed that successful subsidy repurposing required a comprehensive approach based on farmers' needs. It included environmental conditions attached to subsidies scheme supporting production and productivity, support from extension services to provide training in sustainable and green agriculture practices, and access to higher quality planting material, resulting in increasing farmers' profits while restoring biodiversity.

³⁸ Havemann et al. (2015).

³⁹ Cassou (2018).

Case
study

Indonesia

Redesigning pesticides subsidies



In the 1970s, the agricultural policy in Indonesia promoted the use of high-yielding varieties and pesticides via direct subsidies on pesticide sales and favourable credit packages. It enabled farmers to purchase seeds on credit through the village unit cooperative (KUD) if they accepted the entire prescribed package of seeds, fertilizers and pesticides. National expenditures on pesticide subsidies rose from US\$50 million per year in the 1970s to over US\$150 million per year in the mid-1980s. In 1984, 15 years after launching the national rice intensification programme, Indonesia reached its goal of self-sufficiency in rice.

However, the heavy use of pesticides caused considerable harm to the environment and human health,⁴⁰ and ultimately to rice production. By the mid-1980s, a drop in rice production was observed, which had resulted from the overuse of pesticides that had wiped out the natural enemies of many pests, including the brown rice plant hopper. US\$1.5 billion worth of damage to the rice sector resulted directly from pest infestations.⁴¹

In 1986, the oil shock put pressure on the public budget, and Indonesia decided to reduce subsidies to the agricultural sector. Measures included the removal of pesticide subsidies combined with a ban on the import of broad-spectrum pesticides.

Pesticide applications halved over four years, reducing negative impacts on biodiversity and human health. The subsidy removal led to US\$100 million in fiscal saving. In parallel, a nationwide Integrated Pest Management (IPM) programme based on informed crop management was implemented to maintain rice production and farm incomes. There was evidence that biological diversity, especially birds, fish, amphibians and arthropods, is greater in the rice fields of farmers who have adopted Community IPM. The regeneration of biological diversity in and around rice paddies also allowed for new livelihood-generating activities (e.g. local marketing of wild foods, and fish) and enhanced household food security.⁴² In addition, agricultural research and extension were decentralized from the national to the provincial level, which improved the uptake of the results of the research by farmers. This contributed to the success of the IPM programme and rice production grew by three million tonnes over the same period. The IPM technology involves not only pest control, but also other aspects of farming such as balanced and efficient fertilizing, efficient use of water, crop rotation and soil conservation. The following principles are central to the dissemination of the IPM technology: growing healthy crops; conserving and utilizing natural enemies; carrying out regular field observations; and developing farmers as IPM experts in their own field.⁴³

Fiscal crises often present opportunities and strong arguments for subsidy removal at a political level. Subsidy removal may generate fiscal, health and environmental benefits. The treasury saved over US\$100 million per year from subsidy removal, while the IPM programme cost roughly US\$5 million per year. Subsidy reform combined with supporting institutional changes is more likely to succeed. The adoption of IPM as a national policy and the decentralization of many government functions, including agricultural extension, provided farmers with the capacity and sustainable tools to maintain or increase rice production.⁴⁴ Results indicated that insecticide applications were reduced from an average of 2.8 sprays per season to less than one, with most farmers not spraying at all. When they did apply an insecticide, they would do so on a specific pest. Studies showed that IPM farmers had on average slightly higher yields, higher overall returns, and lower economic variance than their non-IPM counterparts.⁴⁵

Government support for the IPM programme was stopped in 1999 due to a change in political priorities and deregulated pesticide imports and sales. Producers and traders of pesticides took advantage of this opportunity and developed an intensive marketing campaign in the countryside. Between 2000 and 2012, the total value of pesticide imports increased from US\$50 million to US\$300 million. By 2014, rice farmers were using more pesticides than ever, and crop losses in high-production areas were important due to pest outbreaks similar to the situation in the mid-1980s, which led to the establishment of the national IPM programme.⁴⁶

The experience of Indonesia shows the importance of using a long-term sustainability approach when re-designing any subsidy.

⁴⁰ Human health issues related to the use of pesticides include skin diseases, respiratory problems, the high percentage of musculoskeletal disorders and mental disorders. According to WHO data sources, workers in the agricultural sector experience pesticide poisoning of 1–5 million cases per year. See WHO (2003).

⁴¹ Thorburn (2015).

⁴² Fakhri, Rahardjo & Pimbert (2003).

⁴³ Untung (1996).

⁴⁴ UNEP (2020).

⁴⁵ Settle et al. (1996).

⁴⁶ Thorburn (2015).

Redesigning energy subsidies

Ecuador has a long history of subsidizing energy prices. In the 1970s, the price for gasoline, diesel and liquefied petroleum gas (LPG) was already subsidized by up to 85 percent,⁴⁷ and in 2012 Ecuador was the fifth country in the world for energy subsidy costs as a share of GDP, only surpassed by Saudi Arabia, Iraq, Bolivarian Republic of Venezuela and Algeria.⁴⁸ The fossil fuel subsidies in these last 10 years are estimated at approximately 7 percent of the national public spending, or two-thirds of public deficit, and a public expenditure of an average of US\$2.3 billion per year.

⁴⁷ Central Bank of Ecuador (BCE) (2018).

⁴⁸ Di Bella et al. (2015).



In addition, in Ecuador, CO₂ emissions per capita increased by 355 percent between 1970 and 2016,⁴⁹ contributing to global warming and environmental degradation. These subsidies also have a strong harmful potential impact on nature in Ecuador, which is one of the 17 megadiverse countries of the world. By providing subsidized energy, the Government indirectly supports activities that contribute to the deterioration of the country's biological richness,⁵⁰ such as intensive agriculture and deforestation, mining, fisheries, petroleum exploration and exploitation.

In 2019, after years of strong public support for energy consumption, the Government of Ecuador engaged in reforming these subsidies. Encouraged by the international climate objectives set out during the Paris Agreement and the wish to save an estimated cost estimated between US\$1.4 billion and US\$2.3 billion per year, the Government announced the removal of subsidies for gasoline and diesel on 1 October 2019 as part of a larger austerity package. The rapid removal of the subsidies resulted in an increase of 25 percent in the gasoline price and 50 percent in the diesel price. The price increases generated by the reform faced a strong political resistance illustrated by important civil demonstrations, which led to the withdrawal of the decree concerned. The hike in fossil fuel prices had an impact on transportation costs (e.g. cars, buses, tractors, fishing boats), affecting the most vulnerable workers who depend on transportation, as well on an indigenous community affected by oil drilling and exploration in their homelands who believed that the low price of fossils fuel had a benefit that compensated for the negative impact of these activities on their community.

The Ecuador case underlined the importance of communication and negotiation. Even if the cost of these subsidies is well known by the Government, a clear planning, communication and compensation strategy is needed to increase the acceptance and sustainability of the reform.

Policymakers need to have a clear understanding of how such a reform will be seen by the different groups of the population and how they will be impacted. It will help to build compensation packages, as suggested by the Inter-American Development Bank, to protect the poorest households and increase the buy-in of the population. For example, the study recommended shifting funding from subsidies to social protection programmes, and shifting from price subsidies (benefiting in majority to the richest households) to vouchers, which allow to target the most vulnerable groups.

It will also be important to establish a consultation process with all stakeholders in the early stages of the process to bring the public on board with reforms, better understand the needs of different groups and positions, and adjust reform plans to reflect their concerns. Targeted communication campaigns can help to convey the rationale and benefits of phasing out fossil fuel subsidies.

Finally, implementing reforms step-by-step and with a gradual removal of subsidies is advised to allow businesses and the public to adapt to the new price situation over time, and to test the compensation measures system proposed to ensure that the most vulnerable are reached, thus building their trust in government institutions.⁵¹

⁴⁹ The World Bank Data, CO₂ emissions. <https://data.worldbank.org/indicator/EN.ATM.CO2E.PC?locations=EC>

⁵⁰ CBD, Country Profile. Ecuador. www.cbd.int/countries/profile/?country=ec <https://www.cbd.int/countries/profile/?country=ec>

⁵¹ IDB (June 2019).

Case
study

France

Developing the fiscal framework to reduce pesticides use





France is the largest agricultural producer in the European Union (EU), the second largest user of pesticides in the continent in terms of volume,⁵² and in 2019, was the sixth largest consumer worldwide. While this large consumption of pesticides supported production in the short term, it also contributed to increasing environmental degradation and pressure on the ecosystem and biodiversity.

The public's knowledge of the potentially negative impacts of pesticides on nature and human health has grown stronger during the last three decades.⁵³ Media attention and awareness-raising campaigns have increased the public pressure on policymakers to make meaningful policy changes.

Following this trend, the first tax⁵⁴ on pesticides was introduced in 1999 under the general tax on polluting activities, followed by several increases and small modifications over the years. Competitiveness and political concerns did not allow for an ambitious tax rate increase. Since the pesticides were also benefiting from a preferential value-added tax rate, the impact on prices and therefore on consumption was limited.

⁵² Marcus & Simon (2015).

⁵³ Saint-Ges & Belis-Bergouignan (2009).

⁵⁴ The tax rate varied according to the toxicity of the pesticides (seven toxicity levels for seven different tax rates, from EUR381 per tonne to EUR1,677 per tonne).

Following the publication of the Public Incentives Harmful to Biodiversity report in 2011 by the Centre d'Analyse Stratégique (Center for Strategic Analysis) (Prime Minister's Office), the need to reform this preferential value-added tax (VAT) rate was underlined. France applied the lowest tax rate to fertilizers and pesticides of the entire EU, at a preferential rate of 5.5 percent, against the average within EU member states in 2019, which was 18.4 percent for pesticides and 16.8 percent for fertilizers.⁵⁵ The cost of this fiscal measure is estimated at EUR43 million for 2008 in comparison to the same volume of consumption with a national standard VAT rate of 20 percent. Through an amendment to the Law of Finance in 2012, the Government followed the recommendation from the Center for Strategic Analysis and cancelled this incentive.

Regarding budgetary and economic aspects, this reform was a success. It allowed the Government to save more than EUR40 million per year without a loss of profit for farmers. Indeed, the re-establishment of a standard VAT rate for fertilizers and pesticides had no impact on the farmers' production costs since they were recovering VAT on the purchase of their products, by charging VAT on their own sales. The fact that this reform did not affect production costs and operating profit for most farmers undoubtedly contributed to the acceptance of the removal of this environmentally harmful subsidy.

The success of this reform needs to be relativized when analysing pesticide and fertilizer consumption. The situation has not improved much: consumption continued to increase in the sector, i.e. by 5.8 percent between 2011 and 2013, and strikingly, by 9.4 percent between 2013 and 2014.⁵⁶ While the initial objective was to reduce pesticide consumption by 50 percent between 2008 and 2018,⁵⁷ this target was postponed to 2025.

The increase of tax on pesticides has not been very effective at reducing pesticide use in agriculture, which is mainly attributed to the relatively low tax rate and the weak price elasticity of demand for pesticides.⁵⁸ Barriers to raising taxes further included political acceptability and negative economic impact on the agriculture sector, among others. In this context, the focus of the new policy was to diffuse and implement existing techniques to reduce pesticides uses with financial support.

The pesticide savings certificate programme⁵⁹ (CEPPs) was launched in 2014. CEPPs require pesticide distributors to encourage farmers to adopt recognized practices that lower the use of pesticides. This requires defining a standardized and approved list of actions that reduce pesticide use and quantify the expected reduction, differentiated by crop type. Since 2016, it has been compulsory for all distributors selling in France and professional users based in France. In exchange for taking these approved actions, the distributors receive the pesticide savings certificates in accordance with the expected pesticide savings achieved. Distributors who have not met their obligations either by implementing recognized actions or by purchasing certificates from obligated parties will be penalized. By decree, the Ministry of Agriculture targeted a 20 percent reduction in pesticide applications in five years (2016–2021). After negotiations with stakeholders, it was agreed that failure to reach this target will be sanctioned by a fine of EUR5 per number of dosage units by the distributor or professional users.⁶⁰ In June 2017, almost 1,200 distributors of plant protection products to professional users, known as 'obligated parties', were notified by the authorities of their obligations for the 2021 campaign. The notified obligations amounted to almost 17 million certificates to be obtained by rolling out concrete standardized actions (among 66 concrete actions identified).

⁵⁵ OECD (2020a).

⁵⁶ French Ministry of Agriculture, Food and Forest (MAAF) (2016).

⁵⁷ Voltz et al. (2022).

⁵⁸ OECD (2017), Chapter X.

⁵⁹ Ibid.

⁶⁰ Ministère de l'agriculture et de l'alimentation (2020).

This case study highlights the difficulty of implementing an effective pesticide use reduction policy. The increased awareness of the general public of the health risks related to the use of pesticides backed by scientific analysis and a court case ruling that linked farmers' diseases to pesticide exposure was critical and put pressure on the Government to address the issue. The Government first introduced a tax on pollution, which was raised several times between 2008 and 2011. In addition, the Government eliminated the reduced rate of VAT on pesticides. The increase of tax and the removal of subsidies were not sufficient in reducing pesticide use because of the weak price elasticity of demand for pesticides and agriculture production in general. A further increase in the price of pesticides would have had a negative impact on French farmers' competitiveness. This would have the effect of delocalizing pollution in countries that could have exported agricultural products to France. In this context, in 2016, the Government decided to introduce the CEPPs, which aims to change the behaviour of pesticide distributors through a fines system in order to promote the effective use of pesticides among farmers with adapted technical support.

The key lessons learned⁶¹ to address challenges to repurposing the fiscal framework to reduce pesticides use are the importance of: raising awareness among the public based on scientific evidence to lobby the government for a change; understanding the market demand for pesticides to appreciate the weak price elasticity and that costs are transferred to the consumers; and understanding the impact of fiscal reform on the competitiveness of the farmers' with high pesticides price and the potential reduction of cost of production by implementing sustainable practices. The benefits of broad stakeholder engagement and awareness are essential. Implementation of effective fiscal policy to reduce pesticide use requires a comprehensive approach integrating producers, distributors, farmers, and appropriate technical support. It also requires a mix of financial solutions such as pollution tax, the reform of harmful subsidies to mobilize additional financial resources to support the monitoring and evaluation mechanism, and penalties to support change of behaviour and effective use to reduce production costs.

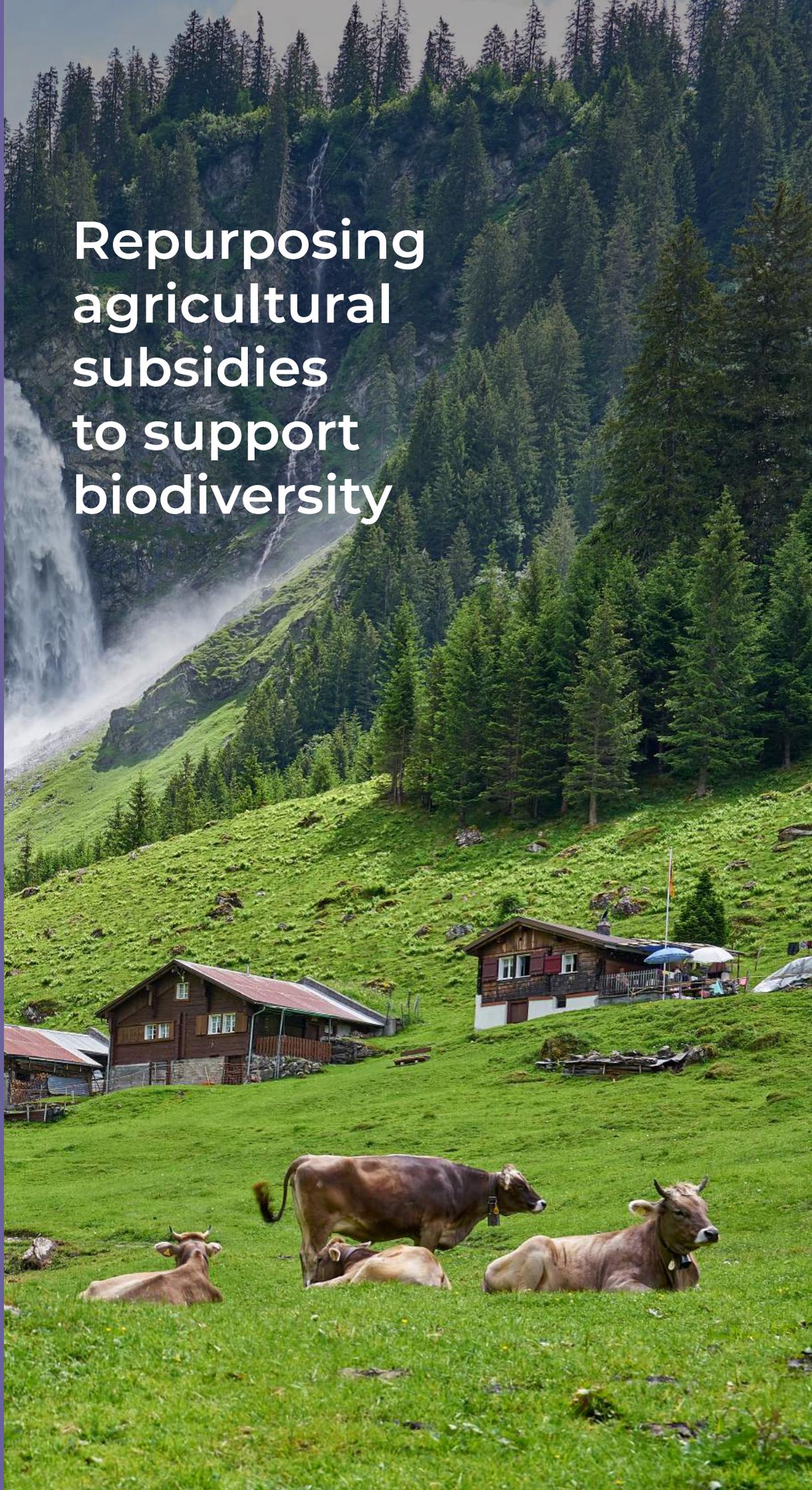


⁶¹ OECD (2017).

Case
study

Switzerland

Repurposing
agricultural
subsidies
to support
biodiversity



Intensive agriculture is putting considerable pressure on Switzerland's biodiversity,⁶² contributing to habitat loss and pollution. Around 36 percent of the country's wild species are endangered, and over 60 percent of habitats are either threatened or near threatened status.⁶³

Since 1999, direct payments to farmers have been conditional on good environmental practices required by 'proof of ecological performance', which is based on the approach of 'integrated production principles' and includes:



Balanced nutrient use: A maximum 10 percent surplus of nitrogen and phosphorus, as shown by farm's nutrient balance (based on crop requirements).



Strict crop rotation of a minimum of six years to reduce the vulnerability of crops to disease and consequently, the need for pesticides.



Soil protection: Land must be planted the whole year round whenever possible to reduce the risk of erosion.



Minimum share (at least 7 percent) of the farm's utilized agricultural area must be allocated as ecological compensation areas (ECAs), which protect and restore ecosystems close to their natural state. The use of artificial fertilizers and pesticides is very restricted.



Animal welfare: Farm animals must be kept according to legal requirements (including compliance with the animal protection ordinance).



Selected and targeted application of pesticides: Restrictions on the timing and use of certain pesticides, consideration of early warning systems and pest forecasts, and frequent tests of sprayers.

However, despite this system, ecological targets were not met. Animal husbandry payments were based on the number of cattle, leading to the intensification of livestock farming and increasing pressure on the environment. A review of the effectiveness and efficiency of the direct payment system was initiated in 2009, and a multi-stakeholder working group was established to lead the process.

A draft policy proposal was prepared and a detailed impact assessments were carried out based on four scenarios: the business-as-usual scenario; implementation of the new policy; the production scenario to better meet farmers' demands; and the ecology scenario to better meet demands from conservation groups and the retail trade.

Following consultations and a modelling analysis, the Swiss Government reformed its agricultural payments policy in 2012. The main aim of the reform was to better align the direct payment system to meet policy goals, including biodiversity. A key element of the reform entailed removing direct payments to livestock farmers using unsustainable practices and increasing payments to farmers who are able to meet biodiversity goals, such as extensive upland grazing and linking ecologically important areas. However, a system of transition payments was included to make the reform socially and politically acceptable. The environmental cross-compliance conditions were to be maintained in the new system of payments.

⁶² OECD (2017), Chapter 4.

⁶³ FOEN (2014).



The new direct payments set out to promote biodiversity in a number of ways across the six new categories:

Cultural landscape

Direct payments for the maintenance of cultural landscapes provide an incentive to prevent the overgrowing or forestation of areas with high biodiversity quality in the Alps and preserve their use for livestock in the summer.

Food supply

As part of the direct payments for sustaining food supply, there is an additional contribution for open agricultural cropland and permanent crops.

Landscape quality

Payments for landscape quality promote the conservation and evolution of diversity and quality of cultural landscapes.

Biodiversity

Contributions for maintaining and promoting species and habitat diversity include payments for ecological compensation, biological quality and habitat linking. The quality of biodiversity is promoted through the differentiation of payments based on quality levels.

Production system

Types of production that are in harmony with nature and are environmentally and animal-friendly are promoted within the production systems' This includes organic farming, extensive crop production (grains and rapeseed), animal-friendly housing, opportunities for regular exercise, as well as meat and milk production on grassland.

Resource efficiency

Payments are made to promote resource-efficient techniques, such as pollution control procedures for slurry application, careful soil cultivation and accurate procedures for pesticide application. These are based on the principles of agriculture IPM methods, which include prevention measures, non-chemical control methods, monitoring of pest organisms, and the application of economic thresholds to assess the necessity of intervention. Chemical pesticides are used only if the other measures are not efficient enough.

Biodiversity payments

Through Swiss agricultural policy, various instruments were developed to promote biodiversity in grasslands and croplands. The Agricultural Policy 2014–2017 increased incentives for high-quality areas reserved for promoting biodiversity in valleys. Additionally, the list of eligible items for a contribution to promote biodiversity was expanded to include summering pastures. The Swiss Federal Council published a draft of its future agricultural policy, which proposes a new concept to foster biodiversity within this instrument.* Presently, biodiversity subsidies are paid to promote and maintain biodiversity. The measure covers several payment categories: meadows (i.e. extensive meadows, low-intensity pastures), wooded formations (i.e. hedges, fields and riparian woods), fallow land (i.e. field edge), flower strips on fields (low-intensity cropping strips), low meadow, species-rich summering areas (e.g. alps), species-rich vineyards, single trees (e.g. walnut, fruit trees or traditional orchards) and regional biodiversity areas. Swiss farmers are required to set aside part of their agricultural land for extensive cultivation to receive government subsidies. These 'ecological compensation areas' create habitats for plants and wildlife. Three types of payments are implemented: ecological compensation areas, which are supported for their quality (i.e. two levels of quality, QI and QII) and cross-linking. The share of ecological compensation areas must be at least 3.5 percent of the area planted with specialized crops and 7.0 percent of the other agricultural area.

*Bundesamt für Landwirtschaft (2018).

The level of direct payments either increases or decreases for various groups of farmers. For example, alpine farmers, in particular, benefited from more payments for steep slopes, extensive production and biodiversity payments under the new system, while farmers with intensive cattle operations in the lowland region of the country no longer receive payments per head of cattle. Transition payments were included in the reform package to minimize negative impacts on these farmers.

Initial impact analyses of the reform show that ecological compensation areas have increased significantly in the plains areas and reached the initial target. The level of the quality of biodiversity of all ecological compensation areas has as well increased, with 34 percent of the share of ecological compensation areas reaching quality level II criteria.

Key lessons learned include the importance of building an alliance of market-oriented and ecological interests, seizing a window of opportunity in the political environment, and devising politically and socially acceptable compromises in the reform package. The composition of the Swiss Parliament in 2013, with strong representation by the Green Liberal Party, provided a window of opportunity to adopt the reforms under the Agriculture Policy 2014–2017. The main driver for the change in agricultural policy was support for market-oriented reforms to encourage free trade and make the direct payments system more closely aligned with World Trade Organization “Green Box” criteria. Building a coalition among advocates of trade liberalization and advocates for the environment was important to support the reform.

Transition payments were as well important especially related to the removal of payments per head of cattle. These payments constituted an important fraction of total receipts for certain farmers, and it was this element of the reform, which could have had the largest impacts on incomes. To help offset these expected income losses, the reform package included transitional payments for the affected farmers. It includes for example a grant for reducing meat supplies, a grant for reducing egg supplies, subsidies for adopting new crops

and innovative varieties in fruit framing and vineyards, interest free loans for farmers in financial need through no fault on their own, and a grant for retraining.

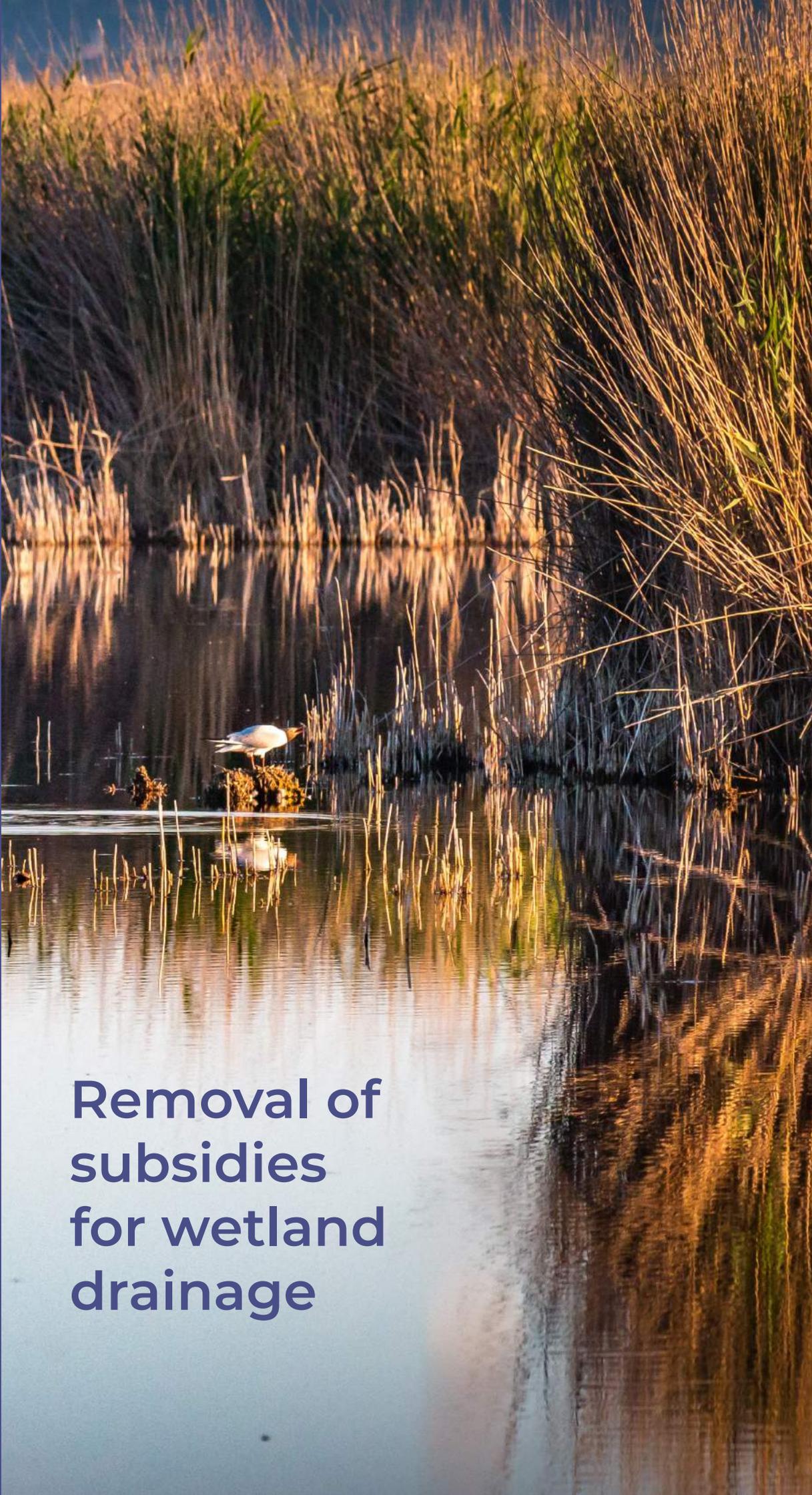
Broad consultation and ensuring public participation, using robust evidence to build support for reform and resist pressure from different interest groups were as well key elements of the reform. The review of the direct payment system starting in 2009. The subsidies reform was officially endorsed and implemented in 2014 and has continuously been assessed and continues to evolve to better target direct payments.

The Government carried out two modelling analyses to assess the impact of the proposed subsidies reform, which included: (i) a comparison between a business-as-usual scenario and the implementation of the reform proposal; and (ii) a comparison between a production scenario and an ecological scenario representing the different interests of farmers and conservation groups. Key elements of the modelling included impacts on farm incomes, ecological areas, livestock, agriculture production, imports, nitrates and phosphates, and on biodiversity.



Case
study

Austria



Removal of
subsidies
for wetland
drainage

Some of the main pressures driving biodiversity loss in Austria are: fragmentation caused by roads and railways, which impacts both landscape and ecosystems; eutrophication, which threatens most habitats types; abandonment of extensive, traditional forms of land use and subsequent succession of industrial extensive agriculture; diffusion of chemical inputs; land clearance; reforestation; intensification of land use; land development, as well as interventions in wetlands such as river regulation, drainage and energy use.⁶⁴



By far the leading cause for the substantial loss of wetlands has been their conversion to cropland for agriculture. Farmers are tempted to convert wetlands to croplands because of their rich, fertile soils. Thus, it is the very biologically productive nature of wetlands that has helped lead to their destruction.⁶⁵

The Government decided to establish the Neusiedler See – Seewinkel National Park, which affects over 1,500 landowners, and negotiations had to address the competing interests and uses associated with agriculture, hunting, fishing, the reed industry, local people and tourism.

The establishment of the national park in Austria was accompanied by a package of incentive measures aimed at supporting the effective management of the protected area and the reed belt, which has been a UNESCO biosphere reserve since 1977.⁶⁶ Subsidies for the drainage of wetlands for agricultural cultivation were removed. Additional incentives to promote conversation included: the compensation of owners ceding land; the restriction of access to hunters (including compensation to hunters with licenses); cessation of stocking the lake with non-native species; and the banning of the burning of reeds while promoting their sustainable harvest. Rather than impose regulations that

would have been resisted, the Government's approach was to provide a range of positive incentives for ecologically sound farming implemented with the provision of financial resources (e.g. lease, compensation, subsidies) for practices conforming to National Park standards.

An environmental NGO set an early example of successful conservation by negotiations with existing rights holders and renting key ecological areas from them.⁶⁷ The area is currently effectively protected. While there is limited quantitative information available on actually measured biodiversity gains, the protection of the threatened ecosystem has resulted in net gains for biodiversity and the ecosystems that benefit people. The use of a combination of economic incentives, information dissemination and payment of compensation to individuals for restricting land use was critical to success. In the context of dropping agricultural prices and increasing intensification of agriculture, the National Park was regarded as a positive economic alternative to agriculture. Compensation seemed to be necessary, in particular where pressures on biodiversity came from outside Park boundaries.⁶⁸

⁶⁴ CBD. Country Profile. Austria.

⁶⁵ WWD (2014).

⁶⁶ CBD (2010), p. 13.

⁶⁷ Hubacek, Fraser, & Thapa (2010), p. 424.

⁶⁸ CBD (2010), p. 13.

10 Main lessons and general recommendations

The results of these case studies provide new perspectives regarding the repurposing of harmful subsidies to biodiversity

Results can be achieved but need to be based on an integrated analysis of environmental, economic, nutritional and social objectives that require strong political support from the different stakeholders. For example, the provision of subsidies that are conditional on farmers' willingness to provide environmental services could be interesting in terms of positive biodiversity impacts, but may result in lower productivity. If farmers were supported to reduce chemical input use or shift to organic agriculture, it may result in a productivity loss that would translate into a reduction in agricultural production and increase in poverty and the cost of healthy diets.



Balancing a reduction of biodiversity impacts with productivity loss, especially in developing countries, is a major challenge. Major resistance against repurposing subsidies can come both from the consumers who might face higher prices due to the lack of access to the former subsidies, and from the producers and industrial sectors that benefited the most from them. Quantifying the impacts of subsidies on ecosystems and biodiversity, and the effect of subsidies on consumption and production is often difficult due to the complexity of the analysis. It is very challenging to understand the direct causality between subsidies and the exact extent of their biodiversity harmful effects. It can be just as difficult to understand the impact of specific regulatory, tax and policy systems on consumption, production and people. It will be important to build robust evidence to build support for reform.

In this context, it is clear that assessing and redesigning subsidies require a holistic approach implemented by a multi-disciplinary team and overseen by an inter-ministerial coordination committee to be successful.

The repurposing of harmful subsidies is a long-term process. In most developing countries, the lack of national data in terms of biodiversity impacts made it difficult to link and disaggregate the impacts of each subsidy on biodiversity, which are often geolocalized. Often, there is no effective monitoring and evaluation system of the subsidies in place including a lack of biodiversity impact indicators and no established baseline.

In the medium term, countries should envisage establishing an M&E system and having the appropriate national database in order to regularly monitor and evaluate the subsidies provided and revise them when necessary. It will include the formulation of a clear set of biodiversity impact indicators with GIS information, financial indicators and social indicators adapted to the national context.

A robust scientific and economic evidence base can be a valuable tool for governments seeking to advance policy reforms. It can help to clearly identify the benefits and beneficiaries of reform, make the case for change, and provide the means to resist pressure from vested interests. The aim is public access to these data to lay the foundations for effective management decisions, greater accountability and better-informed public debates, supporting the long-term sustainability of natural capital.

In the short term, databases from international organizations can be used to reduce these data deficits such as FAOSTAT, CBD, WTO, OECD and World Bank. Other options include one-to-one meetings with key national experts and officials, and pilot studies in targeted areas.

Moreover, while redesigning the subsidies, significant resistance can be expected from the groups benefitting from the subsidy.

It is crucial to gain political momentum and convince important stakeholders why this redesign is necessary and beneficial. Understanding the lobbying power of special interest groups is important and can create opportunities for repurposing environmentally harmful subsidies. Major changes in harmful subsidies will only be possible if decision-makers and government leaders have enough support from the general public and stakeholders who will be directly affected. In this context, it is important to clearly understand who benefits from support and why, for example due to their income levels or location. Participation increases the reciprocal flow of information as well as the ownership of the solution depending on how open the participation processes are. The establishment of the task force with representatives of key stakeholders from the public sector, the private sector and civil society will be an important platform to support this process.

The identification and participation of all the stakeholders are key to create political momentum, which require:



Raising awareness among stakeholders (Box 9).



Having one-to-one consultations (in group convincing is more difficult) and prepare data according to their interest – try to reach a shared vision for the reform of the subsidy.



Having regular dialogues and communication among stakeholders, including media awareness.

Subsidy reform should be considered within the overall context of the economy. In some countries, reforms have been driven by the need to respond to a fiscal crisis (Malawi, Ecuador, Indonesia) or by the need to privatize or liberalize the agriculture sector such as in Viet Nam and Switzerland, or by the need to respond to an environmental crisis and to address the public concern, such as in France).

In this context, the selection of reform options should be given to repurposing options toward

investments that are targeted at productivity-enhancing, biodiversity impacts reduction and shared economic benefits holds the greatest potential for delivering 'triple wins' for a healthy planet, economy and people. Moreover, the identification and reform of ineffective and inefficient subsidies can free up considerable funds that could be used to support the sustainability of the reform process, or to develop transitional measures that may be required when phasing out or reducing subsidies to support the most vulnerable group.

Annexes

Annex 1

Guiding questions to map, screen and prioritize subsidies during the research stage

The following guidance questions were developed as a checklist, adapted from the BIOFIN Workbook and The Economics of Ecosystems and Biodiversity (TEEB). These questions should be used for the analysis of the current subsidies in place. They can additionally serve as guidance for establishing a robust monitoring and evaluation system for the redesigned subsidies.



General screening (Step 2b)

Which subsidies can be categorized as harmful to biodiversity?

1. What are the most prominent subsidies in prioritized sectors known to have an impact on biodiversity? In which areas?
2. What is the available evidence of harm to nature, biodiversity, ecosystems, ecosystem services and to endangered species caused by the specific subsidy?



Desktop review (Step 2c)

What additional information do we need to gather on the harmful subsidies?

3. Is the overall subsidy causing the impact or only a specific part? Why? Where? GIS data can be used, when available, to support this evidence.
4. What are the annual average costs for government and beneficiaries?
5. Is the target group reached? Who are the primary, secondary or other beneficiaries? What are the annual average financial benefits for them?
6. How does the subsidy work, and what is the transfer mechanism?
7. What is the source of funding to pay the subsidy if different than the national treasury?





In-depth assessment (Step 2e)

What are overall considerations to assess the need for redesigning the subsidy?

8. Is the rationale of the subsidy still valid?
9. If so, does the subsidy fulfil its objectives (social/economic/environmental)? If not, it needs to be redesigned.
10. Does the subsidy lack an in-built review process, and has it been in place for a long time? If so, it is likely to need improvement (i.e. it has already locked in inefficient practices).
11. Are there public calls for change of the subsidy for other purposes or removal? This is often an indicator for Points 9 and 10.
12. Is there any other pressure for reforms, such as new national or international commitments (e.g. treaties, pledges), other policy reforms that the subsidy redesign can be aligned with, or are there any crises (e.g. fiscal, environmental, pandemic ones) that could serve as a catalyst?
13. How does the subsidy distribute social welfare? If there are equity issues, it might be worth redesigning it.
14. Do any of the subsidy impacts lead to unintended social or other economic losses? e.g. tourism loss following over-fishing, such as impact on household expenditures.
15. Are there alternative, less damaging technologies available that are hindered by the subsidy's existence? If so, the subsidy might be slowing innovation and creating technological 'lock in'; redesigning it could bring benefits.
16. Are there other alternatives in the form of processes, procedures or practices that are less damaging and viable?
17. Does it offer value for money? Where there is still a valid rationale for the subsidy, could the same or less money be used to achieve the same objectives with less harmful impacts?



Annex 2

Guiding questions to determine redesign scenarios



What are the most optimal redesign scenarios?

1. Would the redesign scenario be understandable for policymakers and the public?
2. Who are the 'winners and losers'?
3. Consider what the redesign scenario would entail (measure changed and compensatory measures). It is rarely a simple case of removing the subsidy altogether. Three scenarios to consider are: (i) eliminating the subsidy; (ii) reducing the investment into the subsidy; and (iii) greening a subsidy – adapting only a part that is harmful.

Assess the costs and benefits of potential change in more detail:

- Potential environmental benefits: e.g. thinking about the benefits in other countries and secondary effects, which can be perverse;
- Potential economic costs: e.g. national (tax, GDP, etc.), sector-wide, for winners and losers within the sector (including new entrants/future industry), for consumers/citizens (affordability);
- Potential social impacts: e.g. jobs, skills, availability of goods/services, health;
- Potential competitiveness and innovation benefits
- Potential ethical benefits e.g. as regards fairness of income, appropriateness of support, links to future generations;
- Is the redesign scenario practical and enforceable?

To identify the likelihood of success and whether it is worthwhile using political capital for reform, the following questions can be useful to set priorities for the road map.



Is there a policy or political opportunity for action?

1. Is there a window of opportunity, for example, policy review process, evaluation, public demand?
2. Is there a potential policy champion?
3. Will there be sufficient political capital for success?
4. What is the most optimal communication/advocacy strategy with key messaging to target the different groups of critical beneficiaries?

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