

Brussels, 16 July 2026
(OR. en)

12025/26

ENV 965
CLIMA 405
COMPET 971
ECOFIN 1025
AGRI 605
SAN 604
CHIMIE 104

COVER NOTE

From:	Secretary-General of the European Commission, signed by Ms Martine DEPREZ, Director
date of receipt:	16 July 2026
To:	Ms Thérèse BLANCHET, Secretary-General of the Council of the European Union

No. Cion doc.:	SWD(2026) 402 final
Subject:	COMMISSION STAFF WORKING DOCUMENT FITNESS CHECK of the Polluter Pays Principle (PPP)

Delegations will find attached document SWD(2026) 402 final.

Encl.: SWD(2026) 402 final



EUROPEAN
COMMISSION

Brussels, 16.7.2026
SWD(2026) 402 final

COMMISSION STAFF WORKING DOCUMENT

FITNESS CHECK

of the Polluter Pays Principle (PPP)

{SEC(2026) 404 final} - {SWD(2026) 403 final}

Contents

1. INTRODUCTION	4
1.1. PURPOSE OF THE FITNESS CHECK	4
1.2. SCOPE OF THE FITNESS CHECK	5
1.3. METHODOLOGICAL CHALLENGES	8
2. WHAT WAS THE EXPECTED OUTCOME OF THE INTERVENTION?	10
2.1. DESCRIPTION OF THE INTERVENTION AND ITS OBJECTIVES	10
2.2. POINTS OF COMPARISON	11
3. HOW HAS THE SITUATION EVOLVED OVER THE EVALUATION PERIOD (2014-2023)	12
4. EVALUATION FINDINGS	18
4.1. TO WHAT EXTENT WAS THE POLLUTER PAYS PRINCIPLE SUCCESSFUL AND WHY? ..	18
4.1.1. EFFECTIVENESS: IS THE PPP APPLIED IN ALL POLICIES THAT AFFECT ENVIRONMENTAL PROTECTION AND THE IMPROVEMENT OF ENVIRONMENTAL QUALITY?	18
4.1.2. EFFECTIVENESS: HOW EFFECTIVE THE PPP IS IN DELIVERING EFFICIENT ENVIRONMENTAL IMPROVEMENTS	27
4.1.3. EFFECTIVENESS: WHAT FACTORS HAMPER EFFECTIVE APPLICATION?	29
4.1.4. EFFICIENCY: IS THE PPP FAIR AND CONSISTENT WITH A JUST TRANSITION, INCLUDING HOW IT AFFECTS DIFFERENT STAKEHOLDER GROUPS, INCLUDING VULNERABLE GROUPS?	34
4.1.5. EFFICIENCY: ARE THERE SIGNIFICANT DIFFERENCES IN THE (EFFICIENT) APPLICATION OF THE PPP ACROSS EU POLICIES AND BETWEEN MEMBER STATES?	38
4.1.6. EFFICIENCY: COULD EU POLICYMAKING BE MADE MORE EFFICIENT (SO AN IMPROVED COST BENEFIT RATIO) BY BETTER IMPLEMENTING THE PPP?	45
4.1.7. HOW CONSISTENT AND COHERENT IS THE APPLICATION OF THE PPP ACROSS POLICIES?	50
4.1.8. HOW CONSISTENT AND COHERENT IS THE APPLICATION OF THE PPP OUTSIDE THE EU?	53
4.2. HOW DID THE EU INTERVENTION MAKE A DIFFERENCE?	55
4.2.1. IS THE CURRENT SPLIT OF RESPONSIBILITY BETWEEN THE EU AND MEMBER STATES RIGHT?	55
4.2.2. DO CURRENT NATIONAL AND EU COMPETENCES AND TREATY LEGAL BASES SUPPORT THE PPP'S APPLICATION IN ENVIRONMENTAL POLICY?	57
4.3. IS THE INTERVENTION STILL RELEVANT?	58
4.3.1. DOES THE PPP MEET THE EU'S NEEDS AS SET OUT IN THE EUROPEAN GREEN DEAL (EGD)?	58
4.3.2. IS THE PPP ABLE TO RESPOND TO NEW OR EMERGING ENVIRONMENTAL ISSUES AND CHANGES IN TECHNOLOGY?	61
5. WHAT ARE THE CONCLUSIONS AND LESSONS LEARNED?	62
ANNEX 1: PROCEDURAL INFORMATION	71
ANNEX 2. METHODOLOGY AND ANALYTICAL MODELS USED	74
ANNEX 3. EVALUATION MATRIX	94
ANNEX 4. OVERVIEW OF BENEFITS AND COSTS	106
ANNEX 5. STAKEHOLDERS CONSULTATION - SYNOPSIS REPORT	109
ANNEX 6. WHAT IS THE POLLUTER PAYS PRINCIPLE?	122

ANNEX 7. ASSESSMENT OF IMPLEMENTATION 145

ANNEX 8. DISCUSSION OF THE COSTS AND BENEFITS OF PPP APPLICATION. 197

ANNEX 9: DISCUSSION OF FAIRNESS AND JUST TRANSITION..... 210

ANNEX 10: APPLICATION OF THE PPP THROUGH EX-POST LIABILITY 218

Glossary

<i>Term or acronym</i>	<i>Meaning or definition</i>
AAQD	Ambient Air Quality Directives
CAP	Common Agricultural Policy
CBAM	Carbon Border Adjustment Mechanism
CEEAG	Guidelines on State aid for climate, environmental protection and energy 2022
CF	Cohesion Fund
CLP	Classification, Labelling and Packaging Regulation
DNSH	Do No Significant Harm Principle
ECA	European Court of Auditors
EAP	Environment Action Programme
EAFRD	European Agricultural Fund for Rural Development
ECD	Environmental Crime Directive
EEA	European Environment Agency
EHS	Environmentally Harmful Subsidies
EIA	Environmental Impact Assessment
ELD	Environmental Liability Directive
ELVs	Emission Limit Values
END	Environmental Noise Directive
EPR	Extended Producer Responsibility
ERDF	European Regional Development Fund
ESF+	European Social Fund Plus
ETS	Emissions Trading System
GBER	General block exemption regulation
GHG	Greenhouse Gas
GWD	Groundwater Directive
IED	Industrial Emissions Directive
JTF	Just Transition Fund
MCPD	Medium Combustion Plant Directive (MCPD)
MS	Member State
MSFD	Marine Strategy Framework Directive
ND	Nitrates Directive
NEC Directive	Directive on the reduction of national emissions
ODS	Ozone Depleting Substances
OECD	Organisation for Economic Co-operation and Development
OELs	Occupational Exposure Limits
PoM	Programme of Measures
POPs	Persistent Organic Pollutants
PPP	Polluter Pays Principle – the principle that polluters pay for the cost of measures taken to prevent, control and remedy pollution and the costs it imposes on society
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation
RRF	Recovery and Resilience Facility
RSB	Regulatory Scrutiny Board
SEA	Strategic Environmental Assessment
TFEU	Treaty on the Functioning of the European Union
UNEP	United Nations Environment Programme
UWWTD	Urban Waste Water Treatment Directive
WEEE	Waste Electrical and Electronic Equipment
WFD (waste)	Waste Framework Directive
WFD (water)	Water Framework Directive
WHO	World Health Organisation

1. Introduction

The Polluter Pays Principle (PPP) means that the polluter should pay for the cost of measures taken to prevent, control and remedy pollution and also pay for the costs imposed on society, such as costs associated with impacts on health, the loss of ecosystem services, or impacts on the economy.

For the purposes of this Fitness Check, pollution is defined as the introduction of substances, vibrations, heat or noise or odour into air, water or land as well as the direct or indirect subtraction or use of environmental resources to an extent which may be harmful to human health or the quality of the environment, result in damage to material property or impair or interfere with amenities and other legitimate uses of the environment (reflecting definitions in the EU acquis and OECD recommendation -See Annex 6).

The PPP is a Treaty-based primary principle of EU law: Article 191(2) of the Treaty on the Functioning of the European Union (TFEU) says that “*EU environmental policy should be based on the [...] principle [...] that the polluter should pay*”. This fitness check asks whether the current level of implementation is optimal, what are the cost of applying it, whether it makes environmental policy more efficient in cost-benefit terms, and whether it is fair and just.

The principle was first set down by the OECD in 1972, as a response to market failure, that “*the polluter should bear the expenses of carrying out the [...] measures [...] to ensure that the environment is in an acceptable state. In other words, the cost of these measures should be reflected in the cost of goods and services which cause pollution in production and/or consumption.*”¹ This approach takes the fairness and economic perspective, to shift costs of prevention and control from society onto polluters. In a well-functioning market economy, prices to producers and consumers should reflect resource scarcity and impact and any externality the production and/or consumption of such a resource would entail for society.

The PPP corrects the market mechanism to provide the right price signals. So, the PPP:

- Promotes pollution reduction through incentives to change behaviour, and steers investment and innovation towards clean technology.
- Shifts the burden of pollution from society to polluters.

This Fitness Check assesses how the Polluter Pays Principle (PPP) is applied across a wide swathe of EU policies affecting the environment, in line with the scope of the 8th Environment Action Programme.

1.1. Purpose of the Fitness Check

The European Court of Auditors found that the PPP is reflected and applied to varying degrees in different environmental policies with its application being incomplete². In response, the Commission accepted to carry out a fitness check of the PPP. The Commission confirmed this intention in its Zero Pollution Action Plan³ and that it would recommend how to implement the PPP based on this Fitness Check.

¹ OECD (1972), [Recommendation of the Council on Guiding Principles concerning International Economic Aspects of Environmental Policies](#)

² European Court of Auditors, [Special Report 12/2021. The Polluter Pays Principle: Inconsistent application across EU environmental policies and actions.](#)

³ [COM/2021/400 final](#) .

The European Green Deal reiterates the Treaty provisions and is clear about the need for “sending the right price signals and providing the right incentives for sustainable behaviour by producers, users and consumers”.

This is reflected in the 8th Environment Action Programme (EAP), the EU’s legally agreed common agenda for environmental policy until 2030⁴, whose Article 1(5) states that the polluter pays principle is one of its underlying principles supporting the delivery of six priority objectives. This is reflected in the enablers, for example, “*environmental taxation, market-based instruments and green budgeting and financing tools, including those required to ensure a socially fair transition*”.

1.2. Scope of the Fitness Check

Article 191(2) of the TFEU sets out that Union environment policy needs to apply the polluter pays principle (PPP). What this means has been interpreted differently in different instruments (see Annex 6). Box 1 below sets out the definition used in this Fitness Check and then elaborated in the rest of the section (what is pollution, what is environment policy, what needs to be paid for).

The 8th Environment Action Programme (EAP), the EU’s legally agreed agenda⁵, states in Article 1(5) that the polluter pays principle is one of its underlying principles supporting the delivery of six priority objectives, including climate mitigation and adaptation, circular economy, biodiversity, zero pollution and limiting pressures on climate and environment stemming from production and consumption. The **scope of the Fitness check reflects the scope of the 8th EAP**, which includes climate and environment policies as well as sectoral policies exerting pressure on climate and environment. The scope includes all policies delivering environmental objectives regardless of their legal base.

The Fitness Check takes a comprehensive approach, examining whether the PPP is applied in policies with a significant link to the environment (76 pieces of legislation are examined along with EU funds)⁶. The geographical scope is the 27 Member States of the EU.

⁴ [Decision \(EU\) 2022/591](#).

⁵ [Decision \(EU\) 2022/591](#).

⁶ The EU Bioeconomy Strategy, although an important strategy to drive the green transition based on biological resources, has not been included in the scope.

Box 1: What is the Polluter Pays Principle

As the interpretation of the principle has evolved over time, this box gives the definition used for the purposes of this Fitness Check. The Polluter Pays Principle (PPP) means that the polluter should pay for the

- *cost of measures taken to prevent, control and remedy pollution*
- *and the costs imposed on society, or environmental externalities, such as costs associated with impacts on health, the loss of ecosystem services, or impacts on the economy*

Pollution is the introduction of substances, vibrations, heat or noise or odour into air, water or soil as well as the direct or indirect subtraction or use of environmental resources to an extent which may be harmful to human health or the quality of the environment, result in damage to material property or impair or interfere with amenities and other legitimate uses of the environment. Impacts on the environment mean impacts on climate, air, water, soil or biodiversity, regardless of the sectoral origins.

Polluters are people, companies and other entities causing pollution. By applying the principle, polluters are incentivised to avoid environmental damage and are held responsible for the pollution that they cause. It is also the polluter, and not the general taxpayer, who covers the costs.

Which costs are assessed?

The interpretation used in this Fitness Check is that it covers **the costs of measures to prevent, control and remedy both the pollution and the costs pollution imposes on society**. The PPP applies to all activities in the economy causing environmental damage: primarily through releases of harmful substances into the environment, but also through activities such as soil sealing, deforestation, over abstraction of water etc⁷. This reflects the scope of environmental policy as set out in the 8th EAP, and the general understanding of coverage (see Annex 6).

This means the PPP is relevant for a wide swathe of policies to prevent or control pollution (such as industrial emissions) but also to remedy pollution (such as water purification costs, soil decontamination, waste treatment) and the costs pollution imposes on society (reflected in pricing instruments such as energy taxation or emissions trading policies) where these policies can relate to specific environmental issues (waste, air or climate policies) but also to specific economic sectors and their associated sources of pollution (such as agriculture, energy production, buildings or transport).

This Fitness Check looks at the cost of implementing environmental policies, and who pays for this as well as the overhead costs of operationalising the PPP eg the cost of identifying “pollution” and “polluters” to ensure that they pay.

To ensure a systematic approach, this Fitness Check covers costs related to: i) **pollution prevention and control** (incurred from investments and expenses which stem from the requirements set out in environmental policy, and including remediation)⁸; ii) costs of

⁷ See Annex 6. In the EU acquis, references to the PPP can be found for impacts with a broad interpretation of pollution such as invasive alien species, or extractive wastes. However, it does not cover environmental improvements.

⁸ An example of pollution control would be compliance with emission limit values by medium combustion plant (MCP) operators to reduce/control emissions to air under the MCP Directive.

administrative obligations⁹; and iii) costs of **environmental damage** (i.e. costs to remedy pollution and any other environmental damage)¹⁰.

An Evaluation only of issues related to who pays

A standard Evaluation asks about all aspects of a policy such as what are the appropriate control measures to be taken, what administrative procedures are required, is it ambitious enough, etc. In this Fitness Check, the focus is on who pays for the required actions¹¹. For example, legislation may require prevention of pollution – this Fitness Check does not evaluate whether the level of ambition of given legislation is right (so the specific limit values are a question for the Evaluation of that specific piece of legislation). It only evaluates whether polluter is the one that pays for that prevention measure¹². This approach differs from the understanding of some stakeholders who called for more ambitious policy, stating that only when environmental damage is halted can the PPP be understood as being fully applied.

We are looking at just one dimension.... across many pieces of legislation

The Fitness Check considers all policies that have a significant link to the environment and PPP application and are considered relevant following criteria (see Annex 2), and as validated by stakeholders¹³. The Fitness Check takes a comprehensive approach, rather than a sampling approach, examining whether the PPP is applied in 76 pieces of legislation. As set out in Annex 2, to enable effective assessment, the policies are grouped according to the priorities of the 8th EAP. These are:

- achieving the 2030 greenhouse gas emission reduction target and climate neutrality by 2050
- enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change
- advancing towards a regenerative growth model, decoupling economic growth from resource use and environmental degradation, and accelerating the transition to a circular economy
- pursuing a zero-pollution ambition, including for air, water and soil and protecting the health and well-being of Europeans
- protecting, preserving and restoring biodiversity, and enhancing natural capital

⁹ An example is the monitoring of permit conditions to demonstrate compliance under the Industrial Emissions Directive (IED). Enforcement costs (monitoring, inspections and litigation) are also administrative costs.

¹⁰ An example is where the polluter is required to comply with compensatory measures to address environmental damage under the Environmental Liability Directive (ELD). Another example is Extended Producer Responsibility under the Waste Framework Directive. These costs can also include a price that is put on pollution to act as a disincentive under, for example, the Emissions Trading System.

¹¹ Another example of a fitness check covering a horizontal issue is the “Fitness Check of Reporting and Monitoring of EU Environment Policy”, [SWD\(2017\) 230 final](#).

¹² As an example, the Waste Framework Directive sets targets and Member States take the necessary measures to achieve the targets: our scope is who pays for those measures. The Directive also has Extended Producer Responsibility provisions, requiring financial contributions of producers based on the circularity and environmental performance of products as a price mechanism, which is also in scope. Questions such as why are Member States having difficulty in delivering targets are out of scope.

¹³ Contrary to the support study, the Alternative Fuels Infrastructure Directive has not been included in the analysis although it contributes to the objectives of the 8th EAP and the EGD. By its focus on the provision of infrastructure and the difficulty to link its financing to the polluters (who may well or not indirectly contribute to the financing via user charges and taxes), it does not suit well for this analysis.

- reducing environmental and climate pressures related to production and consumption (particularly in the areas of energy, industry, buildings and infrastructure, mobility, tourism, international trade and the food system)

The classification does not consider if some policies are more important than others, but recognises that policies act closely together and that some policies, such as framework directives, play an overarching role to which other policies contribute. This approach is suited to a Fitness Check aiming to capture cumulative impacts and synergies.

Funding and subsidies

The polluter might pay for the costs of pollution but also receive subsidies that lead to pollution. State payments to an economic sector that lead to environmental damage are commonly termed environmentally harmful subsidies. Some subsidies that are considered environmentally harmful can be justified based on their social and economic objectives. This Fitness Check looks at how the application of the Do-No-Significant Harm principle (since 2020) helps to avoid environmentally harmful subsidies in EU funding.

There is a strong national dimension

The PPP is a fundamental principle of EU environmental law and so it is also the responsibility of the Member States to implement it on a national level. EU policy can require measures to prevent, control or remedy pollution, but these might be specified in detail at national level.

This issue is greatest for the costs imposed on society, where a price may be placed on these at EU level (such as the emission trading system ETS, the carbon border adjustment mechanism CBAM or extended producer responsibility) but EU competence related to taxes is limited and so Member States often have the competence to apply environmental taxes in line with the principle of subsidiarity. Reflecting this, the Fitness Check also covers how national environmental taxes complement EU legislation and deliver EU objectives. For example, section 4.1.5 assesses how the application of the PPP differs between Member States. Section 4.2.1 analyses the distribution of responsibility between the EU and the Member States (subsidiarity analysis).

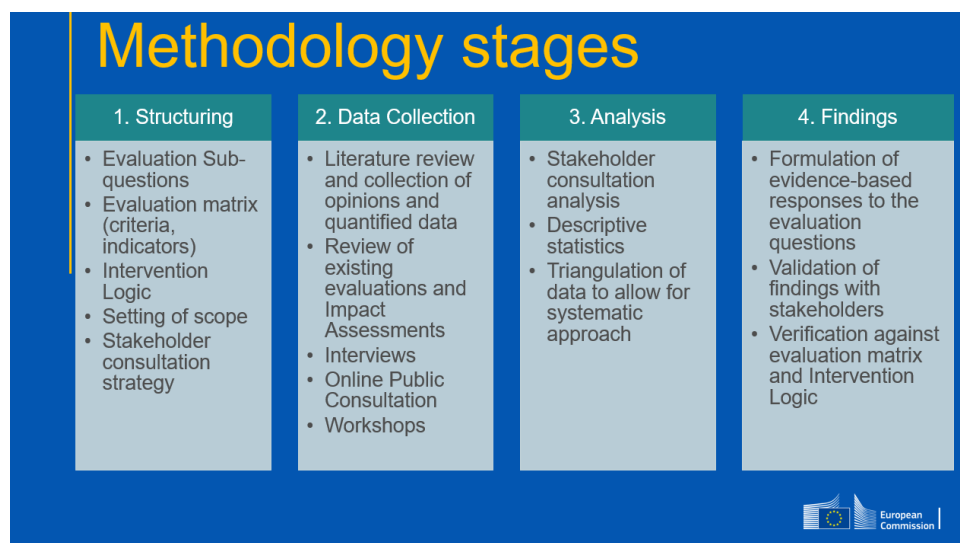
1.3. Methodological challenges

While an Evaluation looks at all aspects of the assessed policy intervention, a Fitness Check looks at specific elements¹⁴ of a related group of interventions, in this case the application of PPP. Whilst the subject is atypical, the approach has been the standard methodological approach of the Commission to ensuring a systematic and proportionate evidence base for an Evaluation. Stakeholders were consulted through a public consultation and two public workshops, with the second workshop validating the draft findings. A study supported this Fitness Check, referred to as the “support study” from now on¹⁵.

¹⁴ European Commission, [Better Regulation Toolbox](#), Tool #45

¹⁵ “Study on the polluter pays principle and environmentally harmful subsidies under framework contract ENV. F.1/FRA/2019/0001”, Logika, RPA Europe and CEPS, 2024

Figure 1: Methodological steps for the Fitness Check



The main methodological challenges are:

- Respecting the definition of PPP that this is about who pollutes and who pays and not about other aspects. For example, whether environmental policy becomes more stringent or ambitious is out of scope and the ambition level cannot be considered a proxy for the level of implementation of the PPP. The Fitness Check considers overall identification of polluters and costs linked to addressing pollution of payment, but not whether the measures they pay for are sufficient or appropriate, which is instead considered in the numerous evaluations and Impact Assessments the Commission carries out of specific policies. (The many existing evaluations and Impact Assessments also provide a valuable source of data for this Fitness Check.)
- Isolating the operationalisation of the PPP from out-of-scope aspects on costs and benefits and fairness. The response has been, for example, to ask:
 - What are the cumulative costs that the polluter pays for and does not pay for?
 - What are the ‘overhead’ costs that are directly related to applying the PPP, and not to the delivery of environmental targets (so how much does it cost to make the polluter pay)?
 - What is the impact on efficiency, so does it reduce the cost of attaining a specific environmental objective by ensuring there is an incentive for polluters to act, through developing technologies or changing behaviour?
 - What is the impact on fairness and if the polluter does not pay, then who does?
- Identifying relevant legislation as part of a comprehensive approach. Legal texts were not sufficient as the legal fashion has not always been to include a PPP reference in the legal text as a Treaty principle does not necessarily need repeating. In response, a wide net was cast of policies relevant for delivery of the 8th EAP and the scope of legislation was explicitly validated in the course of consultations with stakeholders leading to some minor adjustments, which provides reassurance that relevant legislation is included.
- The Fitness Check needs to examine the interaction of many policies at different levels such as EU, national etc. In line with data triangulation, it therefore looks at the issue of PPP from three sides: the EU legislation (who pays for the actions it requires?); the

polluting sectors (do they pay their costs); the environmental damage (are externalities internalised?).

2. What was the expected outcome of the intervention?

2.1. Description of the intervention and its objectives

Needs - The Polluter Pays Principle became a Treaty principle with the Single European Act in 1987 (although it was already present in secondary EU law before 1987). It responds to a market failure whereby the cost of pollution is not systematically addressed by polluters. The market price does not include the full cost of pollution and therefore, pollution levels are too high and a concern to citizens.

Objectives - The PPP addresses the costs of pollution to society and thus remedies the market failure that occurs. The PPP seeks to place the cost on polluters, and so provide the right incentives through price signals for an efficient reduction of pollution. PPP does not aim to unduly punish the polluter but to restore the correct functioning of the price mechanism in our economic system, and hence to promote economic efficiency by avoiding the waste of natural resources and damage to the environment. PPP also pursues a fairness objective, by shifting the costs of pollution away from those affected (society) and towards those causing the problem (polluters). This way it also aims to contribute to a Just Transition towards a sustainable economy.

Inputs - There are resources required to apply the PPP that are difficult to distinguish from the costs of the policies to which the principle applies (see section 4.1.6). The application of the PPP requires various resources, such as the costs for identifying the polluter and monitoring that the latter effectively pays for his pollution. This includes resources both from the public authorities and from private actors. The PPP means that the polluter should pay for the costs of these inputs, that are a form of overhead, as well as the costs of the activities (below).

Activities - The PPP is applied to activities in the form of EU environmental policies including sectoral policies that address economic sectors with polluting activities. The activities can be classified in function of the priority objectives of the 8th Environmental Action Programme. These activities are implemented through various policy instruments to which PPP applies (command and control measures, market-based instruments, sector-specific or issue-specific policies etc).

Output - Polluters face the costs of their pollution. This contributes to the reduction of pollution and a transition to sustainable production and consumption patterns in an efficient and fair way.

Results and impacts – The application of the PPP leads to an environment in a better state and a fair distribution of the cost of preventing, limiting and remedying pollution among the stakeholders. This way, the PPP contributes to meeting the objectives of the 8th Environmental Action Programme.

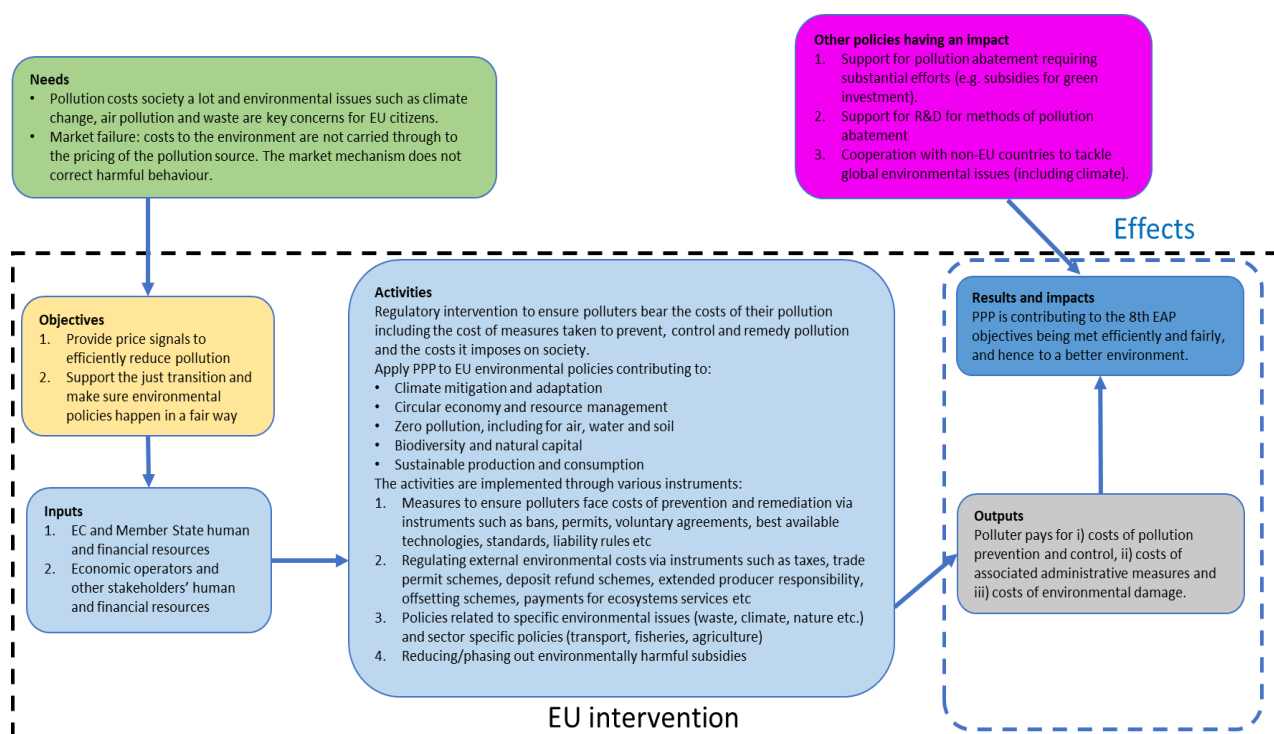
Other policies having an impact - The effects of PPP may be reinforced or weakened by the impact of other policies to which PPP is not applicable (because they do not refer to a specific pollution with an identifiable polluter). For example, the public support for research and development in pollution abatement techniques could reinforce the effects of PPP by reducing the cost of the policies to which PPP is applied. Similarly, support for environmentally friendly investments or cooperation with the rest of the world to tackle global environmental problems will help to reduce pollution.

The PPP is relevant to all the Sustainable Development Goals that relate to the environment, namely SDG 3 (good health and well-being), 6 (clean water and sanitation), 7 (affordable and clean energy), 11 (sustainable cities and communities) and 12 (responsible consumption and production).

In terms of the **costs and the benefits** of the PPP, there are:

- The cost of inputs that form an overhead for the application of the PPP.
- The costs of activities that the polluter should pay for related to prevention and control, administrative costs and costs of environmental damage.
- The benefits in terms of the result of a more efficient and fairer delivery of the 8th EAP objectives by ensuring polluters face the costs of their activities.

Figure 2: Intervention Logic for the Polluter Pays Principle



2.2. Points of comparison

As explained in Section 1, the Fitness Check assesses how well the PPP is applied in EU environmental legislation. It focuses on the current state of play for implementing the PPP, i.e. to what extent is it implemented today.

1. The Fitness Check applies the “point of comparison” approach recommended by the Better Regulation Guidelines: The **main point of comparison is the theoretical situation in which the PPP were fully applied**. In such a situation, environmental legislation would ensure that the polluters pay the costs of prevention/control, the related administrative costs, and the costs of environmental damage (the latter either in specific policies or via horizontal policies). For subsidies, from the EU Funds or from national sources, Funds regulations and certain State aid rules would prohibit subsidies that cover the costs of remediating for the environmental damage and hence reward the polluter by letting the general taxpayer take up the bill instead of the polluter. The objective of the Fitness Check is to identify deviations from this “ideal” situation and to understand the reasons and consequences of this application gap. The analysis focusses on the **situation as observed**

in 2023. However, recent policy proposals or recently adopted legislation will also be looked at, to enrich the analysis and to ensure that the Fitness Check's conclusions are not outdated by the latest developments.

2. **The year 2014 is the second (and secondary) point of comparison.** The Fitness Check also assesses how the application of the PPP has evolved over time, to see whether the application gap has narrowed and what are the factors influencing this evolution. For this purpose, the Fitness Check looks at the period from 2014 to 2023. The decision to look back ten years was made because the 7th Environmental Action Programme entered into force in 2014¹⁶, and ten years allows for an identification of trends, with considerable changes in policy having taken place during this time.

3. How has the situation evolved over the Evaluation period (2014-2023)

As a Fitness Check, the emphasis of this section is on the **cumulative costs and benefits** and how they have changed over the Evaluation period. Analysis for specific policies is best found in the Evaluations, Impact Assessments, monitoring reports associated with those specific policies and that cover a wider range of issues. The breakdown of costs is set out where relevant (e.g. private sector and public authority; EU level and national level).

Given the challenge to evaluate and monetise the costs and benefits of implementing PPP across the wide spectrum of acquis through which the PPP is transposed, the present analysis of costs and benefits is based on data covering what the polluter pays for in terms of the costs of pollution and control, as well as administrative costs and costs of environmental damage. Under Section 4.1.6 there is also a discussion of the costs of making the polluter pay, so the overhead costs.

There is a strong evidence base on **prevention and control costs** at the level of the EU 27 Member States. Despite conceptual differences, EU's national expenditure on environmental protection (NEEP) provides an estimate of **spending on pollution prevention and control**. In 2023, Eurostat reports the NEEP was EUR 357 billion¹⁷. There are scope issues, for example, NEEP includes some administrative costs (see Annex 2 for details). It also does not include resource management and efficiency issues: for example, in 2021 the EU spent about EUR 110 billion on circular economy¹⁸, largely driven by business investing to improve resource efficiency and hence profitability, and not driven by legislation (and so out of scope). EU funds are responsible for EUR 19 billion per annum of environmental investment, they are not

¹⁶ [Decision No 1386/2013/EU](#); According to Article 2 “The 7th EAP shall be based on ... the polluter-pays principle.” and includes “Priority objective 6: To secure investment for environment and climate policy and address environmental externalities”. The 7th EAP states that “The Union and its Member States will need to put in place the right conditions to ensure that environmental externalities are adequately addressed, including by ensuring that the right market signals are sent to the private sector, with due regard to any adverse social impacts. This will involve applying the polluter-pays principle more systematically, in particular through phasing out environmentally harmful subsidies...”

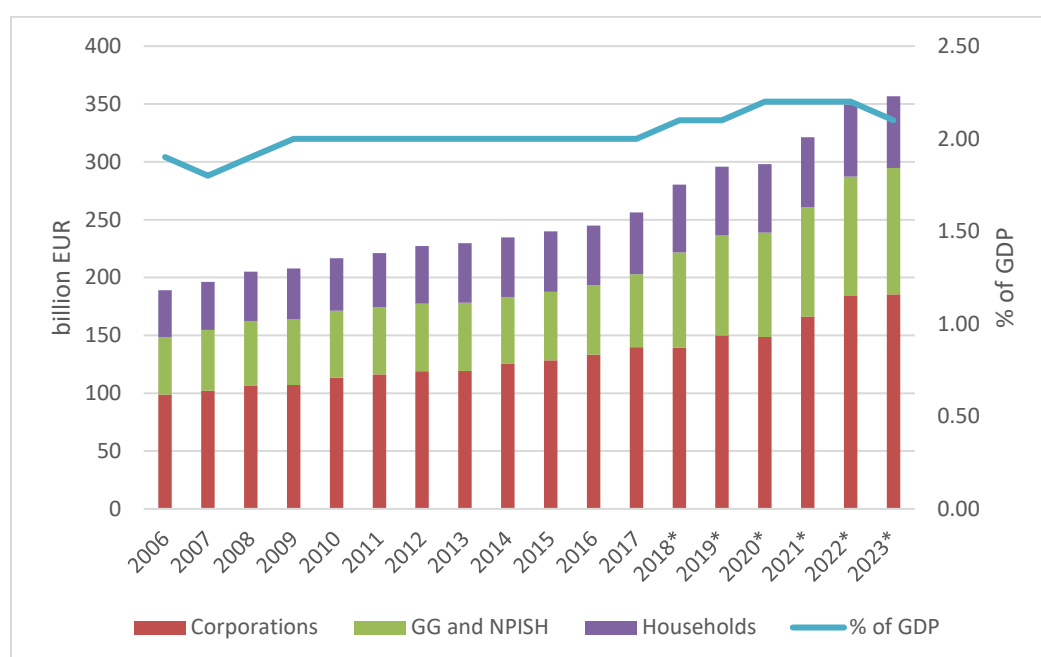
¹⁷ Data on environmental investments and environmental protection expenditure is collected as part of the Environmental Protection Expenditure Accounts (EPEA), which measures the economic resources devoted to prevention, reduction, and elimination of pollution and any other degradation of the environment. Resource management activities fall outside the scope of EPEA, and is not included in NEEP. See [Environmental protection expenditure accounts - Statistics Explained \(europa.eu\)](#) for latest estimate and Annex 2 for details on NEEP.

¹⁸ 2022 environmental implementation review, COM(2022)438

funding polluters in line with the PPP (see Annex 7), as increasingly including DNSH criteria over the evaluation period.

NEEP has grown in nominal terms but remained relatively stable as a percentage of gross domestic product (GDP) over the evaluation period and before at about 2.0% of GDP¹⁹. Changes over time reflect additional demands leading to additional costs but also increased efficiency over time. Corporations and households pay the majority of NEEP with some paid by national governments (which is often recouped by charges). As discussed below, the evidence is that almost all of the costs of prevention and control are met by polluters.

Figure 3: National expenditure on environmental protection by institutional sector and as percentage of GDP, EU, 2006-2023 (€ billion (left scale) and % GDP (right scale); source: Eurostat)



Note: GG: general government; NPISH: non-profit institutions serving households

The NEEP data partially includes **administrative costs** at EU27 level, reflecting a moderately strong evidence base at EU level. Separate estimates for administrative costs are not available, and partial estimates are based on different conceptual definitions. For environmental reporting obligations to the European Commission (which is largely done by Member States), one small component of administrative costs, a previous Fitness Check concluded that reporting was “largely efficient and the administrative burden is moderate, justified and proportionate (estimated costs of EUR 22 million annually)”²⁰.

Evaluations of specific policies have found administrative costs to be proportionate and consider the potential for burden reduction. As discussed below, the evidence shows that most but not all the administrative costs are met by polluters. For example, during the stakeholder consultation the example was given of shellfish farming, where producers are paying to

¹⁹ Figure 3 shows the trend for 2018-23, the methodology used by Eurostat was revised so it not possible to have longer time series. However, the percentage of GDP was similar (looking at trends from 2006 to 2021).

²⁰ [SWD \(2017\) 230](#).

develop monitoring tools to detect norovirus in their production waters, so bearing the costs instead of the polluters causing the virus spread.

Within administrative costs, some costs relate to implementing the policies and measures undertaken and are independent of the PPP (e.g. identification of polluters for the purpose of ensuring limit values are respected). Others relate to the overhead costs of application of the PPP (e.g. identification of polluters for the purpose of putting a price on those emissions). Distinguishing these two types of costs is not possible at the aggregate level, only for a few specific cases.

There is a moderately strong evidence base on **environmental damage**. The 8th EAP²¹, sets six priority objectives for 2030 and the European Environment Agency's (EEA) monitoring report on progress towards the 8th EAP objectives takes stock of progress towards Europe's key environment and climate goals and provides systematic and reliable information²². Whilst this part of the evidence base is strong, the evidence on how this environmental damage translates into monetary terms is less robust (being non-comprehensive and subject to methodological challenges):

- Europe's industry has made significant progress in reducing environment and climate impacts. Over the last decade, external costs caused by air pollution from around 10,000 facilities²³ decreased by nearly 35 %. Even so, the estimated external cost over that period is in a range of between EUR 2.7 and 4.3 trillion, or on average, between EUR 268 and 428 billion per year. Note that this includes health costs, which are the most monetised impact of pollution.
- Total external costs of transport²⁴ are estimated at EUR 900 billion annually for EU27 (including road congestion costs), almost 7% of EU27 GDP. Around EUR 400 billion are environmental external costs (climate change, air pollution, noise and habitat damage), some EUR 250 billion are caused by accidents and some € 230 billion by congestion (delay costs generated by road transport).²⁵

Analysis of the **degree of internalisation for environmental damage** involves comparing payments by polluters to these partial monetary estimates of environmental damage. Internalisation rates appear highest for the costs of air pollution and GHGs, but even here it is estimated the polluter pays less than half of the costs across the EU, and with wide variation between Member States and between economic sectors²⁶.

The Environmental Crime Directive now including an optional accessory sanction of remediation or compensation for the environmental damage caused by the infringement, and the increased price signals from the EU Emissions Trading System.

²¹ [Decision \(EU\) 2022/591](#).

²² European Environment Agency(2023), [Monitoring report on progress towards the 8th EAP objectives](#).

²³ Data reflect facilities in the European Industrial Emissions Portal (2012-2021). [Technical note: Estimating the external costs of industrial air pollution-Trends 2012-2021](#).

²⁴ For road, rail, inland waterway transport, aviation and maritime.

²⁵ [SWD\(2020\)331 final](#).

²⁶ Mottershead et al., (2021) [Green taxation and other economic instruments – Internalising environmental costs to make the polluter pay](#), IEEP.

The market-based instruments²⁷ (MBIs) that introduce price signals and make polluters pay for their environmental damage include liability schemes, sanctions, the EU Emissions Trading System, and environmental taxes that are often applied at national level. Overall, there have been improvements over the Evaluation period: for example, through the revision of the the increased price signals from the EU Emissions Trading System.

Over the Evaluation period the revenue from **environmental taxes** has remained static²⁸. The revenue generated from environmental taxes varies significantly across environmental domain and Member State, showing a varying approach to PPP implementation (as discussed Section 4.1.7). Environmental taxes (i.e. energy, transport, pollution and resource taxes, including ETS) contributed around 4.8% of total revenues from taxes and social contributions in the EU in 2022. Of this, energy taxes contribute most of the revenue (77%)²⁹, while transport contributes 19% and pollution and resource use taxes contribute 4%. Despite frequent calls for environmental tax reform, there has been no systematic switch from taxing labour to taxing pollution³⁰. Figure 4a and 4b show that environmental taxes have declined as a percentage of GDP over the evaluation period, whilst labour taxes have increased: the opposite of Environmental Tax Reform.

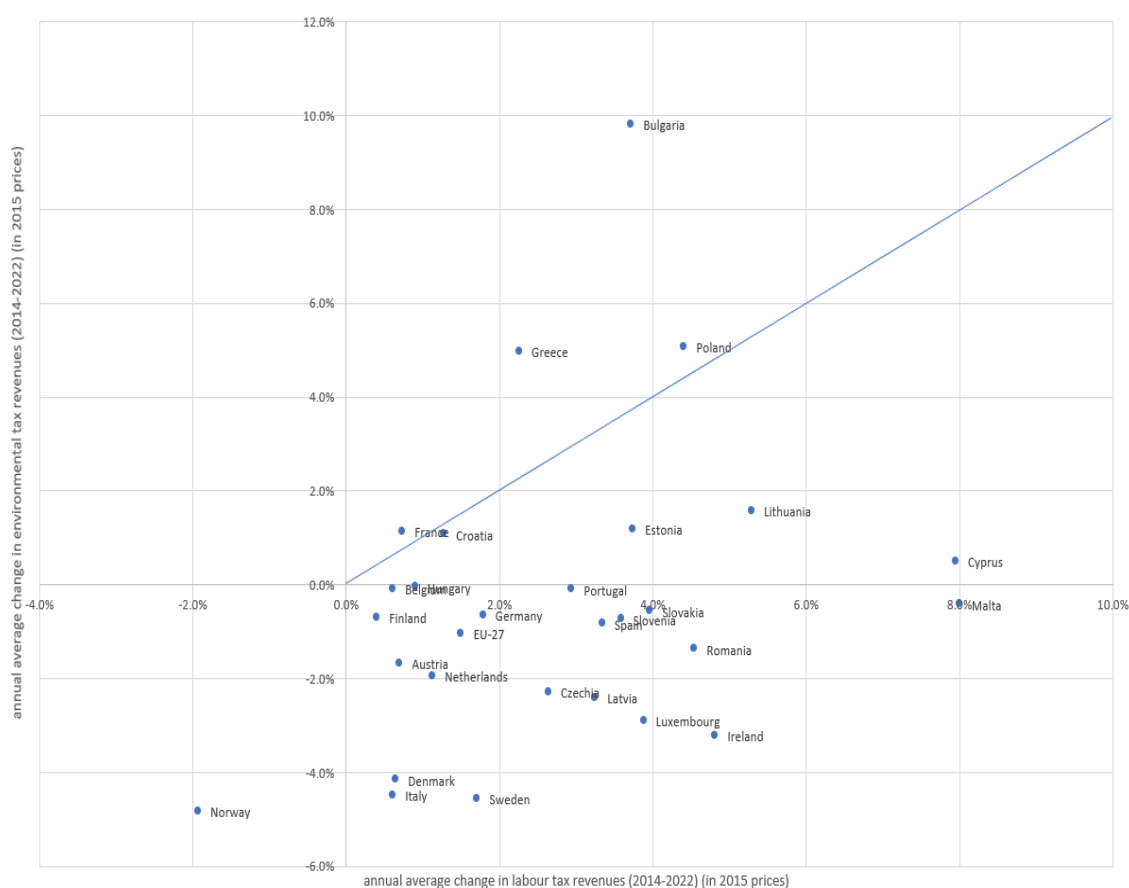
²⁷ Market-based instruments address the market failure of 'environmental externalities' either by incorporating the external cost of production or consumption activities through taxes or charges on processes or products, or by creating property rights and facilitating the establishment of a proxy market for the use of environmental services.

²⁸ Eurostat, [Environmental tax statistics](#). Note that the analysis is of environmental taxes, and not general taxation.

²⁹ It should be noted that energy taxes also cover the excise duties paid on fuels used in the transport sector and that the revenue from ETS and carbon taxes is included under the energy tax figure.

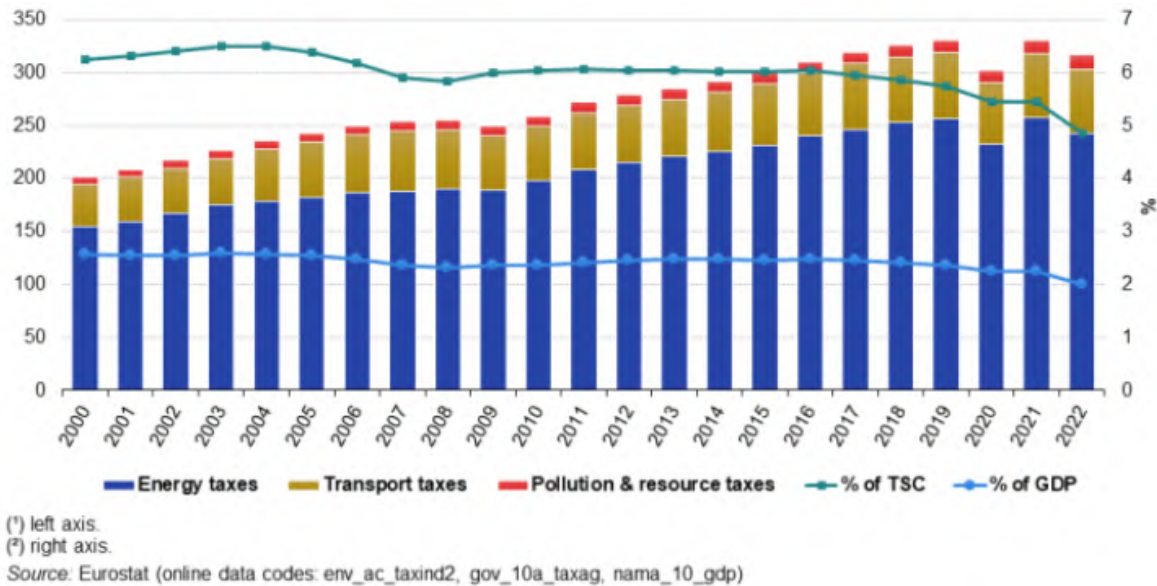
³⁰ European Commission, [Annual Report on Taxation 2023](#).

Figure 4: Change in Tax Revenues from Environmental and Labour Taxation 2014-2022³¹



³¹ Sources: DG TAXUD – Data on Taxation Trends https://taxation-customs.ec.europa.eu/taxation-1/economic-analysis-taxation/data-taxation-trends_en - tax revenue by tax base (Taxes on labour taxes) – the share of taxes to GDP were used for calculation of absolute tax revenues for the years 2014 and 2022 and the source of environmental tax revenues data is Eurostat Statistics Explained article from July 2024: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental_tax_statistics. Deflator (price level 2015) Eurostat Price Index (implicit deflator) 2015=100 was used https://ec.europa.eu/eurostat/databrowser/view/NAMA_10_GDP_custom_10456721/default/table (GDP and main components (output, expenditure and income). Note that there are significant changes for some countries environmental tax revenue from 2021 to 2022 linked to measures / policies implemented following Regulation 2022/1854 of 6 October 2022 on “an emergency intervention to address high energy prices”. These new measures are mainly taxes on excess profits of energy/electricity companies, and may be declassified as environmental taxes.

Figure 5: Environmental Tax Revenues, 2000-2022 (in EUR billion (left scale) and as share of total tax revenue (TSC) and GDP (right scale) (source: Eurostat, Statistics Explained Environmental tax statistics (published July 2024) https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental_tax_statistics)



Over the Evaluation period, the evidence on the size of **environmentally harmful subsidies** is robust for fossil fuel subsidies, which were broadly stable over the evaluation period before doubling in the last year (2023) to EUR 123 billion following Russia's invasion of Ukraine³² (see also section 4.1.3), although there are methodological challenges regarding the comparability and aggregability in particular of tax expenditures over time and over countries.. The evidence on non-energy environmentally harmful subsidies is less systematic, but also indicates significant financial support that leads to pollution (see also section 4.1.3).

With respect to criminal **sanctions**, there have been many examples over the evaluation period where they were too low to reflect the environmental damage, thus failing to implement the PPP: the ECD evaluation found that penalties in Member States mostly covered only a fraction of the environmental damage caused.

As discussed below, the evidence is overall robust that **most environmental damage costs are not met by polluters**, despite some improvements over the Evaluation period. The limited application of the Environmental Liability Directive also points to this conclusion.

The identification of the **benefits** of applying the PPP over the Evaluation period is more challenging. Over the Evaluation period there have been environmental improvements, and the PPP has contributed to these (see Section 4.1.6 and Annex 8) but the degree to which they can be attributed to the PPP cannot be quantified.

³² [COM\(2023\) 651 final](#).

4. Evaluation findings

The Evaluation matrix sets out the approach to answering the Evaluation questions including the definition of sub-questions. The Evaluation questions are provided and answered below, with the details of the Evaluation matrix (sub-questions, indicators etc) in Annex 3.

4.1. To what extent was the Polluter Pays Principle successful and why?

This section looks at whether the PPP has been a success, based on an assessment of whether it is effective, efficient, and coherent.

4.1.1. Effectiveness: Is the PPP applied in all policies that affect environmental protection and the improvement of environmental quality?

Overall

The PPP is generally well implemented in policies to address the costs of pollution prevention and control. There are some gaps in how the PPP is implemented in policies to address the costs of administrative measures (where the costs are instead borne by the authorities). This appears to confirm the findings of the macroeconomic approach in section 3.

The costs of environmental damage are not addressed by 47 of the 76 policies under review. However, in some cases, while the specific legislation does not address costs of environmental damage, these costs are addressed by other legislation (e.g. the Emissions Trading System) or by national measures (e.g. environmental taxes).

Implementation of PPP is improving. For the costs of pollution prevention and control, PPP continues to be well applied over time; for the costs of administrative measures, the PPP application is improving via the broader application of EPR and better sanction regimes; for the costs of environmental damage, there are also some improvements as seen for ETS and again through the broader application of EPR and the strengthened consideration of the amount of damage in criminal sanctioning. The PPP is most implemented through being applied to command-and-control mechanisms in EU policy. Market Based Instruments (MBIs) that place a cost on environmental damage are less common.

Despite the improvements, it was not possible to identify a sector or environmental issue for which PPP is fully implemented for environmental damage. The evidence points towards only partial internalisation of environmental damage costs.

Findings

This question considers, firstly, the extent to which the PPP is implemented in EU policy. This includes a review of how the PPP is referenced in the legal provisions together with a review of how the PPP is applied via the policy provisions. Secondly, it considers the way in which the implementation of the PPP has evolved over the appraisal period.

a) To what extent is the PPP implemented in the policy provisions of EU environmental policies?

To determine how the PPP is implemented, firstly a review of the legal texts was carried out to identify policy provisions that explicitly refer to the PPP. This analysis does not consider the level of implementation of these provisions. The PPP is explicitly referred to in the legal text of only 20 of the 76 policies reviewed, with the reference to the PPP in the legal text most often via the recitals. The Fitness Check seeks to establish who pays for the costs of pollution, irrespective of whether the policies under review explicitly refer to the PPP or not. All the 76 policies should implement the PPP, as it is a Treaty principle. The question that cannot be

answered is if the failure to include the PPP in the legal text leads to worse implementation of the principle or not.

Moving on from the legal texts of the 76 policies in scope, these policies have been reviewed to see in how far they aim to implement the PPP. A detailed view of the detailed analysis for each policy is given in Annex 7. This analysis is presented by cost category to assess how the PPP is applied in practice for: costs of pollution prevention and control; costs of associated administrative measures; and costs of environmental damage or externalities.

Note that this analysis is done policy by policy. It shows for each individual policy if and how the PPP has been translated into practice³³. For the costs of control/prevention and for administrative costs, i.e. the costs that are generated by the environmental policy itself, a colour code is used to visualise how PPP has been integrated in the policy provisions:

- **Red**: Red means no application or a negligible degree of application of the PPP. **For costs of prevention and control and for administrative costs**, the policy contains measures which incur a cost, but that cost is not, or largely not, met by the polluter.
- **Yellow**: Yellow means the PPP is partially applied. The policy in question contains measures which incur a cost and that cost is partially met by the polluter and/or the policy in question establishes a duty for the Member State competent authority, hence the extent of application of the PPP depends on national plans and legislation (e.g. facultative disposition in a Directive).
- **Green**: Green means high degree of application of the PPP. The policy in question contains measures which incur a cost which is met or largely met by the polluter.
- **White**: White means the PPP is not applicable, meaning that the policy contains no measures resulting in such costs to be met by the polluter. So, the PPP is not relevant.

For costs of environmental damage, the colour code is not useful, given that the costs are not the result of the environmental policy but rather of environmental behaviours (see below).

The rating for each legislation is provided in Annex 7. Legislation is grouped by 8th EAP priority objective and then policy area. This section now presents a summary of the findings.

Costs of pollution prevention and control

The review of policies with provisions that address the costs of pollution prevention and control shows for a great majority of these policies these costs are paid for by the polluter:

- The PPP is clearly translated into policy provisions that address pollution prevention and control for 47 of the 70 policies. For example, through the implementation of Best Available Techniques, the IED leads to pollution prevention measures that the polluters pay for. In 17 of the other cases, it would be for Member States to decide on who pays for measures (e.g. the Water Framework Directive). There are 4 cases where the PPP does not appear to be applied (MSFD, Floods Directive, Water Reuse Regulation, SEA), i.e. Member State authorities, and hence the general taxpayers, bear the costs instead of the polluter.

³³ EU funds and State aid have been reviewed separately and without colour rating. They are considered relevant to the application of the PPP in their role in safeguarding the environment, rather than in playing a role in directly addressing costs of pollution (see section 4.1.3 and Annex 7). Hence, analysis is often for 70 policies in this section.

- By policy area, the costs incurred by the provisions are met or are largely borne by the polluter for 9 of 12 climate change policies, all of 12 circular economy policies, and 23 of 37 zero pollution policies.
- Within zero pollution, the costs incurred by the provisions are met or are largely borne by the polluter for 4 of 13 policies for water quality, 6 of 9 air quality policies, and 13 of 14 chemical risk management policies. For noise (1 policy), the extent to which the PPP is applied is dependent on national / local plans to implement the provisions of the policy (noise action plans). For 3 of the 13 water policies, the PPP is not clearly applied, singling out this policy area in this analysis (reasons include the challenge of defining who is the polluter).
- Of the 5 policies under review that contribute to biodiversity and the enhancement of natural capital, only the Regulation on Invasive Species contains provisions that directs the costs of pollution prevention and reduction to the polluters. For the other four policies, this mainly depends on the decisions taken by the Member States.

Table 1 : Implementation in legal provisions of the PPP for costs of prevention and control

Cost of pollution prevention and control		PPP applies	PPP applies partly and is Member State decision	PPP is not applied	Not applicable	Total
Climate		9	2		1	12
Circular economy		12				12
Zero pollution	Water	4	6	3		13
	Air	6	2		1	9
	Noise		1			1
	Chemical risk management	13	1			14
Biodiversity		1	4			5
Horizontal policies		2	1	1		4
Total		47	17	4	2	70

Costs of administrative and enforcement measures

The review of policy provisions for administrative and enforcement measures shows a more varied coverage for the way the PPP has been implemented. In sum:

- The costs of administrative and enforcement measures for 35 of the 70 policies under review are largely borne by the polluter.
- By policy area, the PPP is fully applied to 9 of 12 climate change policies, 9 of 12 circular economy policies, and 14 of 37 zero pollution policies. Within zero pollution, the PPP is applied to 2 water quality policies, 4 air quality policies and 8 chemical risk management policies.
- For 14 policies, the provisions that address administrative and enforcement costs were found to incur costs only partially borne by the polluter, where the provisions were also found to incur costs borne by competent authorities (e.g. monitoring of air quality, or the state of nature).
- For 16 policies, costs are not borne by the polluter, and hence the PPP is not applied as measures to monitor and report progress are carried out by competent authorities and there is no provision stipulating that costs to monitor and enforce shall be recovered by

the competent authority. Many zero pollution policies fall into this category, i.e. 9 water policies, 2 air policies, the Environmental Noise Directive and the POPs Regulation.

Table 2: Implementation in legal provisions of the PPP for administrative and enforcement costs

Administrative and enforcement costs		PPP applies	PPP applies partly and is Member State decision	PPP is not applied	Not applicable	Total
Climate		9	1	1	1	12
Circular economy		9	2		1	12
Zero pollution	Water	2	2	9		13
	Air	4	3	2		9
	Noise			1		1
	Chemical risk management	8	4	1	1	14
Biodiversity		1	2		2	5
Horizontal policies		2	1	1		4
Total		35	14	16	5	70

Costs of environmental damage

The colour coding is not used for the analysis of costs of environmental damage as the costs are not generated by the environmental policy itself. The policy may address the costs of environmental damage, and this is indicated in the table below. But when a policy does not address the cost of environmental damage, this does not necessarily mean that the latter is not addressed at all as it may already be covered by horizontal policies. Indeed, to a much greater extent than for the other cost types, the PPP may be applied through other pieces of legislation, i.e. the horizontal policies. It is therefore also necessary to look at the degree of internalisation of environmental damage from a more general, sectoral viewpoint (section 3 already established the only partial implementation of PPP for the costs of environmental damage).

By policy area, the assessment of policies shows:

- For climate change policies, 10 of 12 climate policies do not address costs of environmental damage and hence the PPP is not applied. However, this only tells part of the story as the EU ETS places a price on GHG emissions and the costs are borne by the polluters. The Energy Taxation Directive establishes a framework for the taxation of energy products that includes minimum tax rates.
- 8 of 12 circular economy policies partially address costs of environmental damage via extended polluter responsibility (EPR) schemes which, for example, cover clean-up costs from litter (including transport and treatment of litter collected)³⁴. Where extended to clean-up actions, EPR is an increasingly common tool to address part of the costs of externalities (the analysis suggests it does not cover all such costs).
- 4 of 37 zero pollution policies reviewed include provisions to ensure the costs of environmental damage are largely or partially borne by the polluter, including policies for water quality (1) and chemical risk management (3). Taking these examples in turn:

³⁴ EPR is in some cases also applied to some administrative costs but has been allocated here to costs of environmental damage as this is the main focus.

- Seveso Directive: Where such accidents occur, operators are responsible for limiting the consequences for human health and the environment.
- Safety of Offshore Oil and Gas Operations Directive: Operators are required to take all suitable measures to limit [the operation's] consequences for human health and for the environment regarding discharges to water and they are financially liable for the consequences.
- Cosmetic Regulation: Responsible persons that placed a cosmetic product on the market not in conformity with the Regulation are required to take immediate corrective action (withdraw or recall as appropriate).
- For biodiversity and natural capital policies, costs are only partially addressed directly by the instruments concerned. For the Nature Directives and the Invasive Alien Species Regulation the relevant liability rules are contained in the ELD.
- Regarding horizontal policies, ELD covers liability for environmental damage caused by economic activity. Annex III of the ELD qualifies some specific activities as hazardous, meaning that for these activities, the liability is strict and covers damage to all three relevant resources, biodiversity, water and land. This includes activities subject to permit under the IED, discharges to groundwater and surface water, water abstraction, chemical risk management for manufacture, use, storage, and transport. In case of other economic activities, liability is limited to damage to biodiversity and fault based.

In total, the review of policies with provisions that address costs of environmental damage shows that the PPP is explicitly applied to 8 out of the 70 policies; and partially applied to 15 policies. There are however 2 policies where (part of) the cost of pollution is explicitly borne by the authorities (the Drinking Water Directive and the Mercury Regulation).

Table 3: Implementation in legal provisions of the PPP for costs of environmental damage

Costs of environmental damage		PPP applies	PPP applies partly to costs in the sector and is Member State decision	PPP not part of the provisions	Total
Climate		1	1	10	12
Circular economy		2	8	2	12
Zero pollution	Water	1		12	13
	Air		2	7	9
	Noise			1	1
	Chemical risk management	3		11	14
Biodiversity			3	2	5
Horizontal policies		1	1	2	4
Total		8	15	47	70

EU funds

The Fitness Check reviewed EU funds to assess whether they are being used to pay for polluting activities or clean-up activities (see detailed analysis in Annex VII). Although the effective application of the PPP implies that clean-up activities are paid for by liable entities and EU funds should not be used to cover these costs, there appear to be cases where EU funds may potentially have financed clean-up activities, e.g. contaminated site remediation or waste infrastructure (however, this is difficult to establish at budget programme level, and would require an investigation at project level). Note that the use of EU funds to finance clean-up actions is justified when the polluter cannot clearly be identified or made liable (orphan pollution, diffuse pollution) or when they serve to finance research and development of novel techniques.

The ECA Report³⁵ detailed 42 projects across three Member States that financed the clean-up of industrial pollution, decontamination of non-compliant landfills, clean-up of orphan industrial pollution and investment in water treatment plants. However, 20 of the 42 projects examined relate to orphan pollution. Orphan pollution is pollution that took place in the past and where the PPP cannot be applied because the polluter is either unknown, no longer exists, or cannot be made liable. Amongst the other projects, the Commission indicated in its response to ECA that under shared management it is the responsibility of the Member States to select operations where the conditions recommended by ECA should be applied. The Commission committed to, in “its supervisory capacity, make the use of EU funds for cleaning pollution conditional on checks, in collaboration with the Member States, that the relevant authorities took all the necessary steps to charge the polluter for the pollution they are responsible for”.

State aid

The Fitness Check reviews the extent to which State Aid is contributing to clean-up actions that should otherwise be paid for by the polluter. The Fitness Check examines whether the PPP is applied in policies with a significant link to the environment. Therefore, the General Block Exemption Regulation (GBER) and the Guidelines on State aid for climate, environmental protection and energy (CEEAG) have been reviewed as the State aid instruments with a significant link to the environment. Other State aid rules fall outside the scope of the fitness check and have not been reviewed. The reviewed State aid rules require Member States to comply with the PPP for environmental aid categories to be declared compatible. In particular, the CEEAG explain that aid cannot be considered compatible where it supports the costs which the polluter must bear in accordance with the PPP. Also, the General Block Exemption Regulation contains direct references to PPP in specific articles (for more details, see annex VII).

Has the implementation of the PPP improved over time?

The analysis reviewed both changes in legal references to the PPP in recitals, and/or articles, and changes in the actual application over the appraisal period (2014-2023). Potential planned changes to policies in 2023/2024 were also reviewed to determine how these may influence the application of the PPP in the future.

There are 12 legal instruments in scope that were revised during the appraisal period. Many of these revisions included additional policy provisions that strengthen the application of the PPP. As discussed under scope (Section 1.2), this Fitness Check seeks to separate out the question

³⁵ ECA (2021), [The Polluter Pays Principle: Inconsistent application across EU environmental policies and actions](#).

of better application of PPP from simply having stricter environmental policy, but in looking at implementation over time the two issues are hard to disentangle.

One example where the PPP is clearly better applied is for the ETS Directive where the cap on GHG emissions has been identified as the key mechanism used to apply the PPP as it enables a market price for the externality associated with GHG emissions. The ETS has evolved to address the excess of allowances in the system which hindered the creation of a robust price signal. Furthermore, the sectoral scope of ETS has increased over time. In 2012, the scope that mainly included industrial installations and power generation was extended to (intra- European Economic Area, AEA) aviation. In 2023, the Directive was expanded to maritime transport and buildings, road transport and small industry sectors were brought under in a separate new system, ETS 2. Free allowances will be phased out for the aviation sector, while for certain industrial sectors, free allocations will be phased out in conjunction with the introduction of a Carbon Border Adjustment Mechanism (CBAM). This adds up to a fuller application of PPP across economic sectors.

The most significant changes in the context of the European Green Deal are often too recent to be assessed in this Fitness Check or are still proposals under negotiation between the Council and the Parliament. Many of the revisions extend the scope of measures to prevent and control pollution (e.g. proposals for initiatives to regulate the maritime sector and soil management). In doing so, they also change the pattern of application of the PPP:

- As prevention and control costs are almost always paid for by polluters, these new provisions apply the PPP.
- Environmental damage and therefore also environmental damage costs are likely to be reduced, as these damages are prevented or controlled.

Similarly introducing EU targets (e.g. under the Nature Restoration Regulation) can strengthen environmental law but does not necessarily change the way in which the PPP is applied.

As well as changing the pattern of costs, there is a change in the degree of application with respect to administrative and environmental damage costs through the wider application of EPR (including for the Batteries Regulation, Packaging and Packaging Waste Regulation, and UWWTD), strengthened consideration of the environmental damage in penalties (including for AAQD, IED, UWWTD and ECD), and access to health damage compensation (including for AAQD, IED and UWWTD). The proposal for a revision of the Energy Taxation Directive is still under discussion, in part because it requires unanimity.

Overall, the policies under revision are leading to stronger environmental policy. There is a tendency to better implement the PPP. For pollution prevention and control, PPP continues to be generally well applied (to more ambitious policies); for the costs of administrative measures, the PPP application improves via the broader application of EPR and better sanction regimes; for the costs of environmental damage, there are also some improvements seen through ETS and broader application of EPR against a picture of continuing gaps. There are also implementation gaps in environmental policy, which also affect the implementation of the PPP.

The avoidance of financing harmful activities in EU Funds indirectly also contributes to a better implementation of the PPP. The Do No Significant Harm (DNSH) principle, as it is used today in the EU, was initially legislated on within the EU Sustainable Finance framework. The DNSH principle found its place in several other policy documents well beyond the sustainable finance space, such as the Interinstitutional Agreement (IIA) on the EU 2021-2027 budget, the Communication on Better Regulation and in several EU funding programmes and policies of

the 2021-2027 EU policy cycle. The DNSH principle has also been included in the revised Financial Regulation³⁶, which lays down principles and procedures governing the EU budget.³⁷ The Commission's July 2025 proposal for a long-term EU budget for 2028-2034 includes an enhanced and single performance framework to monitor how the budget is spent and what results it achieves, based on simpler rules. It sets the horizontal principle that the budget should be implemented without doing significant harm to the climate and the environment.

Sectoral viewpoint

The 8th EAP mid term review recognises that additional efforts are needed to shift towards sustainable production and consumption requiring suitable alternatives to be found across key economic sectors, whilst at the same time maintaining EU competitiveness. In this context, it is relevant to look at whether the PPP is applied to different economic sectors. In terms of the main sectors to consider, the analysis for the Taxonomy Regulation identified the following matrix of high impact sectors for environmental issues.

Figure 6: Mapping of high impact sectors (source: Technical Expert Group set up under the Sustainable Finance Strategy to identify the activities that should be covered by the EU Taxonomy)

Sustainable use and protection of water and marine resources	Transition to a circular economy	Pollution prevention and control	Protection of healthy ecosystems	Mitigating climate change (reducing GHG emissions)
Agriculture	Industry/product manufacturing	Agriculture	Agriculture	Energy
Industry/product manufacturing	Construction	Industry/product manufacturing	Mining	Transport
Transport	Energy	Transport	Forestry	Industry/product manufacturing
Mining	Transport	Energy	Tourism, sports, and leisure	Buildings ⁷
Aquaculture	Agriculture	Waste Treatment	Energy	Agriculture

For all of the sectors identified, there are differences in the means for application and also gaps in the application identified. The support study found different levels of analysis for different sectors. Some indications for the different economic sectors are:

- The PPP is not applied directly to greenhouse gas emissions from the sectors covered under the Effort Sharing Regulation (ESR), in particular agriculture, road transport, buildings and the waste sector as it applies to Member States and leaves Member States discretion to implement their national policies and measures. In its implementation Member States may have implemented the PPP principle to meet the (ESR) targets. In the case of agriculture, the PPP is integrated in the Common Agriculture Policy through conditionality with a set of actions that are positive for climate and the environment acting as a baseline requirement

³⁶ Regulation (EU, Euratom) 2024/2509 of the European Parliament and of the Council of 23 September 2024 on the financial rules applicable to the general budget of the Union (recast), OJ L, 2024/2509, 26.9.2024.

³⁷ Beltrán Miralles, M., Gourdon, T., Seigneur, I. (2023). [The implementation of the 'Do No Significant Harm' principle in selected EU instruments : a comparative analysis](#). European Commission, Joint Research Centre. Publications Office of the European Union.

to be fulfilled by farmers benefiting from direct payments or other area-based payments. Any further application of the PPP linked to the CAP will need to be designed to support environmental and climate objectives without undermining the economic and social objectives of the CAP and most importantly, EU food security.

- Europe's industry including energy production has made significant progress in reducing environment and climate impacts. However, as discussed in Section 3,³⁸ the continuing environmental impacts are significant in environmental, health and economic terms and are not fully reflected through an application of the PPP.
- The total environmental external costs of transport correspond to EUR 400 billion, as mentioned in Section 3, which exceeds the level of environmental taxes on transport (as an indication of the degree of internalisation). Analysis by the Commission of further pricing for transport indicated it would lead to further environmental improvements³⁹. Within the transport sector, additional pricing policies have been introduced during the evaluation period: e.g. extension of the EU ETS to maritime transport from 2024; Member States reductions of the diesel discount compared to petrol in terms of taxes, introduced for socio-economic reasons, that is not clearly justified by environmental concerns⁴⁰; and, Member States are also increasingly looking at pricing mechanisms to reduce transport emissions in hotspots, with clean air zones and charging for more polluting vehicles.
- The built environment uses significant amounts of resources and accounts for about 50% of all extracted material. The construction sector is responsible for over 35% of the EU's total waste generation. Greenhouse gas emissions from material extraction, manufacturing of construction products, as well as construction and renovation of buildings are estimated at 5-12% of total national GHG emissions. Greater material efficiency could save 80% of those emissions. In response, the strategy for a sustainable built environment is promoting coherence across relevant policy areas such as climate, energy and resource efficiency, management of construction and demolition waste, accessibility, digitalisation and skills as well as promoting circularity principles. Given the impact of the construction sector on the environment, and the failure to reflect environmental damage costs for those sectors, it seems unlikely that construction implements fully the PPP.

Overall, there is no evidence for any sector that it fully implements the PPP.

Stakeholder views

On the question whether economic sectors bear the costs of the pollution they are directly responsible for, much more participants to the public consultation disagreed than to the contrary. However, an overview of the consultation results by sector is not conclusive, as a high proportion of participants answered "don't know" or did not answer these questions (ranging from 25% to 52% for individual economic sectors). An overview per stakeholder group is therefore not useful either.

Some respondents to the public consultation raised concerns that the use of exemptions and derogations permitted under EU policy has prevented the consistent application of the PPP. For example, reference was made to the exemptions as foreseen in Article 4, paragraphs 4 to 7 of the Water Framework Directive (WFD), that allow for pollution emission levels to vary over

³⁸ Data reflects facilities in the European Industrial Emissions Portal (2012-2021).

³⁹ [SWD\(2020\)331 final](#)

⁴⁰ OECD (2022), [Pricing Greenhouse Gas Emissions : Turning Climate Targets into Climate Action](#).

water bodies, hindering a uniform PPP application. To some extent, this is more about the effectiveness of policy and the need to take into account specific local conditions and balance different policy objectives rather than the application of the PPP.

4.1.2. Effectiveness: How effective the PPP is in delivering efficient environmental improvements

Overall

The PPP is effectively contributing to environmental improvements when applied to command-and-control instruments. This finding is based on existing policy evaluations where it is demonstrated that prevention and control costs are borne by the polluter at the same time as reductions in pollution are achieved. The PPP is also effectively contributing to environmental improvements via a price signal reflecting environmental damage costs. This finding is based on existing policy evaluations where it is demonstrated that price signals are achieving reductions in pollution, including from environmental taxes.

Findings

The Fitness Check assessed how EU policy is implementing the PPP to contribute to the improvement of the environment. The focus of this analysis is on command-and-control instruments and market-based instruments, based on their relevance to implementing the PPP in EU policy (as reviewed in 4.1.1). Voluntary approaches were considered of very low effectiveness as confirmed by the low support from stakeholders (and only 3 of the policies in scope use them). The analysis builds on the findings of sections 3 and 4.1.1, combined with evidence compiled from existing policy evaluations.

For **command-and-control instruments**, the costs of preventing and controlling pollution are largely borne by the polluter and existing policy evaluations⁴¹ have demonstrated that significant reductions in pollution have been achieved. For example, the 2020 Evaluation of the IED⁴² has shown that it significantly contributed to reducing emissions (especially to air) and the related impacts on the environment at the same time as overall economic growth, indicating that there has been a decoupling of industrial activity from emissions to air.

However, the analysis has shown that issues remain with allowable residual pollution (leading to environmental damage costs) and non-compliance that results in environmental externalities where costs are not borne by the polluter. These costs are often not addressed by policy provisions contained in command-and-control instruments but can be addressed via market-based instruments.

The use of **market-based instruments** (MBI) has a positive influence on the overall trends in pollution reductions where the price signal accurately reflects the value of an economic activity, including the value of environmental externalities. The findings of section 4.1.5 show that MBI that place a price on pollution (and particularly on environmental externalities) are the second most used type of policy mechanism to which PPP is applied in EU policy. The Fitness Check focused on prominent examples of MBI, including carbon pricing under the EU ETS, waste management pricing via pollution charges and taxes (as used to implement EU waste management policies), or preventive and remedial measures under the ELD.

⁴¹ Examples include: [SWD\(2019\) 428](#) ; [SWD\(2017\) 179](#) ; [SWD\(2016\) 454](#) ; [SWD\(2021\) 61](#); [SWD\(2019\) 199](#); [SWD\(2020\) 87](#); [SWD\(2021\) 49](#); [SWD\(2016\) 399](#); [SWD\(2019\)329](#); [Evaluation on F-gas Regulation \(2022\)](#); [SWD\(2020\)182](#) ; [SWD\(2019\) 440](#); [SWD\(2016\) 472](#); [SWD\(2019\) 1300](#); [SWD\(2020\)26](#).

⁴² [SWD\(2020\)181](#) .

The EU ETS is the main carbon pricing instrument in the EU, followed by carbon taxes. For emission trading, the evidence is conclusive that by setting a carbon price, the EU ETS has achieved GHG emission reductions. Since its launch in 2005, the EU ETS has helped drive down emissions from electricity and heat generation and industrial production by 37.3%⁴³.

There is a range of evidence to show that carbon pricing is effective in reducing emissions. Studies⁴⁴ find that the advantages of carbon pricing policies which apply to a large number of emitters (such as the EU ETS) are that they provide a price signal to producers and consumers which incentivizes development and implementation of technologies to reduce emissions. Carbon pricing has been found to spur innovation⁴⁵ and investment in low-carbon technologies, such as carbon capture and utilization or renewable hydrogen. The IMF found support for the benefits of EU ETS on accelerating firms' climate transition, while keeping firm-level financial costs at bay.⁴⁶

There are factors that in theory can undermine the effectiveness of carbon pricing as a mechanism to provide a price signal which include market balance and overarching policy certainty (in the case of the EU ETS) and uncertainty in abatement costs (for carbon taxes)⁴⁷. Under the EU ETS, the formation of a robust price signal and market balance are supported by the cap on emissions (and thus the supply of allowances) and since 2019 by the Market Stability Reserve (MSR). The MSR adjusts the supply of allowances to the carbon market annually based on predefined thresholds. Analysis of the EU ETS has shown that price movements have followed market fundamentals⁴⁸.

Other examples of MBI, to which PPP is applied, are landfill taxes and waste incineration taxes. Moreover, pollution charges in the form of waste collection fees are increasingly being used by Member States to incentivize the waste producer to reduce waste generation and sort their waste (pay-as-you-throw schemes, PAYT). In general terms, the effectiveness of taxes to reduce pollution can be measured in terms of trends for recycling, landfilling and incineration (indication of where the use of MBI have incentivised a change in waste management). The OECD finds that PAYT systems typically have a positive impact on recycling rates (2019)⁴⁹. The Member States with the highest recycling rates are those that have implemented a well-designed landfill tax or ban (or combination of both) and established PAYT schemes (combined with high-convenience systems for the separate collection of bio-waste).

The effectiveness of applying the PPP to sanctions is difficult to assess given that the PPP is seldom fully applied to sanctions (as mentioned in section 3), with sanctions often not related to the environmental cost.

Stakeholder views

In the public consultation, between 53% and 61% of participants⁵⁰ believed that the application of PPP to command-and-control instruments and market-based instruments was effective or fully effective for preventing, reducing or remedying pollution. The effectiveness of voluntary

⁴³ [COM\(2023\) 654](#)

⁴⁴ [Isermeyer et al \(2019\)](#), [Aghion et al. \(2016\)](#); [Calel and Dechezleprêtre, \(2016\)](#), [Dechezleprêtre et al., \(2022\)](#)

⁴⁵ EIB (2024), [Investment Report 2023/2024: Transforming for competitiveness](#).

⁴⁶ IMF (2024), [Firms' Response to Climate Regulations Empirical Investigations Based on the European Emissions Trading System](#)

⁴⁷ OECD (2021), [Effective Carbon Rates 2021. OECD Series on Carbon Pricing and Energy Taxation](#).

⁴⁸ ESMA (2022), [final report on emission allowances and associated derivatives](#)

⁴⁹ OECD (2019), [Waste management and the circular economy in selected OECD countries: evidence from environmental performance reviews](#).

⁵⁰ The differences between stakeholder groups are not significant given the low number of participants.

approaches was seen as very low or inexistent (more than half of participants found them little effective or not effective at all⁵¹). Less than 20% of participants disagreed with this view and the remaining participants were undecided or had no opinion.

Several position papers referred to the issue that costs of environmental damage are not effectively addressed by the PPP through command-and-control instruments. For example, in the cases of diffuse pollution or legacy pollution, where the challenge is identifying who the polluter is. One example given was for the chemical sector where it is difficult to trace the source of chemicals, making it challenging to enforce the "duty of care" and "extended producer liability" principles upon companies. These issues are addressed in section 4.1.6.

4.1.3. Effectiveness: What factors hamper effective application?

Overall

This section asks about the factors that have led to the partial implementation of the PPP. Firstly, there are overhead costs to applying the PPP reflecting the additional costs of making the polluter pay. There are no identifiable overhead costs associated with making the polluter pay for the costs of prevention and control, however, they are easier to identify for making the polluter pay for environmental damage costs.

Secondly, there are concerns about competitiveness, with policy makers aiming to strike a balance between enhancing competitiveness, reducing pollution, and making the polluters pay. This can lead to the application of the PPP being weakened in specific cases unless mitigation measures are applied.

Thirdly, there is a conflict between the effective application of the PPP and environmentally harmful subsidies. Fossil fuel subsidies in particular are significant and distort the price signal given. Non-energy environmentally harmful subsidies are also found, but there is less information on their value and effect.

Also, EU funds may potentially have financed clean-up activities. However, this regards mainly cases where the polluter could not be identified. For other cases, when such financing may have occurred in specific cases during the evaluation period, measures taken by the Commission in the meantime should prevent this from occurring again. There are also unintended gaps in the application of the PPP, and gaps in liability regimes.

Findings

Overhead costs of implementing PPP

The OECD noted that *“At a first sight, the Polluter Pays Principle looks straightforward: if you pollute, you bear the costs of your pollution. When it comes to practical implementation, however, some challenges have revealed over the years: what is considered as pollution? Who are the polluters and who should pay? In addition, which costs should be paid by polluters?”*⁵²

All policies have ‘overhead costs’ related to ensuring that obligations are complied with: this can include monitoring and enforcement costs and reporting obligations. It is therefore not always free to implement the PPP. Evaluations undertaken for a specific piece of legislation usually cannot separate out these overhead costs from the substantive costs, but there are Evaluations and Impact Assessments that cover aspects in detail, for example: the EU ETS is regularly monitored and evaluated; the discussion of Extended Producer Responsibility under the Batteries Regulation or the UWWTD; the application of liability through the ELD. All of

⁵¹ Nevertheless, about 40% of businesses and their associations found voluntary approaches effective.

⁵² OECD (2022), [Background note: The implementation of the Polluter Pays Principle](#).

these different analyses show that the costs of implementing the PPP are proportionate but do not single out overhead costs in a way that can be used in this Fitness Check covering more than 70 pieces of legislation.

These examples are also not representative, as they relate to pricing instruments, which focus on environmental damage costs where it can be argued that all enforcement costs relate to applying the PPP. However, for prevention and control costs, identifying the enforcement costs attributable to the substantive legislation and separate from applying the PPP cannot be done. Arguably, there are no additional overhead costs, as the default is that regulated entities should pay for the costs of prevention and control.

Overall, any overhead costs tend to reflect the difficulty of ensuring compliance promotion and assurance specific to making the polluter pay (so over and above the costs of ensuring the policy is implemented). Identifying the polluter and the damage they cause can be difficult and this explains why price signals are less likely to be found, for example, for diffuse pollution or where actual emissions vary significantly from permitted emissions or where the timing or geographical location of emissions is crucial. This explains findings such as:

- There tends to be poor application of the PPP to diffuse pollution, where multiple sources are contributing to pollution, and it is not possible to distinguish who the polluter is with sufficient clarity.
- There tends to be poor application of the PPP to legacy pollution, where contaminants are left in the environment by sources that are no longer discharging them (e.g. companies that no longer exist) and/or it is not clear who the polluter is.
- There tends to be good application of the PPP to GHG emissions, where the time and location is not critical.
- Within the legal instruments used there are successes, but the degree to which they can be applied further needs to be considered on a case-by-case basis. This holds both for command-and-control instruments and also for market-based instruments, where there are good examples (eg some environmental taxes, Extended Producer Responsibility). These instruments look promising for further use, as experience with them increases and overhead costs decline accordingly (eg Extended Producer Responsibility is increasingly used in Member States and also for different environmental issues at the EU level).

Impact on competitiveness and pollution leakage

Studies into the impacts of environmental policy on the competitiveness of businesses do not produce conclusive evidence. There are two opposing views on the likely competitiveness effects. On the one hand, companies that face relatively stricter environmental regulation than their competitors abroad may lose competitiveness. On the other hand, more stringent environmental policies may promote cost-cutting efficiency improvements and foster innovation in new technologies that may (at least partially) offset the costs of the policy (“Porter hypothesis”).

The related concept of pollution leakage refers to the situation that may occur if, for reasons of costs related to pollution policies, businesses were to transfer production to other countries with laxer environmental standards. In the EU, studies into the impacts of environmental policy and pollution leakage have focussed on carbon pricing and carbon leakage in the context of the EU ETS. Studies have considered if in energy-intensive industry sectors, the cost of compliance with carbon pricing and the carbon cost being passed on in energy prices led to

industries relocating⁵³. The evidence of the risk of carbon leakage is not always conclusive or suggests that it is difficult to isolate carbon cost as a single factor in relocation decisions. However, ex-post studies appear to fail to detect such effects, possibly due to the effectiveness of special provisions, such as free allowance allocation or carbon tax exemptions, to mitigate the risk of carbon leakage⁵⁴. This confirms the view that policy design plays an important role in the possible competitiveness impacts.

Given the risk that making the polluter pay could lead pollution-intensive production capacity to shift towards countries where they do not face such costs (pollution leakage), policy makers may seek to loosen the application of the PPP by shifting part of the cost of the environmental measures onto others. This way, they seek to find a delicate balance between stringency of environmental measures, preserving competitiveness, reducing pollution, and making the polluters pay.

Regarding the impact on SMEs, there is limited evidence over the impacts from the application and from the non-application of the PPP. In relation to whether SMEs are more affected than big companies (e.g. can big companies just ‘buy’ their pollution and continue polluting?) there is no conclusive evidence, and again this needs to be considered on a case-by-case basis. Illustrating this, the comments received from SME stakeholders in the consultations and workshops often referred to the negative effects of non-application. For example, that they endure higher costs because they need to clean up the pollution from other industries (e.g. shellfish farmers complained that to ensure the quality of the water for their production, they need to install monitoring devices and remediate pollution that is caused by other industries situated on the mainland and that the latter do not pay for these costs).

The present fitness check does not assess the usefulness or intensity of an environmental policy, but only the question of who pays for it. When considering the risk of pollution leakage in companies exposed to international competition, the policy choice to not fully apply the PPP comes down to shifting the cost of environmental measures from sectors exposed to international competition to sectors less exposed and to the general taxpayer (where increasing taxes may also lead to lower demand for the goods and services of these “domestic” sectors). A discussion about the application of PPP is primarily a discussion about the distribution of the costs as the underlying policy to which the PPP is applied (or not) is a given in this analysis.

From a sectoral perspective, the impact of a strict application of the PPP to environmental policies may differ from sector to sector, depending on the price elasticities of demand and supply and on the capacity to pass production cost increases into higher output prices (where the latter depends in part on the risk of substitution with goods subject to less stringent environmental requirements). The variety of possible impacts invites to carefully assess the costs and benefits of specific policy measures in specific sectors. The sparse evidence also shows that further research is needed into the competitiveness effects of environmental regulations and of the application of the PPP to ensure that policy is based on robust evidence.

Environmentally harmful subsidies

If the PPP is effectively applied, all polluters should be paying for the pollution they cause. When polluters receive subsidies for their polluting activities, although such subsidies pursue legitimate socio-economic objectives, this creates a conflict with the PPP and changes the balance of their payments.

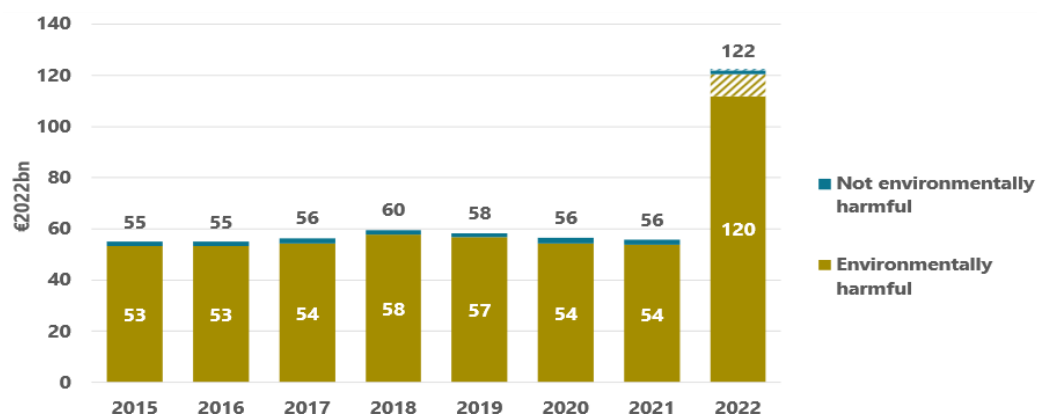
⁵³ [SWD/2020/0190 final](#)

⁵⁴ As most studies refer to the pre-2020 period with relative low prices of ETS carbon emissions allowances, this would need to be confirmed by further studies in the post-2020 period.

Reforming environmentally harmful subsidies is not just about reducing the subsidies, but also about pursuing their socio-economic objectives in alternative ways, where feasible (i.e. less harmful to the environment). A careful assessment of available policy options is needed to make the trade-offs between policy objectives visible to policymakers. A first step is the identification of environmentally harmful subsidies. At present, EU-wide we mostly have data on energy subsidies, and these estimates are not necessarily comparable across countries and over time because of methodological challenges.

The 2023 Report on energy subsidies in the EU⁵⁵ shows that fossil fuel subsidies remained broadly stable over the years until 2022 when they increased substantially in the wake of the energy crisis and the war in Ukraine (but contain many temporary measures) and then fell to EUR 111 billion in 2023. 98% of the fossil fuel subsidies are considered environmentally harmful. The fossil fuel subsidies considered as not environmentally harmful mostly relate to compensation to companies and workers for curtailing or closing coal mines and coal-fired power plants, or funding for rehabilitation of the areas where such closures have taken place.

Figure 7: Fossil fuel subsidies in the EU-27 by environmental impact (2015-2022; EUR2022bn)



Source: Enerdata, Trinomics, 2023. NB: 2022 estimate are represented with hatching

The OECD⁵⁶ finds that fossil fuel tax revenues exceed fossil fuel support in the EU. However, in 2022, overall energy subsidies in the EU exceeded energy tax revenues.⁵⁷ Thus, despite the limitations imposed on how the PPP is applied, the impact of environmentally harmful subsidies on the effective application of the PPP is only partially offsetting: there is still a price signal in the right direction, if not of the right magnitude.

For other, non-energy environmentally harmful subsidies, the European Commission is developing with the Member States a methodology for their identification and reporting. In the absence of this methodology, there is no accurate information on their level or which sectors are most distorted by them. As an indication of their magnitude though, estimates of the levels of environmentally harmful subsidies developed by several Member States indicate they are substantial.⁵⁸

Unintended gaps in PPP implementation

The following unintended gaps are identified:

⁵⁵ [COM\(2023\)651](#)

⁵⁶ OECD (2022), [Carbon Pricing and Energy Taxation](#).

⁵⁷ European Commission (2023), [Study on energy subsidies and other government interventions in the European Union - European Commission \(europa.eu\)](#).

⁵⁸ See also [Phasing out Environmentally Harmful Subsidies - European Commission \(europa.eu\)](#)

- Allowable residual pollution, where the polluter has taken all the measures ordered by the authorities and is meeting the environmental requirements stipulated by the policy but the policy itself does not address all the pollution. Even if the PPP is fully applied to the prevention and control costs arising from an environmental policy, the costs borne by the polluters will not fully reflect the environmental damage costs when the policy itself leaves a degree of allowable residual pollution with associated costs incurred by wider society. This can be the case, for example, with command-and-control measures that reduce pollution but that do not address the costs of the residual pollution to society.
- Opportunity for polluters to circumvent costs of pollution. For example, ship owners could reflag their ship at end-of-life so that they are not subject to the requirements of the Ship Recycling Regulation and do not bear the costs.
- Pollution from non-compliance, where the polluter has failed to meet environmental requirements stipulated by the policy and enforcement is focussed on ensuring the requirements are met, but not addressing the damage caused.
- There have been some limitations because of the limited uptake of instruments by national administrative and judicial authorities, for example, the Environmental Liability Directive and the Environmental Crime Directive.

Gaps in liability regimes

The PPP is insufficiently applied to pollution from non-compliance, meaning environmental damage, in all three areas of ex-post liability or responsibility: administrative, criminal and civil^{59 60}.

The remediation requirement in the Environmental Liability Directive is an example of PPP application but also has limitations.⁶¹

Some sectoral administrative remediation regimes for specific activities, e.g. the Waste Framework Directive, have a strong PPP application, while others such as the Extractive Waste Directive and the IED have a mixed degree of application of the PPP. There is a positive tendency over the evaluation period, e.g. the revision of the IED includes compensation for harm to human health and adds more categories of industrial activities.

When criminal penalties are used in addition to enforce a policy, the penalties aim to dissuade the non-compliance without addressing the environmental cost of the non-compliance. Member States are not obligated to consider the damage caused when determining penalties under the crosscutting Environmental Crime Directive (pre-reform) as well as the sectoral IED and SSD. The obligation that the offences are punishable by effective, proportionate and dissuasive penalties led to the implementation of the PPP depending on the Member State transposition, which was mostly found lacking as fines were not reflecting the damage⁶².

This could potentially be improved with the introduction of (accessory) penalties of remediation or compensation. The ECD proposal stipulates that Member States shall take the

⁵⁹ See for a more detailed analysis of the different acts Annex 10.

⁶⁰ Fogleman, V. (2024), [Polluter pays principle – Liability for environmental damage](#). Publications Office of the European Union. European Commission.

⁶¹ See evaluation of the ELD

⁶² [SWD\(2020\) 259](#).

necessary measures to ensure that natural persons face the obligation to reinstate the environment, provided that the damage is reversible, or, where the damage is irreversible, the obligation to compensate costs linked to the damage to the environment. This will improve the application of the PPP. However, the damage caused is still only optionally considered if the Member State decides to transpose this part into national law and the new minimum max sanctions do not necessarily equal the often very high amount of damage.

Stakeholder views

In line with the above findings, responses show that the use of environmentally harmful subsidies was deemed a very important or important obstacle for 57 % of participants (144) to the public consultation (only 15, or 6%, found it not important at all). This percentage was highest for citizens (73%), followed by public authorities (64%, 7 out of 11) and NGOs (60%). Only 29% of participating businesses and their associations thought so.

Some specific concerns were raised regarding the use of EU and national funds to finance projects that should be paid for by the polluter in position papers, e.g a “project for monitoring internal pollution of Europeans, HBM4EU24, receiving € 74 million in public funding under Horizon 2020 and its successor project PARC25 receiving € 400 million from public funding” or “hundreds of millions of euros being approved for site rehabilitation under the Just Transition Fund (JTF)”.

Competition between EU Member States was found to be a very important or important obstacle by 58% of participants to the public consultation. This 58% was led by citizens (65%), followed by businesses and their associations (57%) and NGOs (52%).

Competition between the EU versus third countries was considered an important obstacle by 62% of participants to the public consultation. The 62% was led by citizens (69%), followed by businesses and their associations (58%) and NGOs (42%).

As one example, a business association for animal and human medicines believed that EPR schemes may impact patients’ access to medicines where the inability to increase prices to cover EPR costs may lead to the withdrawal of critical medications from the market, posing a threat to patient health and well-being. Also, there were concerns about the difficulties for SMEs to minimize pollution compared to larger companies as they do not have the same investment capacity.

In addition, more than half of the responses to the public consultation identified “very important” obstacles such as the

- ‘lack of political willingness to introduce and enforce implementation of the principle’ (59%, 157)
- ‘the price of products and services does not fully reflect (internalise) the environmental damage (externalities) of the products’ and services’ life cycles’ (55%, 147) and
- that ‘national authorities fail to enforce environmental legislation’ (51%, 136).

4.1.4. Efficiency: Is the PPP fair and consistent with a just transition, including how it affects different stakeholder groups, including vulnerable groups?

Overall

The application of the PPP appears overall fair, as it ensures the costs of pollution are paid by whoever is causing the pollution and not by the general public or people affected by it. The application of the PPP can though be inconsistent with the just transition concept if its

distributional effects disproportionately affect vulnerable groups and regions. Distributional effects depend on the way costs are recovered. Regressive effects can be avoided through a careful design of policies implementing the PPP as well as compensation mechanisms. As a result, a fair application of the PPP through carefully designed mechanisms to ensure an acceptable distribution of costs and benefits not only does not cause concerns with regards to the just transition but can directly contribute to the fairness of the transition.

Findings

The just transition principle establishes a particular dimension to fairness in the context of the green transition. This is reflected in EU policies which aim to achieve its climate and environmental targets while leaving “no person and no place behind”, thus protecting citizens from economic and social inequalities⁶³.

In 2022, 21.6 % of the EU population were at risk of poverty or social exclusion. The EU aims at increasing the inclusion of vulnerable and marginalised groups by developing targeted approaches in environmental and climate policies to respond to their specific needs⁶⁴. Europe’s most vulnerable or “lagging” regions, characterised by persistent low growth and poverty, risk being left further behind in the EU’s pathway towards a green transition.

The application of the PPP in environmental and climate policies is inherently fair. The social pollution costs are paid by whoever is causing the pollution and not by the state or people affected by it⁶⁵. From a societal point of view and if well designed, environmental taxes reduce distortions by internalising negative externalities while at the same time providing additional public revenue⁶⁶.

The status quo is that the health damages caused by pollution are usually concentrated among the poorest (the so-called environmental justice gap), who work and live near the most polluted areas and have less access to green areas and more expensive eco-products. Meanwhile higher income households tend to consume more goods and services that negatively affect the environment than lower income households.⁶⁷ As a result, the application of the PPP through carefully designed mechanisms not only does not cause concerns but directly contributes to the fairness of the transition.

Nevertheless, a full implementation of the PPP means that all polluters are charged according to their level of pollution, independent of their income level. The application of the PPP can result therefore in a situation which is inconsistent with the just transition concept if policies are designed in a way that their distributional effects disproportionately affect vulnerable groups and regions in a way that is not justified by its benefits for these groups and regions. In other words, it may happen that the economic and social downsides of charging people with

⁶³ European Commission, [The European Green Deal - European Commission \(europa.eu\)](https://european-council.europa.eu/media/eu-press-room/16784/attachment/press_release/16784_en.pdf) ; European Commission, Special [Eurobarometer 527- Fairness perceptions of the green transition](#).

⁶⁴ Eurostat, [Living conditions in Europe- poverty and social exclusion](#); European Commission, [Inclusion of Vulnerable Groups](#).

⁶⁵ OECD (2021), [Managing the Distributional Effects of Environmental and Climate Policies: The Narrow Path for a Triple Dividend](#).

⁶⁶ European Commission (2023), [Annual report on taxation 2023](#) ; see for further economist background on the inception of the PPP Annex 6.

⁶⁷ OECD (2021), [Managing the Distributional Effects of Environmental and Climate Policies: The Narrow Path for a Triple Dividend](#); European Environment Agency (2018), [Unequal exposure and unequal impacts](#).

the costs of their pollution outweighs the benefits of the PPP for these people, including health and non-market ones.

Past policy evaluations often have not specifically assessed the PPP application, and the distributional aspects are not always considered in detail. Annex 9 gives examples of assessments that did consider these aspects, such as findings from the impact assessment of the reform of the Energy Taxation Directive.

Recent research into the distributional impacts of environmental policy does provide useful insights and lessons learned. Although research tends to focus on climate policies⁶⁸, the findings are often also relevant for other environmental policies (such as an analysis of the impact of PPP policies on buildings and transport⁶⁹).

Whether a given policy has economic downsides for low-income households depends on whether its distributional effects are progressive or regressive. A distributional effect is said to be regressive (progressive) when the net benefits increase (decrease) more than proportionally with income⁷⁰. This means that a regressive effect affects the poor more negatively than the rich reinforcing inequality. The distributional effects of implementing the PPP can only be considered on a case-by-case basis as there is no comprehensive data.

Regressive effects may be traced back to the product to which the costs are attached⁷¹. Examples are taxes on electricity which are usually regressive where lower income households spend a higher share of their income on energy taxes than higher income households⁷². There is some evidence that command and control instruments are more regressive than MBIs⁷³. Overall, adverse distributional effects depend on the way costs are recovered.

Box 2: Cost pass-through of PPP measures

What is cost pass-through?

Applying the PPP to producers that did not fully pay the price of their pollution will inevitably increase the costs for these producers. As for any production cost, the additional cost of PPP for the producers in point will, to a certain degree, trickle down along the value chain to the price of the final product. The degree to which this happens depends on the market structure and on the prevailing market elasticities:

- In a monopolistic market it is easier to pass on the cost to the customers than in a competitive market.
- The less elastic is demand, and the more elastic is supply, the bigger the extent of pass-through, all else being equal.

⁶⁸ See for example, [Distributional impacts of climate policies in Europe \(europa.eu\), Bruegel Blueprint 28 final.pdf](#)

⁶⁹ Gore, T. (2022), [Can Polluter Pays policies in the buildings and transport sectors be progressive? Assessing the distributional impacts on households of the proposed reform of the Energy Taxation Directive and extension of the Emissions Trading Scheme](#). Research report, IEEP.

⁷⁰ OECD (2021), [Managing the Distributional Effects of Environmental and Climate Policies: The Narrow Path for a Triple Dividend](#).

⁷¹ European Commission (2023), [Annual Report on Taxation 2023](#).

⁷² See support study as well as for further examples of distributional effects per tax object in Annex 9.

⁷³ OECD (2021), [Managing the Distributional Effects of Environmental and Climate Policies: The Narrow Path for a Triple Dividend](#).

It follows that the pass-through of higher costs from PPP to the final consumer varies between countries, economic sectors and policy design. The final impact of, for example, an energy tax will not only depend on the price elasticities in the energy market but also on the price elasticities of energy-intensive products and the specific characteristics of their markets⁷⁴⁷⁵.

What are the consequences of cost pass-through in terms of making the polluters pay?

On the question whether the cost-pass through would hinder the application of the PPP, one must consider that the PPP aims to remedy a market failure brought about by the fact that market participants (both producers and consumers) do not face the full cost of their choices. The application of the PPP “normalises” the market functioning, and producers and consumers will make their choices by assuming the full environmental cost of their choices. The application of the PPP will induce the producers to modify, at the latest in the medium to long term, their production processes to make them less polluting (which will also reduce the price pressure from the PPP application). Consumers will be incited to reduce the consumption of polluting goods.

It links to the question of who the polluter is, and that pollution can be considered as a shared responsibility between producers and consumers. Nonetheless, it is essential to recognise that producers, in contrast to consumers, have a direct influence on the environmental impact of products and services through their design, resource utilisation as well as operational and distribution choices.

Despite its economic efficiency, the cost pass-through may have *distributional impacts* that may hinder its application in practice. Such distributional impacts could be considered as another market failure to be addressed by policy design and/or compensatory measures (see annex 9 for concrete examples).

It has been found in different cases that significant regressive effects can be effectively avoided by designing the policy to become progressive, thus lowering inequality. A progressive distributional effect can be achieved where lawmakers ensure a careful design of policies implementing the PPP, e.g with progressive pricing or exemptions for vulnerable households or areas, or by introducing a compensation mechanism within or outside the policy, e.g. a shift away from labour taxation, means-target measures (monetary or in-kind measures) using the revenues from such taxes (tax recycling) or on a EU funding level – such as the EU Social Climate Fund (funded from the new ETS 2) or the Just Transition Fund.⁷⁶⁷⁷

There are comparatively few examples of recycling revenue at EU level, suggesting potential for its greater use to improve the fairness of the implementation of the PPP. Member States

⁷⁴ Shang B. (2021), [The Poverty and Distributional Impacts of Carbon Pricing: Channels and Policy Implications](#), IMF Working Paper.

⁷⁵ de Bruyn et al. (2015), [Ex-post investigation of cost pass-through in the EU ETS](#), CE Delft and Oeko-Institut.

⁷⁶ Mottershead et al. (2021), [Green taxation and other economic instruments](#); Best, Martini and Görlach (2022) [Can Polluter Pays Policies in the Buildings and Transport Sectors be Progressive? Country briefing paper: Germany](#); Galović, (2016), [Forest Public Benefit Function Fee in Croatia](#).

⁷⁷ According to [EEA analysis](#), 76% of revenues between 2013 and 2022 was spent on climate, renewable energy and energy efficiency related purposes. Since the [2023 reform](#), Member States must spend all ETS revenues on climate-related activities, which also includes protecting vulnerable households affected by the increased costs of electricity.

take a varied approach to the use of recycling revenue generated which is consistent with modelled analysis where the use of recycled revenue is found to be most effective when tailored to the specific tax or pollution charge⁷⁸. Based on current approaches to implementation, recycling revenue generated through implementation of the PPP has improved the fairness of implementation particularly where the use of revenue generated can be tailored to the specific socio-economic challenges incurred as a result of introducing the tax or pollution charge⁷⁹.

Stakeholder views

48% (129) of participants found that concerns about the social impact (e.g., on vulnerable households) of implementing PPP more fully is “important” or “very important”. In terms of stakeholder groups, this 48% is driven by 59% (63) of citizens, 45% (17) of NGOs and 39% (37) of businesses and their associations. A further 23% (61) of participants found this concern “moderately important”.

Replies were less pronounced on the question whether the application of the PPP contributes to the objective of the Just Transition. 25% (67) of participants found that it does to full extent, and 14% (37) to a high extent. 19% (50) thought it did so to a medium extent, while 13% (35), mainly businesses and their associations, thought it did not or to a small extent.

Several issues related to fairness were identified by respondents in their open text responses, including concerns that the vulnerable social groups, e.g. low-income households as consumers ultimately bear the costs as they are passed on by the polluter, particularly in terms of limited availability of goods and rising expenditure due to higher prices of goods and services in energy and waste management sectors.

4.1.5. Efficiency: Are there significant differences in the (efficient) application of the PPP across EU policies and between Member States?

Overall

Often, environmental policy is applied through Directives or strategies, which leave flexibility to Member States. This is especially the case for costs of environmental damage, where price signals vary considerably, for example, reflecting considerable differences in the use of environmental taxes in Member States. Across EU policies, price signals are systematically too weak: there is no evidence that any polluters pay the full cost of the environmental damage for any environmental issue. Evidence is strongest for climate impacts, but price signals are likely to be weakest where evidence is weakest, and in particular for biodiversity. Given the link between price signals and the efficiency of policy, this is significant.

Findings

The analysis considers whether there are significant differences between Member States in the application of the PPP when implementing EU policies. To answer this question the provisions used to apply the PPP in EU policy have been reviewed to identify first, where there is a significant degree of Member State choice in how they implement the PPP. Second, in such cases, the risks of inconsistent application due to a higher degree of Member State choice was assessed. This greater degree of flexibility tends to be associated with a less consistent

⁷⁸ Wang, Q., Hubacek, K., Feng, K., Wei, Y., & Liang, Q. (2016), [Distributional effects of carbon taxation](#); European Commission (2020), [Tax wedge on labour: Shifting tax burden from labour to other forms of taxation](#).

⁷⁹ See further use cases on this in Annex 9.

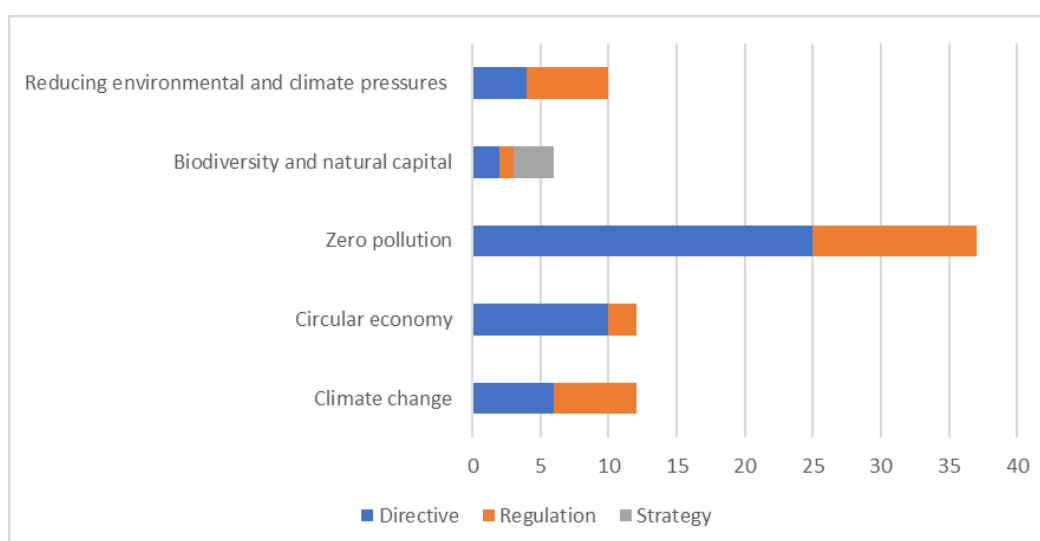
application of the PPP (as further discussed in the analysis of subsidiarity aspect in section 4.2.1).

a) Type of legal instrument

The degree of Member State flexibility was reviewed starting from the type of legal instrument to implement the policy, i.e. whether it is a Regulation, Directive or strategy. The use of a Directive establishes a common goal together with a framework to guide implementation but ultimately it is for the Member State to identify measures and adopt and implement them.

Figure 8 shows that most policies under review are adopted by Directive (61%, 47 policies). A small number of policies contributing to the 8th EAP biodiversity and natural capital priority objective are adopted via a Strategy (3 examples), and the remainder via Regulation (35%, 27 policies). Over the Evaluation period, there has been a slight shift eg the Batteries Directive was repealed and replaced with a Batteries Regulation.

Figure 8: Share of legal instruments used by policies, grouped by 8th EAP priority objective (in the year 2023)



Source: Logika Group based on review of policy

The extent to which the flexibility afforded to Member States under a Directive impacts on implementation of the PPP varies by policy. In the case of command-and-control instruments under Directives, flexibility can exist but is limited by targets, standards and permit conditions. For market-based instruments, there is a greater degree of flexibility afforded by Member States in the use and design of schemes which has led to differences in the way they are used to apply the PPP between Member States and between economic sectors. The use of minimum rates of excise duty (e.g. Energy Taxation Directive) or in the case of criminal sanctioning of minimum max penalties (e.g. under the revised ECD) can minimise differences.

b) Type of policy mechanisms

For the purposes of this analysis, the “policy mechanism” refers to the policy provisions that ensure the costs are borne by the polluter. These have been grouped into command and control, market-based instruments and voluntary actions.

Table 4: Application of PPP to policy mechanisms

Type of legislative intervention	Description of the legislative intervention to which PPP is applied	Number of policies ⁸⁰ applying the mechanism
Command and control measures		
EU applicable restrictions	Requirement to comply with restrictions e.g. banned substance or restricted use of a substance for specified purposes.	17
EU authorisation	Requirement to seek prior approval before carrying out an activity e.g. approval to ship waste, or continued use of substances of very high concern (SVHCs).	8
Targets	Requirement to contribute to the achievement of a target. Targets may be determined at EU level, or determined at national level. Targets may apply at EU, national and/ or sector level.	13
EU framework to guide Member State implementation	Requirement to adopt and implement programmes of measures to achieve a shared goal, e.g. achieving national target or adhering to limit values. The EU policy instrument provides a framework for developing the programme of measures without specifying the measures contained therein.	14
EU standards	Requirement to meet harmonised standards e.g. quality standards, environmental performance, emission limit values.	22
Permit conditions	Requirement to meet conditions prescribed by permit. Conditions may include compliance with limit values, performance levels, monitoring and reporting requirements, inspection requirements, among others.	5
Market based instruments		
Extended producer responsibility (EPR)	In the context of waste management, and more recently wastewater management, schemes that require the producer to cover all costs of waste management throughout a products life cycle.	7
EU labelling	Requirement to comply with labelling specifications	2
Liability and compensation schemes	Requirement to take remedial actions and cover any retrospective costs.	1
Sanctions	The use of penalties or criminal proceedings to enforce requirements.	1
Subsidies and incentives	Rules used to regulate EU funds.	7
Tradable permit scheme	Establishing a trading system to place a market price on an externality	1
Voluntary actions		
Recommendations	E.g. actions outlined in strategies.	3

Command and control is the most used legislative intervention to implement EU policy, specifically the use of standards (used in 22 policies) and restrictions (17 policies). It is therefore also the most common mechanism to which the PPP is applied, particularly for the costs of prevention and control.

The category of **standards** includes performance specifications (13 policies contributing to climate change and zero pollution) as well as limit values (10 policies contributing to zero pollution). Limit values are used in policies contributing to zero pollution (water and air policy areas). Standards are often used in combination with other legal interventions where the PPP is then applied, including targets (5 policies, all within the climate change policy area), permit

⁸⁰ A single policy may be using several mechanisms.

conditions (2 policies: IED, MCPD), and more broadly together with EU frameworks to guide Member State implementation (3 policies: ND, AAQD, IED).

Restrictions are used mainly for policies within the circular economy (8 policies) and zero pollution policy areas (6 policies). Restrictions are also used to apply the PPP in the case of the F-gas Regulation and ODS Regulation (climate change), and the Regulation on Invasive Species (natural capital).

EU **frameworks** to guide Member State implementation are commonly used to implement EU policy and so where the PPP is applied to policies contributing to zero pollution (11 policies). They are also used in the case of climate change (proposal to revise the Energy Taxation Directive), circular economy (Waste Framework Directive), and enhancing natural capital (Nature Directives). Frameworks typically leave Member States considerable flexibility in how they apply the PPP.

Targets are another commonly used legislative intervention, relevant to several policy areas (climate change, circular economy, and zero pollution).

Market based instruments (MBIs), mainly applied to the costs of environmental damage, include tradeable permit schemes, sanctions, liability and compensation schemes and extended producer responsibility (EPR). There are also a number of MBIs that do not involve prices, but rather supporting markets e.g. through labelling and transparency measures. Prominent examples of MBI to apply the PPP relate to climate priorities (under the EU ETS Directive and the Energy Taxation Directive), to circular economy and waste management policies (e.g. landfill tax and plastic bag fee to implement the Waste Framework Directive or Plastic Bags Directive), remedial measures required via the Environmental Liability Directive or criminal sanctions under the Environmental Crime Directive.

Differences in application across Member States

Considering Table 4 along with the discussion on the level of implementation, the main conclusions are that:

- **Command-and-control instruments** are effective in ensuring that the polluter pays for the costs of prevention and control, and also largely for administrative costs. Command-and-control instruments can still be subject to some differences where implementation of the PPP occurs based on the design of programmes of measures decided at national or regional level (e.g. WFD waste, WFD water, AAQD, NEC Directive).
- **Market based instruments (MBI)** face the more difficult task of ensuring polluters pay for their environmental damage costs. There is often considerable flexibility afforded to Member States in the use and design of schemes which has led to differences in the way they are used to apply the PPP between Member States, economic sectors and policy areas. Member States also use national environmental taxes to deliver environmental objectives, in line with the principle of subsidiarity. The revenue generated from environmental taxes varies across type and Member State and the range of revenue generated by environmental taxes may be indicative of such differences. The use of minimum rates of excise duty (e.g. Energy Taxation Directive) or in the case of criminal sanctioning of minimum max penalties (e.g. under the revised ECD) can minimise differences.

The varied use of environmental taxes and pollution charges is one of the main drivers that have led to differences in implementation of PPP. The focus of the following section is therefore on the differences in the efficient application of the PPP via such environmental taxes and pollution charges.

Environmental taxes and pollution charges

There are differences in how much the polluter pays between Member States. The application of the PPP will lead to different levels of costs depending on national circumstances. For example, a Member State with a larger polluting sector would experience larger prevention and control costs and higher external costs of pollution.

Under the EU ETS, auctioning revenue is an indication of the costs borne by the polluter to implement the PPP. This revenue variation varies, for example, with the majority of Member States between 0.1 and 0.2% of GDP, whilst the revenues are higher in Estonia: 0.7%; Poland: 0.8% and Bulgaria at 1%. This reflects the carbon intensity of the energy mix and of industry in these countries and the challenges highlighted for the country in achieving a just and fair transition⁸¹.

Similarly, waste management costs also vary as a share of national GDP, most Member States' capital investment costs range between 0.01% and 0.04%. Similarly for air and water policy, there are differences in capital investment between Member States. However, the capital investment costs are only a proxy for the costs borne by the polluter as EU funding often subsidises these investments, particularly through regional development funds.

Whilst costs of prevention and control may differ, the analysis suggests that these differences reflect variation in factors such as the economic structure, the industrial makeup, the environment, different stages of investment in infrastructure and differences in implementation of EU policies. There are limited differences in the application of the PPP, so who pays for these costs.

The analysis identifies varied use of environmental taxes and pollution charges by Member States to implement the provisions of EU policies. Currently, there are over 40 environmental taxes applied in at least one of the Member States according to the National Tax Lists prepared by Eurostat (excluding Transport Taxes). The variety of environmental taxes, in combination with their limited use so far (see section 3), indicates that there is scope for more use of market-based instruments, such as taxes for solid waste to landfill and incineration, taxes on pesticides and fertilisers, taxes on water pollution, and taxes on plastics.⁸²

This is significant because of the crucial role of taxation in the transition towards a greener and more sustainable European growth and the need to better align the taxation systems with EU environmental objectives. Well-designed tax reforms can indeed boost economic growth, help reduce greenhouse gas emissions by ensuring an effective carbon pricing and contribute to a fair transition. Environmental taxes (i.e., energy, transport, pollution and resource taxes,) contributed around 5.0% of total tax revenues in the EU in 2022 but were almost 10% in Greece, Bulgaria and Latvia compared to under 5% for Sweden, Germany and Luxembourg⁸³. The tax rates vary between Member States. For instance, the tax rate on sulphur emissions in Sweden, Norway and Denmark is between EUR 1,300/tonne and EUR 1,600/tonne; while rates

⁸¹ European Commission (2022), [EU Cohesion Policy: €3.85 billion for a just transition toward climate neutral economy in five Polish regions](#).

⁸² Goonesekera, S., Greño, F., Markandya, A. (2024). [Candidates for taxing environmental bads at national level](#), European Commission, Publications Office of the European Union.

⁸³ Eurostat - [environmental tax revenues](#) (online data code: env_ac_tax)

in Italy, France and Spain are lower than EUR 50/tonne. Tax rates applied to waste, plastics and water also differ significantly⁸⁴. The Commission provides technical support to Member States looking to further use environmental taxes⁸⁵.

It is also striking that price signals vary significantly between the priority objectives of the 8th EAP. Examples of variation include:

- The OECD reported⁸⁶ that “Carbon pricing could potentially play an important role in pathways to net zero GHG emissions, but, overall, price levels and coverage have been too low to date to do so.”
- Article 9(1) of the Water Framework Directive calls for water pricing policies to provide adequate incentives to use water resources efficiently and calls for an adequate contribution of the different water uses to the recovery of the costs of water services. In so doing, Member States should take into account the polluter pays principle, yet may also consider the social, environmental and economic effects of cost recovery efforts. The general wording used in the WFD and the possibility to exempt / differentiate between certain users or uses from the obligation of cost recovery including through water pricing policies, reduces the enforceability of this article including a stringent and consistent PPP application. Indeed, available information suggests that in many Member States the PPP is underutilised (see also box 3 on water pricing).
- Biodiversity credits markets exist but not at a significant scale yet, and so not at a scale to make a material impact on the rate of biodiversity loss. Biodiversity credits can finance actions that result in positive outcomes for biodiversity (e.g. species, ecosystems, natural habitats) through the creation and sale of biodiversity units.
- Polluters only partially pay the costs of remediation of environmental damage⁸⁷.
- The level of environmental taxes varies across Member States, and therefore so do price signals, reflecting inconsistency across Member States and presenting a challenge for the consistent application of the PPP, and the efficient delivery of policy.
- The approach to pricing also varies across policies, for example whether the marginal price is set to reflect the social costs or the average costs or a desired policy outcome⁸⁸. There are different pricing regimes that deliver the same amount of revenue but in different ways, and with different incentives. It is also possible to start with a price (eg taxes) or a target that then leads to a price (eg under the EU ETS).

⁸⁴ Goonesekera, S., Greño, F., Markandya, A. (2024). [Candidates for taxing environmental bads at national level](#), European Commission, Publications Office of the European Union. See Appendix 8 for more details on the cross-country differences in environmental taxation.

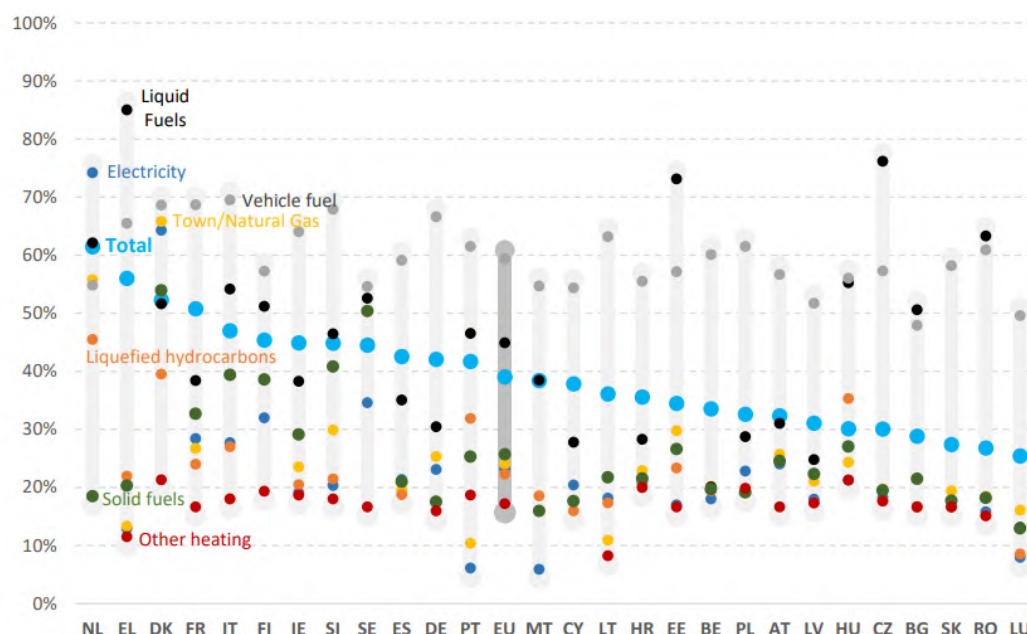
⁸⁵ DG REFORM, [Technical Support Instrument 2022: Flagship technical support projects. Greening taxes – applying polluter pays principle in practice](#).

⁸⁶ OECD (2023), [The role of carbon pricing in transforming pathways to reach net zero emissions: Insights from current experiences and potential application to food systems](#).

⁸⁷ See Section 4.1.3 and Annex 10.

⁸⁸ See Annex 7

Figure 9: Implicit tax rates across countries and fuels



Source: (Amores, Maier, & Ricci, 2022), page 11.

Note: Implicit tax rates are the share of total household consumption expenditure on energy products that go to taxes. "EU" is the (unweighted) mean.

Bringing these strands together, the inconsistent application for all environmental issues and sectors, linked to the successful implementation through different instruments suggests potential for further implementation. This includes:

- Further use of Extended Producer Responsibility to cover both administrative costs and some environmental damage costs. Whilst applied so far mostly in the waste context at the EU level, national approaches suggest it can be applied to other environmental issues and when combined with eco-modulation deliver a stronger price effect.
- Even with successful applications such as EU ETS, ETS 2 and CBAM, there is potential for a broader PPP application building on the existing schemes (e.g. wider scope).
- The considerable national experience with environmental taxes provides indications for where EU level environmental taxes could be applied.
- The PPP is least applied for some environmental issues and sectors (e.g. for biodiversity) suggesting a greater potential for further applications.

Taxation and other pricing instruments can lead to higher production costs that put companies at a disadvantage compared to their competitors who are not subjected to such a tax. Such impacts are, however, highly context-specific, and can be addressed through careful policy design (for example, by using the revenues from environmental taxes to reduce other taxes). Various studies confirm that well-designed environmental taxation policies do not need to harm the competitiveness of businesses⁸⁹

⁸⁹ Mottershead et al., (2021) [Green taxation and other economic instruments – Internalising environmental costs to make the polluter pay](#), IEEP; OECD, [Taxation and environmental policies](#).

Views of stakeholders

On the question whether the PPP is coherently and consistently implemented across environmental policies and mechanisms at the Member State level, 55% (148) of participants in the public consultation mostly or completely disagreed. That amounts to 71% (27) of NGOs, 58% (62) of citizens and 43% (41) of businesses and their associations.

Several interviewed stakeholders discussed environmental or environmental taxes in more detail. They viewed environmental taxes largely positively; however, they also pointed out some of the shortcomings that reduce their effectiveness. According to the interviewees, the charges applied in environmental taxes (or revenues raised from environmental taxes) have been too low to a) encourage the transition from polluting to sustainable activities and/or b) tackle the issues of environmental pollution. Some respondents believed that derogations and exemptions weakened the effect of taxes.

4.1.6. Efficiency: Could EU policymaking be made more efficient (so an improved cost benefit ratio) by better implementing the PPP?

Overall

The PPP is a powerful tool to make environmental policy more efficient, by reducing the costs of obtaining a given policy target. It does this by delivering a price signal that makes markets work better and leads to low-cost reductions in pollution (see also Section 4.1.2). There are overhead costs (so the cost of making the polluter pay), which can often not be separated out from the costs of the policies themselves. This is especially the case for policies that apply the PPP to prevention and control costs, where overhead costs are not apparent. For other policies, case studies suggest they are marginal and have been considered as part of the Better Regulation analysis of specific policies. The PPP has the potential through further implementation to improve the cost-benefit ratio of environmental policy. As a horizontal principle, the potential for simplification and burden reduction is limited, but could be realised through facilitating implementation.

Findings

This section considers what are the implementation (or ‘overhead’) costs of the PPP and how they compare with its benefits. This section complements Section 3 and Section 4.1.2 by asking what the additional costs are specific to the application of the PPP and the resulting benefits. Annex 8 examines this issue in more detail, including with case studies.

There are two significant methodological challenges, going beyond a standard lack of data:

- It is difficult to distinguish the overhead costs of applying the PPP from the costs of the policies themselves. For the cost/benefit analysis of the PPP application, we need to separate the costs and benefits of the policies from the costs and benefits of applying the PPP to these policies. For the latter, the costs are mainly the costs of identifying the polluter and enforcing the PPP (“overhead costs”); while the benefits are the efficiency gains achieved via price signals when the polluter pays rather than someone else such as the general taxpayer. Conceptually, the difference between cost categories must exist, but identifying it in practice is harder. The analysis concludes that in practice the overhead costs of applying the PPP to prevention and control costs appear to be zero. For other policies, related to environmental damage costs, the analysis remains qualitative, but case studies suggest they are marginal and have been considered as part of the ongoing Better Regulation work associated with specific policies.

- It is difficult to separate out and measure the incentive effect of applying the PPP. There is a full consensus amongst stakeholders, academics and the literature that this incentive effect exists delivering a price signal that makes markets work better and leads to low-cost reductions in pollution. However, it is methodologically difficult to measure eg the effect of making a polluter pay the costs of prevention.

Analysis of costs

The policy Evaluations and Impact Assessments undertaken as part of the Better Regulation practices reviewed for this analysis do not distinguish between the costs of the policies themselves and the costs of applying the PPP: the two are usually considered inseparable. It follows that it is very difficult to get an overview from them, and the analysis below remains mainly qualitative (reflecting a poor evidence base). As general comments:

- For prevention and control, the overhead costs cannot be separated, in part as the default is that the polluter should pay any overheads related to prevention and control costs. This implies that there are no additional or overhead costs from ensuring the polluter pays.
- Measures to ensure the PPP is applied for administrative costs and environmental damage costs are considered, and hence their overhead costs eg Impact Assessment⁹⁰ of EPR under the Batteries regulation, Impact Assessment⁹¹ of the ETD revision etc. This is not a representative sample: the evidence is about the additional or overhead costs from putting in place pricing mechanisms; where such overhead costs were considered disproportionate policies were not in place.

Within administrative costs, some costs are incurred regardless of the application of the PPP and relate to the policies and measures undertaken, and that polluters then need to pay for (eg identification of polluters for the purpose of ensuring limit values are respected). Others relate to the overhead costs of application of the polluter pays principle (eg identification of polluters for the purpose of putting a price on those emissions).

Extended Producer Responsibility schemes can entail significant administrative costs, but the level of these costs also depend on their specific design. For example, the Commission's proposals to simplify environmental legislation of December 2025 (environmental omnibus⁹²) address certain costs of EPR schemes (designation of authorised representatives). An efficient application of the PPP requires that administrative costs be maintained as low as possible.

The main 'overhead' costs of applying the PPP in EU policy are incurred via administration costs, with three broad types:

1. Additional costs of identifying the polluter
2. Additional costs of monitoring the pollution costs
3. Additional costs of enforcement of the PPP

As part of the compliance assurance process for (any) legislation, there are costs associated with these different elements. Separating these costs from those that would be incurred in the absence of the PPP, is for most pieces of legislation not possible.

→ **Additional costs of identifying the polluter** are minimal when the pollution is addressed at source. In such cases, the provisions are targeted at the polluter which is directly identifiable

⁹⁰ [Batteries - modernising EU rules \(europa.eu\)](https://european-council.europa.eu/media/en/press-communications/default.asp?id=12544)

⁹¹ [EU Green Deal – Revision of the Energy Taxation Directive \(europa.eu\)](https://european-council.europa.eu/media/en/press-communications/default.asp?id=12544)

⁹² [Simplification of administrative burdens in environmental legislation - Environment](https://european-council.europa.eu/media/en/press-communications/default.asp?id=12544)

(e.g. companies targeted by command-and-control measures under the IED). Regardless of who pays, the legislation usually requires such costs (for example, in a permitting regime). The main challenge of identifying the polluter occurs in the case of⁹³:

- Legacy pollution, where contaminants are left in the environment by sources that are no longer discharging them and/or it is not clear who the polluter is.
- Diffuse pollution, where multiple sources are contributing to pollution, and it is not possible to distinguish who the polluter is with sufficient certainty.

→ **The costs of monitoring** for tracking and reporting of costs incurred to address pollution. Policy provisions that address monitoring and reporting requirements encompass pollution rather than the costs of pollution (see also related section on administrative costs below). As can be seen from the use case in Annex 8 on maritime ETS where monitoring systems are already in place for obligatory or voluntary reporting, the additional costs for both reporting entities and administration of applying the PPP to these areas are relatively low. Digital solutions also lead to a reduced cost burden for monitoring. An example is the use of blockchain technology and smart contracts for intelligence-led EPR investigation and enforcement as a best practice given existing funding constraints to detect non-compliant online sellers⁹⁴.

→ **Costs of enforcement** apply for all policies, and there are limited examples of enforcement measures dedicated solely to the PPP identified in Annex 7.

In conclusion, there are conceptually overhead costs to the application of the PPP. These are considered on a case by case basis, and have been considered proportionate for all the legislation under scope. It is not possible to provide a quantified estimate, but they seem to be minor in most cases, and relatively larger for applications to environmental damage.

Analysis of benefits

Section 4.1.2. discusses benefits of the PPP application in the form of achieving reductions in pollution and concluded that the PPP is effective in contributing to efficient environmental improvements. This section expands on the benefits in the form of efficiency gains, i.e. by remedying market failures and achieving pollution reduction in the most cost-effective way. The intervention logic shows one of the objectives of the PPP as to provide price signals to reduce pollution efficiently.

Price signals steer the behaviour of producers and consumers by increasing the cost of activities that harm the environment. A company that needs to pay for its own prevention and control costs will do so at least cost, whereas if subsidised it will not have that incentive. Households that move from a flat rate charge for water to volumetric charging significantly reduce water consumption⁹⁵.

Providing a quantification of this incentive effect necessitates estimation of the price elasticity of abatement – a measure of the responsiveness of pollution to increases in the pollution price. Literature on the topic points towards the difficulty of arriving at comparable estimates for different types of pollution, pricing instruments and contexts and therefore a lack of reliable average values. As an example, introducing pricing for water may reduce consumption by

⁹³ Examples of policies dealing with the legacy and diffuse pollution and related difficulties in identifying the polluter are described in Annex 8.

⁹⁴ See for more details on this use case as a demonstration of the use of digital tools to increase efficiency of PPP application in Annex 8.

⁹⁵ EEA (2013), [Assessment of cost recovery through water pricing](#); EEA (2017), [Water Management in Europe: price and non-price approaches to water conservation](#).

around 15%, but the impact of different tariffs is less certain. Figures for water may differ from those for transport, air, nature etc and the long-term response normally outweighs the short-term (due to innovation).

One example of an efficiency gain brought about by application of the PPP is the EU ETS. Under the EU ETS, the PPP provides an incentive to polluters to take action and reduce pollution at the lowest cost possible and develop new technologies and ways of working that are cleaner e.g. where carbon pricing has contributed further to innovation and investment in low-carbon technologies, such as carbon capture and utilisation or electrolytic hydrogen. For instance, improvements in energy efficiency and carbon intensity of production and increased low-carbon innovation are both impacts of the current EU ETS and forecasted effects of its extension.⁹⁶ As such, the PPP reduces the cost of meeting a given environmental target.

Analysis of environmental expenditures over time, shows that protection and control costs decline over time, other things equal. This seems to be driven by technological progress driven in turn by the incentive to develop new ways of working by the PPP.⁹⁷ National expenditure on environmental protection has remained stable over the evaluation period even as environmental legislation has become stricter (see Section 3).

Comparing the costs and the benefits

Impact Assessments and Evaluations of specific policies in scope of this fitness check do not include a discussion of costs and benefits of the application of PPP. Where there is some discussion of the PPP, this tends to be because there was an explicit choice about applying it (eg where a market based instrument is introduced). In these cases the overhead costs of applying the PPP through the chosen option were considered justified. However, this sample is not representative, though it could be seen as showing the principle justified at the margins of its application.

Overall, the analysis suggests that the PPP reduces the overall cost of environmental policy by reducing the cost of meeting a given environmental objective, improving the cost-benefit ratio of policy. Analyses of specific policies consider the trade-off between overhead costs and efficiency gains, leading to the policy designs under scope.

Simplification and administrative burden reduction

This is best considered in the Evaluations of specific policies. For example, the Evaluation of the Environmental Liability Directive⁹⁸ considers that the liability regimes in the EU (notably ecological and civil liability) are now covered in many sectoral and horizontal instruments and the overall complexity may be a factor making it more difficult to implement such tools by Member States.

Looking at the PPP in a horizontal manner, there are actions that could potentially have made it simpler to implement. This includes further sharing of best practice amongst Member States, reflecting the considerable flexibility that they have under the subsidiarity principle and so the rich patchwork of experiences that exist. This already happens to some extent, through the various fora in which Member States are active (including expert groups), but the question was

⁹⁶ These efficiency gains are discussed in detail in Annex 8. Other examples of efficiency gains brought about by policies which applied PPP to varying extent are also presented in Annex 8.

⁹⁷ European Commission (2016), [Environmental expenditures in EU industries – Time series data for the costs of environmental legislation for selected industries over time – Final report](#).

⁹⁸ Fogleman, V. (2024), [Polluter pays principle – Liability for environmental damage](#). European Commission, Publications Office of the European Union.

posed by Member States over whether this could be made more systematic for proposed environmental taxes.

Evaluations of individual policies consider the associated individual reporting obligations. Economy-wide reporting related to PPP is made to Eurostat on environmental taxes and environmental protection expenditure including investments.⁹⁹ The recent revision of this Regulation will improve reporting, extending it to environmental subsidies and with a feasibility study of monetary valuation of ecosystem services.

At the same time, the Governance Regulation¹⁰⁰ requires reporting of fossil fuel subsidies, and this is being complemented with reporting of other (non-energy) environmentally harmful subsidies¹⁰¹. These two elements of reporting should use the same definitions, and their timing should be linked.

However, the evidence base for this study is affected by a limited analysis and reporting of costs. Issues exist both at the level of governments, and also at the level of businesses. Better information on a business's impact on the environment, for example through natural capital accounting, would allow for improved environmental management and voluntary consideration of the PPP. Some of the ongoing changes in policy, such as the CSRD should improve the quality of information.

No potential simplifications of reporting obligations were identified in the analysis. Due to the nature of the fitness check, which assesses environmental policies only regarding a specific aspect, it was not an appropriate exercise to analyse the potential for administrative cost reductions. This can be done more efficiently in a dedicated exercise. In the context of the Commission's commitment to reduce the reporting burden by 25%, DG ENV is currently assessing the administrative burden across the environmental acquis, and making proposals to reduce them. This builds up on DG ENV's action plan¹⁰² to modernise environmental reporting which followed up on the 2017 Fitness Check on reporting in the environmental acquis. The Commission's proposals of December 2025 to simplify environmental legislation (environmental omnibus) contribute to reducing the administrative burden for businesses. Ongoing evaluations of environmental policy instruments will also contribute to this exercise.

Views of stakeholders

At the stakeholder workshop held in December 2023, a number of participants stressed the importance and effectiveness of 'environmental taxes'. An example given was that in the Flemish region in Belgium, after the introduction of a sufficiently high landfill tax, a strong migration away from landfilling towards recycling has been observed. In addition, there was a suggestion to establish an EU-wide database illustrating which environmental taxation, pricing mechanisms and other instruments are implemented or foreseen for the future in each Member State.¹⁰³

⁹⁹ [Regulation \(EU\) No 691/2011](#).

¹⁰⁰ [Regulation \(EU\) No 2018/1999](#)

¹⁰¹ [Phasing Out Environmentally Harmful Subsidies \(europa.eu\)](#).

¹⁰² [COM\(2017\)312](#)

¹⁰³ More details on the views of stakeholders, including differences in opinions are outlined in Annex 8.

4.1.7. How consistent and coherent is the application of the PPP across policies?

Overall

Coherence of EU policies is strong, with no identified contradictions but coherence could be strengthened e.g. through better implementation of the Environmental Liability Directive, or biodiversity markets.

Consistency varies, being strongest for prevention and control costs, and weakest for environmental damage. In particular, the extent to which environmental damage costs are reflected in prices varies considerably, with the level of internalisation being partial for all environmental issues, but probably weakest for biodiversity issues.

Findings

Assessment of coherence reviewed whether there is conflict or mutual support amongst mechanisms used to apply the PPP between policies. Assessment of consistence reviewed the degree of variation in application of the PPP across policies grouped by 8th EAP priority objectives and policy areas.

With regards to **coherence**, the analysis found no identified contradictions and/or overlaps in how the PPP is applied. Instead, it found that policies worked together. For example, the ETS and ELD apply across a wide range of pollutants and complement many policies, reflecting the synergies between nature, zero pollution policies and climate policies. Where incoherence does exist, it is in policies not fulfilling their potential. Another example of potential for stronger coherency would be biodiversity markets to deliver both nature and climate objectives and support the full range of nature legislation¹⁰⁴.

With regards to **consistency**, there is variation in the application of the PPP between cost types. As discussed under the effectiveness questions, there is very good application in costs to address pollution prevention and control, good application for costs to address administrative measures and mixed application for costs of environmental damage.

There is also variation in the application of the PPP between policies grouped by 8th EAP priority objectives. For example, pricing for environmental damage is better implemented for climate and air policies¹⁰⁵ than for nature policies.

Analysis in the run-up to this Fitness Check¹⁰⁶, estimated the external environmental costs of different sectors of the economy in five areas: air pollution and greenhouse gas emissions, water pollution, waste treatment, water scarcity and biodiversity loss. These costs were then compared with the revenues generated from those economic sectors through environmental taxes and other economic instruments, to show the degree of internalisation. The findings were that EU polluters are not being made to pay in full – across all pollutants, in all Member States and across all sectors of the economy. The evidence was strongest in the case of air pollution and GHGs and water pollution, for which good data on both costs and emissions is available. More localised evidence about other forms of environmental damage told the same story and suggested lower levels of internalisation. The analysis found that households contribute more in revenues in relation to their air pollution and GHG costs than do sectors like industry, energy or agriculture.

¹⁰⁴ M. Camboni and L. Cavalieri (2024), [Scope for applying the polluter pays principle through biodiversity markets](#), European Commission, Publications Office of the European Union

¹⁰⁵ Largely thanks to the ETS and taxation.

¹⁰⁶ Mottershead et al., (2021) [Green taxation and other economic instruments – Internalising environmental costs to make the polluter pay](#), IEEP.

Table 5: Coherence and consistency by priority objective for environmental damage costs

	Comments on coherence and consistency	Scoring
PO 1 achieving the 2030 greenhouse gas emission reduction target and climate neutrality by 2050	The EU Emissions Trading System (ETS) Directive 2003/87/EC applies the PPP to a high degree and in a coherent manner (for prevention and control). There is no evidence of incoherence, and the ETS for example complements other pieces of legislation. There is improving consistency as the imbalance in the EU carbon market has been gradually addressed over the evaluation period, which helped foster a robust price signal formation. The scope of the EU ETS was extended to emissions from maritime transport from 2024. Under the EU ETS, some allowances are allocated for free to industry sectors to address the risk of carbon leakage. The free allocation to aviation will be phased out from 2026. The new ETS 2 was also created to help address emissions from road transport, buildings and small industry. It will complement, and is therefore consistent with, national emission reduction measures put in place to meet the reduction targets under Effort Sharing Regulation (ESR) 2018/842.	4
PO 2 enhancing adaptive capacity , strengthening resilience and reducing vulnerability to climate change	The EU's Adaptation Strategy sets out a framework for addressing the impacts of climate change and increasing resilience in sectors such as water management, agriculture, and forestry. Additionally, EU funds are used to improve the resilience of infrastructure and apply the PPP. However, as this objective relates to environmental improvements to a large extent, the PPP is often not relevant.	2
PO 3 advancing towards a regenerative growth model , decoupling economic growth from resource use and environmental degradation, and accelerating the transition to a circular economy	The legislation applies the PPP to a high degree and in a coherent manner (for prevention and control). WFD (waste) requires that the costs of waste management including for the necessary infrastructure and its operation are to be borne by the original waste producer or by the current or previous waste holders. WFD (waste) monitoring and reporting at national level and costs are largely incurred by Member State authorities, but 'extended producer responsibility' (EPR) is used to ensure polluters contribute to meeting administrative costs and the costs associated with environmental damage. There is evidence of increasing consistency with the increased use of EPR over the Evaluation period. EPR also partly responds to the low degree of internalisation for environmental damage, although some Member States apply relevant taxes (eg for landfilling).	3
PO 4 pursuing a zero-pollution ambition , including for air, water and soil and protecting the health and well-being of Europeans	For water policies, implementation of the PPP was greater for pollution prevention and control, whilst extended producer responsibility is being introduced for the first time at EU level in the UWWTD. For environmental damage, some Member States apply water taxes, but to a limited extent only. Implementation of the PPP was weaker in the MSFD. Overall, there are inconsistencies in applying the PPP in the water policy area in part due to variations at Member State level (see box 3 below). Implementation is though coherent with no overlapping measures. For air quality, costs for pollution prevention and control were well-directed towards the polluter while costs of environmental damage were only partially directed towards the polluter. There are also disparities in penalty regimes between Member States. For chemicals risk management, costs for pollution prevention and control and for administration were well-directed towards the polluter, costs for administration and enforcement were also generally well-directed towards the polluter. In contrast, costs of environmental damage are not well reflected by the PPP.	3
PO 5 protecting, preserving and restoring biodiversity , and enhancing natural capital	In the Habitats Directive and the Birds Directive, the extent to which prevention and control and administrative costs are borne by the polluter is not confirmed in part due to variations in national approaches (and that maintenance and restoration are not covered by the PPP). There is inconsistency in implementation between Member States of the ELD in supporting the nature directives by applying the PPP for prevention and remediation of biodiversity damage. For soil, more specifically, the Soil Monitoring Law strengthens the application e.g. for remediation of contaminated sites. With regards to environmental damage the application of the PPP is weak. Overall, the degree to which the PPP is implemented is weakest for nature.	2
PO 6 reducing environmental and climate pressures related to production and	Analysis shows that all of the sectors driving environmental impacts do not fully face the costs of their environmental damage. This is the case for, construction, industry etc. Over the Evaluation period, there have been improvements, for example, the wider application of DNSH helps to reduce environmentally harmful subsidies.	3

consumption (particularly in the areas of energy, industry, buildings and infrastructure, mobility, tourism, international trade and the food system)		
---	--	--

Scoring: 1 = no evidence of pricing; 2= some evidence of pricing but incomplete and inconsistent; 3= moderate evidence of pricing but incomplete and inconsistent; 4 = strong evidence of pricing but still incomplete and inconsistent; 5 = strong evidence of pricing - largely complete and consistent

The overall picture is that the implementation of the PPP is:

- Incomplete across environmental issues (climate, air, water, nature etc) and sectors (eg industry, transport, agriculture, construction etc), in relation to covering the costs of environmental damage.
- Not quantitatively assessed for its level of completeness in covering the costs of environmental damage, due to methodological challenges and a lack of quantified evidence. However, it is qualitatively assessed, being more successful in carbon pricing (which is still underpriced) than in, say, biodiversity pricing.
- Largely complete and consistent across environmental issues and sectors for prevention and control costs.
- Strong but not complete across environmental issues and sectors for administrative costs.

Box 3: Water pricing

*Article 9 of the **Water Framework Directive** calls for water pricing policies to provide adequate incentives to use water resources efficiently; recovery of the costs of water services including the environmental and resource costs, based on adequate contributions of different water uses and user sectors, taking account of the PPP. PPP application through this cost recovery can take the form of water pricing or imposing direct costly abatement or clean-up obligations on polluters.*

Article 9 allows Member States to consider the social, environmental and economic effects of the cost recovery efforts as well as the geographic and climatic conditions when setting the cost recovery rate. Authorities need to strike a balance in applying different principles and broad policy orientations (cost recovery, efficiency, general equity concerns, et cetera), all in relation with the environmental objectives.

The general wording used in WFD art 9(1) ('taking account of', 'adequate') and the possibility to exempt / differentiate users or uses from the obligation of cost recovery reduces the enforceability of this article. Nevertheless, the broad obligation stands and the chosen modalities in following it up and deviations from it must be justified. Available information suggests that WFD Article 9(1) is under-implemented in many Member States, meaning PPP application is under-implemented. This can be seen in the large disparities in water tariffs across sectors. The Commission is currently assessing the third cycle River Basin Management Plans, paying particular attention to the economic analysis providing the basis for the implementation of the cost recovery and water pricing policies, and to any exemptions applied to it, and the reporting on the 'adequate incentives' and 'adequate contributions.'

Stakeholder views

Respondents to the public consultation expressed overall dissatisfaction with the coherency and consistency of implementation of the PPP in various areas. The majority disagreed regarding its coherent and consistent implementation at Member State and European Union (EU) levels, both in relevant policies/strategies and environmental policies/mechanisms. In the public consultation, 62% (167) of participants disagreed that the PPP is consistently applied across relevant policies (e.g., agriculture, transport, trade) and strategies at the Member State level (and still 52% when it comes to the EU level). Disagreement was highest among NGOs (92% for EU level and 76% for Member State level consistency) and lowest for businesses and their associations (52% for both EU and Member State level). Participating citizens largely disagreed with the EU-wide Member State level consistency (65%) but less on EU-level (37% disagreement and 13% agreement while half of participating citizens had no clear opinion on the matter).

4.1.8. How consistent and coherent is the application of the PPP outside the EU?

Overall

The application of the PPP worldwide varies between countries and regions while being influenced by national laws, regulations, and international agreements. The PPP is recognised as a fundamental principle in international environmental law and many global agreements and conventions explicitly endorse the PPP. Countries with strong environmental governance structures are more likely to incorporate and enforce the PPP in practice.

Findings

It is difficult to draw a robust conclusion on the degree of application of the PPP outside the EU: analysis (e.g. by OECD, UNEP etc) suggests that different countries have very different practices, and arguably the EU has a fuller implementation than many other countries. Pollution does not stop at borders and the EU is committed to promoting the zero-pollution ambition for a toxic-free environment in its external action, including its Green Deal diplomacy and investments, providing expertise and financial resources to scale up international partnerships and action in and with non-EU countries¹⁰⁷. Many EU policies entail spill-over environmental benefits for non-EU countries, given the interconnection of supply chains and the transboundary nature of much pollution. Clearly some policies have a stronger positive impact, such as the Waste Shipments Regulation¹⁰⁸ which controls transboundary movements of hazardous wastes and their disposal.

As indicated in section 4.1.3, the effects of environmental policy regarding the risk of pollution leakage have primarily been studied with respect to climate policy. The most notable policy directly addressing the implementation of the PPP in the external context is the EU's Carbon Border Adjustment Mechanism (CBAM). As the EU raises its climate ambition, and as long as less stringent climate policies prevail in many non-EU countries, there is a risk of 'carbon leakage'. Carbon leakage occurs when companies based in the EU move carbon-intensive production abroad to countries where less stringent climate policies are in place than in the EU, or when EU products get replaced by more carbon-intensive imports.

CBAM puts a price on the carbon emitted during the production of carbon intensive goods that are entering the EU. The gradual introduction of the CBAM is aligned with the phase-out of the allocation of free allowances under the EU ETS to support the decarbonisation of EU

¹⁰⁷ [COM/2021/400 final](#).

¹⁰⁸ [Regulation \(EC\) No 1013/2006](#).

industry. CBAM will ensure the carbon price of imports is equivalent to the carbon price of domestic production, addressing the risk of carbon leakage.

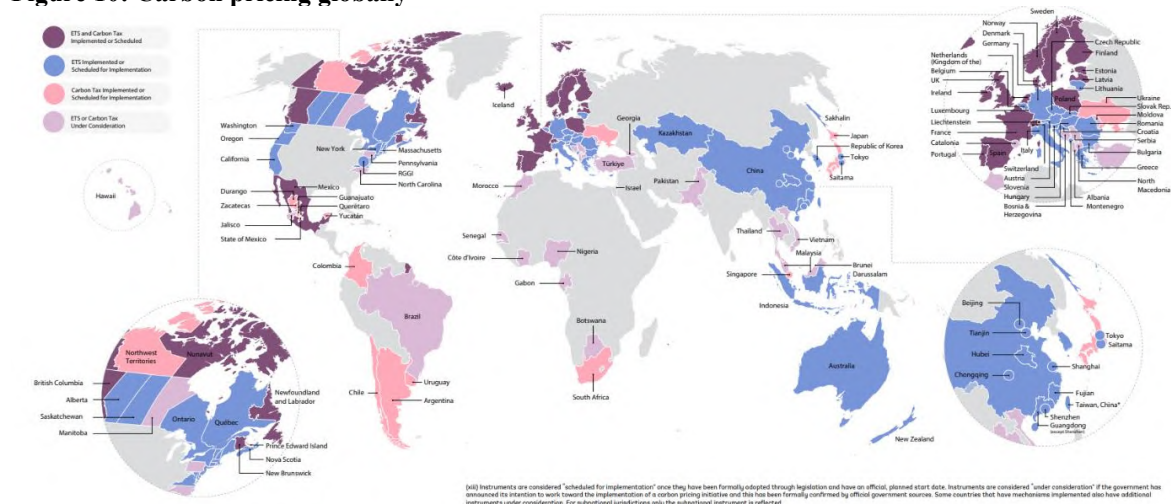
In terms of application of the PPP in third countries, the OECD analysis of effective carbon prices¹⁰⁹ provides insights into global carbon pricing, covering fuel excise taxes, carbon taxes, and emissions trading systems. It analyses 72 countries, responsible for 80% of global GHG emissions in 2021, ensuring comparability through a standardized methodology. The OECD found increasing use of explicit carbon pricing mechanisms both in terms of coverage and marginal prices, and more through emissions trading than through carbon taxes.

Key findings are that in 2021, 58% of 40 billion tonnes of GHG emissions were unpriced. About 16% of emissions were priced at EUR 30 per tonne of CO₂ or more, with 7% exceeding EUR 60. Carbon pricing coverage varies across sectors, with fuel excise taxes playing a significant role. Emissions trading remains the primary explicit carbon pricing instrument.

Worldwide, carbon pricing is gaining traction, with explicit carbon pricing instruments playing an increasingly significant role. Emission Trading Systems (ETSs) are expanding both in countries with established systems and those newly adopting them. ETS permit prices have shown robust resilience to the energy crisis, maintaining an upward trend since 2021 in most cases. Despite this momentum, there are notable disparities in carbon pricing coverage and price levels across countries and sectors, leaving over half of global emissions unpriced.

According to the World Bank¹¹⁰, there are 75 carbon taxes or ETSs in operation (see Figure 1010). Direct carbon pricing is seen through a broader lens, not just as a climate policy but also as a tool to increase revenues that can be allocated to climate action, promote innovation and contribute to broader sustainability and development goals.

Figure 10: Carbon pricing globally



A report from the European Commission titled “Green taxation in non-OECD countries: a review of experience and lessons learned”¹¹¹ found that many opportunities are being missed to make the polluter pay as the PPP is applied inconsistently in both the EU and non-OECD

¹⁰⁹ OECD (2023), [Effective Carbon Rates 2023 : Pricing Greenhouse Gas Emissions through Taxes and Emissions Trading](#).

¹¹⁰ <https://carbonpricingdashboard.worldbank.org/>

¹¹¹ European Commission (2023), [Green taxation in non-OECD countries: A review of experiences and lesson learned](#).

countries. This is reflected also by green tax instruments, which are often set at too low a level to internalise fully the external costs of pollution or to incentivise pollution reductions.

The EU has ambitions to support the application of the PPP outside of its Member States. This is primarily taking place through the Zero Pollution Action Plan¹¹², and a mix of diplomacy and investments, providing expertise and financial resources to scale up partnerships and action in and with third countries. Furthermore, the plan explicitly states that the EU will “continue supporting international action for zero pollution and implementation of the polluter pays principle” through multilateral forums.

Stakeholder views

50% (135) of the respondents to the public consultation believed the EU's PPP implementation had a positive or very positive impact on environmental legislation in other developed regions. However, many respondents lacked a firm opinion, with 25% expressing neutral views and 20% choosing 'don't know' or giving no answer. Citizens were the most positive (63%), followed by public authorities (55%, 6 of 11), NGOs (50%, 19 of 35) and businesses and their associations¹¹³ (36%).

37% (97) of respondents considered international agreements insufficiently effective/not effective in preventing/reducing pollution¹¹⁴, with 41% (113) expressing uncertainty or neutrality. Concerning the effectiveness to remedy remaining environmental pollution again a substantial number was not knowledgeable or expressed neutrality. This suggests a lack of awareness or confidence in the impact of such agreements.

Participants to the second workshop recommended making sure that products imported in the EU are compliant with environmental rules through market surveillance authorities and customs control. In this context, it was suggested that the Carbon Border Adjustment Mechanism (CBAM) should be extended to all markets facing the risk of carbon leakage outside the EU.

4.2. How did the EU intervention make a difference?

4.2.1. Is the current split of responsibility between the EU and Member States right?

Overall

The analysis of EU-added value shows that EU action has brought advantages in the form of improving consistency, allowing for economies of scale and ensuring a greater degree of market harmonisation, and so allowing for political objectives to be met more efficiently. This reflects the clear benefits from application of the PPP at the EU level intervention. Where national policies decide on the degree of implementation, it is less consistent. Further EU level action would have led to greater market harmonisation and a stronger application of the PPP, strengthening the internal market.

¹¹² 2 business associations and 1 business found a negative influence on the environmental legislation in other developed countries, while the other businesses and business associations (58 out of 95) had no firm opinion or gave no answer.

¹¹⁴ That is 55% of the participating public authorities (6), 39% of citizens (42), 33% of businesses (31) and 29% of NGOs (11).

Findings

Under the principle of subsidiarity, the EU should only act when the objectives can be better achieved by EU level action rather than Member State action. The analysis therefore considered whether Member States would be able to apply the PPP in national policies without EU action.

The analysis found across multiple priority objectives that where flexibility is afforded to Member States in applying the PPP, there are risks to ensuring a uniform approach to addressing the costs of pollution across Member States. For example, in the climate change context, the application of the PPP is to a large extent driven by EU intervention and the Emission Trading Scheme. Another significant piece of legislation is the Energy Taxation Directive that establishes a framework for the taxation of energy products; this leaves the specificities to Member States, but they need to respect minimum rates of excise duty set out in the Directive. The current nationally driven approach has presented risks in implementing the PPP due to the varied tax rates across EU Member States. The Evaluation of the Directive highlighted that there would have been value to be gained from EU intervention and a common framework and a *“level of systemisation of product definitions, categories and respective tax rates”*.

In practice, there is no evidence of differences in approach to who pays for costs of prevention and control (although the actual measures may differ). With regards to administrative costs and the costs of environmental damage, there do appear to be differences in the approach to the implementation of PPP. For example, different Member States have different approaches to environmental taxes and putting price signals on pollution. In the absence of EU level action, it seems likely that these differences would be greater, as some measures would be much harder e.g. the creation of an Emissions Trading System, and the harmonising approach in the internal market would not have been manifest along with concerns over competitiveness impacts from isolated actions.

In the absence of a coordinated EU framework for addressing transboundary pollution, Member States working in isolation face challenges ensuring that the polluter pays. The Fitness Check of the AAQD highlights that, in the absence of an EU-wide approach facilitating a level playing field in the internal market, there is a possibility of individual Member States lowering their national air quality standards in efforts to gain competitive market advantages¹¹⁵.

One additional benefit of EU-level action is legal clarity. An issue that may have different interpretations between Member States is the definition of the polluter, which can vary between Member States¹¹⁶.

The current approach to implementing the PPP in EU policy also provides Member States with some flexibility in application of the PPP, for example in consideration of socio-economic policy objectives, if application of the PPP would contradict them. Flexibility is also needed to achieve time-critical environmental objectives. There are limits on these flexibilities, in that they must not create distortions in the single market.

As discussed above, the application of the PPP is inconsistent. The implication is that further EU level action would have led to greater market harmonisation and a stronger application of the PPP, strengthening the internal market. This would be particularly the case where the PPP is applied to EU level intervention addressing transboundary pollution, but also where the costs of national action affect the degree of competitiveness. Further EU level action would have

¹¹⁵ [SWD\(2019\) 427](#).

¹¹⁶ See Annex 6, Sec 5.3, as well as ongoing ELD evaluation.

reduced the inconsistency between Member States across all priority objectives and be justified as increasing the efficiency of environmental policy.

Stakeholder views

50% (135) of respondents to the public consultation indicated that EU requirements had resulted in PPP implementation in Member States ‘to a limited extent’, and 27% (72) indicated that they had led to PPP implementation ‘to a large extent’. 41% (39) of businesses and their associations, 56% (60) of EU citizens and 58% (22) of NGOs thought that EU requirements had a limited impact, while 40% (38) of businesses and their associations, 21% (23) of EU citizens and 10% (4) of NGOs among the respondents answered that EU requirements to a large extent led their Member States to implement the PPP. Overall, these findings are broadly consistent with the findings above review, which indicate that benefits in terms of implementation of the PPP have been realised, although some challenges have persisted.

Asked about the EU added value of the PPP, most interviewees evaluated it positively and highlighted the role of the EU in the coordination of efforts of the Member States, facilitating the solution of transboundary issues and driving the development of the environmental policies all over the EU.

4.2.2. Do current national and EU competences and Treaty legal bases support the PPP’s application in environmental policy?

Overall

The analysis suggests there is scope for greater implementation of the PPP at EU level, with a particular focus on addressing the costs from environmental damage. Where consistent with the subsidiarity principle, the use of MBIs, perhaps within a co-ordinated or harmonised framework at EU level may have been an efficient and effective instrument to do this. The requirement for unanimity in Council votes on environmental taxes has also been a limiting factor, compared to the alternative of Qualified Majority Voting (QMV).

Findings

As established above, the current split between EU and national action is delivering the PPP in a manner that is only partially consistent, effective and efficient. The benefits of implementation of the PPP in policy measures at both EU and Member State level are clear, but there are also trade-offs. EU level action can provide greater legal clarity, harmonised rules and a level playing field in the internal market. Member State action can better reflect national circumstance, provide greater flexibility and accountability, and accords to the principle of subsidiarity.

An example of this is the use of EPR schemes to apply the PPP in the WFD (waste). There is evidence to show that EPR schemes are effective in ensuring investment and driving reductions in pollution¹¹⁷. The challenge with applying the PPP via EPR schemes is that they are often implemented at national or local level. The analysis found though potential for EU action to facilitate a more harmonised approach between Member States, including through eco-modulation of the fees.

More generally, the potential for distortion is highest for environmental taxes, which when applied at the national level may cause distortions. Therefore, there may be a conflict between

¹¹⁷ OECD (2023), [New Aspects of EPR: Extending producer responsibility to additional product groups and challenges throughout the product lifecycle](#).

the subsidiarity principle and application of the PPP, if Member States opt to implement the PPP through environmental taxes.

For tax policies, decision-making relies on unanimity in terms of Member State voting in Council. It has been argued that this blocks the advance of environmental taxes, because it is usually not possible to have the support of all Member States. In response, in 2019, the European Commission published a Communication¹¹⁸ proposing a gradual shift to qualified majority voting. A change of the Treaty is not necessarily needed to move from unanimity to qualified majority - this can be done with the so-called “passerelle clauses” in the current Treaties upon the approval of the Council or the European Council. This is referred to in Article 48(7) of the Treaty on European Union (TEU).

The Commission argued that a purely national approach to taxation was not working as an efficient way of decision-making. Article 192(2) of the Treaty on the Functioning of the European Union (TFEU) contains a clause for measures in the environmental field currently subject to unanimous voting, including provisions “primarily of a fiscal nature”. Given the discussions above, a shift to more QMV would have allowed for a stronger implementation of the PPP, and on a case-by-case basis be consistent with the principles of subsidiarity and proportionality.

In the case of MBIs, establishing minimum rates, rules and a policy framework at EU level, leaving the detail and level of ambition to be determined nationally, could have minimized differences in application, striking a balance between the two and increasing effectiveness and efficiency when the rates are set at a sufficiently ambitious level. For example, the ETD establishes a set of minimum taxation rates to be applied by Member States to a variety of fuels and electricity. Whilst the ETD needs updating, the general approach of bringing in more harmonisation could have worked for other green taxes as well where Member States are currently moving ahead individually.

Stakeholder views

The respondents to the public consultation were asked to assess where the PPP would have been better implemented through a market-based instrument on an EU level rather than on a Member State level. Two market-based instruments, Extended Producer Responsibility and the EU Emissions Trading System, were mentioned mostly by business associations and companies as desirable or working tools on the EU level. Another instrument, Payment for Ecosystem Services (PES), was mentioned by a wider respondent group, including instances of businesses, non-governmental organisations, public authorities, and EU citizens. The use of such instruments via EU action was noted across several sectors including agriculture, water, waste, textile, chemicals, packaging and transport.

As found by the above analysis, where respondents favoured EU action over national action, the benefit highlighted was the potential for EU action to achieve a harmonious approach to implementing the PPP.

4.3. Is the intervention still relevant?

4.3.1. Does the PPP meet the EU’s needs?

Overall

The PPP is highly relevant to the needs of the EU as set out in its climate and environment policies. This is particularly the case for the PPP’s commitment to reduce pollution levels via

¹¹⁸ [COM/2019/177 final](#)

price signals and correcting market failures, as set out in EGD’s headline targets. Where concerns exist, they are over the support for a just transition, and the possibility that the costs for internalisation of pollution may be passed through to consumers, and disproportionately affect vulnerable groups. There is therefore a need to address potentially conflicting outcomes with other priorities: policy design in the context of a just transition and also to pollution leakage.

Findings

The objectives of the PPP, as set out in the intervention logic, of delivering efficient environmental policy and facilitating a just transition, are fully reflected in the EU policies. For example, the EGD sets out that: *“Well-designed tax reforms can boost economic growth and resilience to climate shocks. They play a direct role by sending the right **price signals** and providing the right incentives for sustainable behaviour by producers, users and consumers. At national level, the European Green Deal will create the context for broad-based tax reforms, **removing subsidies for fossil fuels**, shifting the tax burden from labour to pollution.”*

The 8th Environment Action Programme mid-term review¹¹⁹ takes stock of the progress in achieving the 8 EAP’s climate and environment 2030 objectives, providing an overview of European Green Deal deliverables. The mid-term review underlines the importance of further delivering on the enabler of financing the transition, and further implementing the PPP.

Such a price signal is provided if the PPP is fully applied, internalising the environmental externalities¹²⁰. The extension of the EU ETS to new sectors was highlighted in the EGD, e.g. maritime transport, which is also identified above as an example of better PPP implementation over the Evaluation period. Likewise, the EGD identified EHS as inconsistent with the green transition. Moreover, by incentivising businesses to decrease their environmental impact and emissions, the PPP can drive innovation. This is essential to the EGD’s ambition to transform the EU’s economy to more sustainable, circular, and resource-efficient practices.

While the provision of price signal while phasing out EHS is a major headline of the EGD, the fiscal transition should *“help contribute to a fairer society and to a just transition [...] taking into account social considerations”*. The application of the PPP through carefully designed mechanisms not only does not cause concerns, but directly contributes to the fairness of the transition (see Section 4.1.4). Disproportionate regressive effects of policies implementing the PPP which would endanger the just transition aspect, proportionately burdening vulnerable groups and regions more than rich ones, can be avoided by designing the policy to become progressive, thus lowering inequality. A progressive distributional effect can be achieved where lawmakers ensure a careful policy design, e.g. with progressive pricing or exemptions for vulnerable households or areas, or by introducing a compensation mechanism within or outside the policy, e.g. a shift away from labour taxation, means-target measures (monetary or in-kind measures) using the revenues from such environmental taxes (tax recycling).¹²¹ An example of an Impact Assessment, setting out different regressive or progressive distributional effects depending on the policy design is the reform of the Energy Taxation Directive¹²² which was also part of the EGD strategy.

The EGD expresses concerns over the *“risk of carbon leakage, either because production is transferred from the EU to other countries with lower ambition for emission reduction, or*

¹¹⁹ [COM/2024/123 final](#)

¹²⁰ See support study.

¹²¹ See further Sec 4.1.4 and Annex 9

¹²² See Annex 9 for more on this use case.

because EU products are replaced by more carbon-intensive imports, frustrating the efforts of the EU and its industries to meet the global climate objectives of the Paris Agreement". By increasing costs of production at least in the short to medium term, the PPP may incentivise such **pollution leakage**¹²³. However, the Carbon Border Adjustment Mechanism in the case of climate shows that where such risks are material there are pricing mechanisms to mitigate against a shift of pollution to third countries.

Finally, in the context of liability it is important not only that the polluter pays but also that the actual damage is repaired. In the context of the Green Deal, this is advocated through measures to clean up contaminated sites. In the Environmental Liability Directive this is translated into an obligation of damage prevention and remediation in kind (and not only of financial compensation for the damage).

Stakeholder views

Respondents to the public consultation generally agreed with this finding, given that over two thirds of the respondents emphasised the full or sufficient PPP's contribution to the following objectives of the Green Deal: a zero-pollution ambition for a toxic-free environment (66%, 175), mobilising industry for a clean and circular economy (68%, 182) and preserving and restoring ecosystems and biodiversity (62%, 167). Note that this support was consistently higher for citizens and NGOs than for businesses and public authorities¹²⁴.

¹²³ Jakob, M. (2021), [Why carbon leakage matters and what can be done against it](#). One Earth, 4(5), 609-614.

¹²⁴ Full or sufficient PPP's contribution to the zero-pollution ambition was recognised by 76% of participating citizens (81) and NGOs (29), 53% of businesses and their associations (50) and 5 out of 11 public authorities. Full or sufficient PPP's contribution to restoring ecosystems and biodiversity was recognised by 70% of citizens (75), 63% of NGOs (24), 53% of businesses and their associations (51) and 4 out of 11 public authorities. Full or sufficient PPP's contribution to the circular economy was recognised by 82% of citizens (88), 79% of NGOs (23), 58% of businesses and their associations (55) and 7 out of 11 public authorities.

4.3.2. Is the PPP able to respond to new or emerging environmental issues and changes in technology?

Overall

The PPP can play a part in responding to current, new and emerging environmental issues as the costs of prevention and control, administrative costs and environmental damage are expected to remain significant in the future. A particular strength of the PPP is in promoting technology change through price signals, so it should drive technology change. As the PPP is technology neutral, it can respond to changes in technology.

Findings

According to the intervention logic, the objectives of the PPP are to provide price signals to reduce pollution and to support the just transition. Significant environmental damage related to current and continuing pollution persists, with consequent costs of pollution. Internalisation rates for environmental damage vary across the different priority objectives, as discussed under earlier questions.

Given the current environmental damage and lack of internalisation across policy areas, the PPP's objective to reduce current pollution through price signals remains highly relevant to the needs of the EU. Relevance is high both in areas where price signals currently apply (such as climate change) and in areas with low price signals and so larger untapped potential.

For example, biodiversity offset markets are instruments based on the PPP, provided the mitigation hierarchy applies first, and offsets are only applied to the residual impact. Biodiversity markets aim 'to internalise the external costs of biodiversity loss from development projects by imposing a cost on the activities that cause adverse impacts to biodiversity'¹²⁵. Biodiversity-positive carbon credit and nature certificate markets could be developed to ensure equitable, nature-positive outcomes, but would require robust principles for defining and verifying credits, consensus on their use, mechanisms to safeguard market integrity, and clear long-term demand signals.

Box 4: Biodiversity markets

EU nature/biodiversity annual investment needs are around EUR 50 billion and currently there is an annual funding gap of around EUR 20 billion. The biggest barrier to increasing the level of private sector financing is that the majority of nature's benefits currently have no financial market value (so the 'polluter' does not pay when environmental damage is done). One route to encouraging private sector financing of nature/biodiversity restoration and maintenance action is to support the creation of a payment for ecosystem service public goods markets that financially reward these actions. This would involve creating the necessary certification frameworks as well as the market frameworks (tradeable credits, product/service biodiversity surcharges, etc.) establishing who would be obliged to buy the certificate. However, so far the administrative complexity/cost has not led to such schemes on a widespread basis.

The implementation of the PPP is technology neutral, and incentivises the development of innovative technologies to deliver efficient environmental improvements. For example, if the

¹²⁵ Moilanen, A., and Kotiaho, J. S. (2018), [Planning biodiversity offsets - Twelve operationally important decisions](#). Nordic Council of Ministers.

polluter has to meet an environmental standard, and pays to do so, then there is an incentive to seek cheaper approaches both in the short and long term. Indeed, the PPP's price signals yields incentives to develop less-polluting technologies. In this context, Section 4.1.3 identified technological innovation as one of the benefits of applying the PPP, for example through carbon pricing instruments.

Among the emerging pollutants and pollution types an overwhelming majority of interviewees mentioned perfluoroalkyl and polyfluoroalkyl substances (PFAS – used in various sectors) as generating costs in relation to preventing, reducing and eliminating environmental pollution¹²⁶. A recent study¹²⁷ confirms that PFAS pollution causes considerable costs to society. If the current levels of PFAS pollution in Europe continue until 2050 without regulatory action, the cost will reach approximately €440 billion during that period. Tackling such PFAS releases at the source by 2040 would save €110 billion, whereas treating polluted water alone would cost more than €1 trillion. The EU has already taken steps to address the issue, mainly through bans and restrictions (thus using command-and-control instruments). Moreover, in the Chemicals Industry Action Plan¹²⁸ and in the Water Resilience Strategy¹²⁹, the Commission indicated that the cleanup of PFAS pollution should be based on the polluter pays principle, while acknowledging that public financing would be needed to clean up orphan sites, where no liable entity could be found. The challenge is to apply the right combination of the various PPP instruments to efficiently cope with the considerable environmental and health costs involved. Extended Producer Responsibility schemes are often mentioned as relevant instruments in relation to PFAS pollution, while France has introduced a charge on PFAS discharged through industrial wastewater. In parallel, several court cases are ongoing across the EU, involving financial compensation to be paid by the identified polluters to polluted communities.

Stakeholder views

The above analysis is in line with the stakeholder interviews conducted in the context of this study, where many respondents considered current PPP implementation inadequate to resolve problems related to new forms of pollution.

Responses to the public consultation were mixed on this issue. 42% (112) of the respondents found that the implementation of the polluter pays principle in the EU acquis was adequate to tackle new or emerging environmental issues and changes in technology (59% of citizens, 38% of businesses and their associations, and 21% of NGOs found it adequate). 23% (62) found it inadequate while 20% (53) found it neither adequate nor inadequate.

5. What are the conclusions and lessons learned?

The Polluter Pays Principle implies that the polluter should pay for the cost of measures taken to prevent, control and remedy pollution and the costs imposed on society. A long-established principle, captured in the Treaty, it should apply to all actions leading to environmental damage.

The following section presents the key findings including examples of best practice, and the critical success factors that need to be addressed in line with the theory of change. As many of

¹²⁶ see findings of stakeholder interviews in annex 3

¹²⁷ https://environment.ec.europa.eu/news/new-study-confirms-huge-and-growing-costs-pfas-pollution-2026-01-29_en

¹²⁸ COM (2025) 530 final

¹²⁹ COM(2025) 280 final

these critical success factors are case specific, future considerations of how to better apply the PPP will also need to be considered on a case-by-case basis.

- 1. The PPP is only partially implemented in EU policies, affecting its effectiveness. It is relatively well implemented for prevention and control, but there are gaps in implementation for administrative costs and especially there are gaps for environmental damage.**

Findings (based on Section 4.1.1)

- The macroeconomic analysis (see NEEP analysis in section 3) and the analysis of individual legal provisions (section 4.1.1) both suggest that the principle is relatively well implemented in EU policies to address the costs of pollution prevention and control. The same analyses provide strong indications of gaps in how the PPP is implemented for the administrative costs of policy implementation (where the costs can be borne by the authorities), and especially for costs of environmental damage (where the costs are often borne by society as a whole), although additional measures at national level may cater for that and are outside the scope of this analysis. The picture of partial implementation for environmental damage applies across all economic sectors.
- For no sector or environmental issue is there evidence that polluters fully cover the cost of environmental damage. Where evidence is available, estimates of the degree of internalisation point to only a partial implementation of the PPP. The degree of implementation varies but is always less than full implementation. This reflects environmental taxes of EUR 341 billion per annum¹³⁰, that are much lower than even the partial estimates of the monetary damage.
- Over the evaluation period, the implementation of the PPP has improved, as can be seen from both the legal texts revised and those currently under revision. Overall, the changes are that: for pollution prevention and control, PPP continues to be well applied (but to more ambitious policies); for the costs of administrative measures, the PPP application improves e.g. via the broader application of EPR and better sanction regimes; for the costs of environmental damage, there are improvements as seen for the EU ETS and broader application of EPR and improved consideration of the environmental damage in penalties.

Lessons learned

- The application of PPP could be improved. How to improve implementation needs to be considered on a case-by-case basis, balancing the benefits of doing so against the critical success factors that constrain implementation (set out below).
- The implementation of the PPP via market-based instruments can contribute to the equilibrium of public finances, by providing additional revenues. Green budgeting allows for monitoring of environmental revenues and subsidies, and better aligning budgetary policies with environmental goals.

- 2. Making the polluter pay is an effective mechanism for providing price signals that increase the efficiency of environmental policy.**

Findings (based on Sections 4.1.2 and 4.1.6)

¹³⁰ 2023 figure, see Eurostat: [Environmental tax statistics - Statistics Explained \(europa.eu\)](https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&code=env_ea_en_1&plugin=1)

- The analysis in individual evaluations strongly suggests that the PPP makes environmental policy more efficient, by giving to economic agents the price incentives to modify their behaviour or innovate, and thus reduce pollution costs. Price signals steer investment and innovation towards clean technology, and so can drive development of new ways of working and eco-innovation. A fuller implementation of the PPP might further reduce the costs of environmental policy.
- It is a challenge to provide a cost-benefit analysis of a principle. The costs of applying the PPP are mainly overhead costs to identify the polluter, to monitor the pollution costs and to enforce the PPP. In current applications of the principle, such costs are limited when pollution is addressed at the source (as for command-and-control measures) and appear proportionate for market-based instruments currently applied (see also point 5 below). For further applications, a case-by-case consideration of costs and benefits would be necessary to ensure that the overhead costs of applying the PPP remain justified by the benefits of doing so.

Lessons learned

- PPP sends price signals that improve the efficiency of environmental policy, in part by stimulating innovation and behavioural change. The analysis suggests that currently price signals in many environmental policies are too weak. Given the link between price signals and the efficiency of policy, this affects the cost-benefit ratio of environmental policy overall.

3. Making the polluter pay is potentially an effective mechanism for supporting the just transition. Careful policy design with consideration to distributional effects is a critical success factor to make sure this happens in practice.

Findings (based on Section 4.1.4)

- The application of the PPP in environmental policies starts from a position of being inherently fair; in the sense that the social pollution costs are paid by the polluter and not by the general taxpayer or people affected by it.
- The PPP can though be inconsistent with the just transition when costs are passed along in a way that distributional effects negatively affect vulnerable groups or regions in a way that, for them, is not justified by the benefits¹³¹. Indeed, depending on the market structure and the relative power of the market participants, producers may pass the costs of the PPP application through to consumers. Although this means that consumers and producers face the effective cost of their choices (addressing the initial market failure), this may have regressive effects. The latter can be particularly concerning for consumers and vulnerable groups in the context of the ongoing affordability and cost-of-living crisis.

Lessons learned

- Case studies¹³² show that possible regressive effects of applying the PPP eventually amount to a policy choice regarding its social impact. Indeed, distributional effects depend on the way costs are recovered. Regressive effects can be avoided through a careful design of policies implementing the PPP. Examples include progressive pricing or exemptions for vulnerable households or areas, such as volumetric pricing for water

¹³¹ See section 4.1.4 and its references to relevant research.

¹³² See annex 8 and references in section 4.1.4.

or energy, or a compensation mechanism within or outside the policy, e.g., means-targeted measures (monetary or in-kind measures) using the revenues from taxes (tax recycling) or on an EU funding level – such as the EU Social Climate Fund (funded from the new ETS 2) or the Just Transition Fund. More generally, environmental taxes can fund a shift away from labour taxation.

- There are comparatively few examples of recycling revenue at EU level, suggesting potential for its greater use to improve the fairness of the implementation of the PPP.
- Application of the PPP should be preceded by a case-by-case examination of possible regressive effects and of the best policy design to mitigate this if appropriate.

4. A second critical success factor for improving implementation of the PPP relates to addressing concerns over competitiveness impacts and pollution leakage.

Findings (based on Section 4.1.3)

- Making the polluter pay increases costs for polluting businesses and can impact on competitiveness. However, environmental policy can also support and drive innovation and so the competitiveness of the industry. The issue of competitiveness needs to be considered on a case-by-case basis. There are examples where policies have been designed to address negative side effects.
- Policies may also be designed to avoid that polluting activities move outside the EU and continue contributing to pollution globally and in the EU via cross-border impacts. For example, CBAM puts a fair price on the carbon emitted during the production of carbon intensive goods that are entering the EU and aims to avoid carbon leakage¹³³.

Lessons learned

- Potential competitiveness impacts of applying PPP need to be assessed on a case-by-case basis. Policy design (and possible flanking measures) should take into account the possibility that competitiveness impacts could undermine the effectiveness of environmental policies applying the PPP.
- Studies into the impacts of environmental policy and pollution leakage have focussed on carbon pricing and carbon leakage in the context of the emission trading system. Further research into other forms of pollution leakage could provide useful insights for a larger application of the PPP while avoiding pollution leakage.
- There is a lack of consideration for small and medium-sized enterprises (SMEs) in research into the competitiveness impact of PPP application. Further consideration of the PPP in environmental policies should be accompanied by specific assessments of the impacts on SMEs.

¹³³ A similar reflection can be made about the CountEmissions EU proposal which aims to impose a common methodology to count emissions on transport companies offering services in the EU and that choose to count and publish their emissions. If adopted, the Regulation would avoid that some companies gain advantage by a more “beneficial” counting standard.

5. **A third critical success factor for improving implementation of the PPP relates to addressing the difficulty of application, and the resulting administrative ‘overhead’ costs.**

Findings (based on Sections 4.1.3 and 4.1.6)

- Although difficult to isolate, there are overheads to applying the PPP. These include the administrative costs of identifying who are polluters and measuring their pollution, for the purpose of applying the PPP (e.g. through price mechanisms for environmental damage). For prevention and control measures, the default is usually that the polluter pays, and there do not appear to be extra costs associated with this. Analysis of specific cases suggests that these overhead costs are proportionate where identified. Thus, careful consideration in impact assessments ensures that the PPP is applied without causing disproportionate costs.
- Reporting obligations are almost all embedded in the specific pieces of legislation, and no scope for simplification was identified with the exception of ensuring co-ordinated reporting of all environmentally harmful subsidies (so aligning future non-energy EHS with the reporting of energy related EHS under the Governance Regulation) and exploring the potential for further standardisation under the Environmental Economic Accounts managed by Eurostat.

Lessons learned

- The overhead costs of applying the PPP, appear proportionate for existing cases, but need to be considered on a case-by-case basis for the further implementation of the PPP. A better application of the PPP also requires a careful analysis of costs and benefits (e.g. in impact assessments) and the exploration of new policy designs (such as digital solutions) to ease the costs of implementation.
- As a horizontal principle, the potential for simplification and burden reduction is limited, but could be realised through better sharing of best practices in Member States, and in specific cases the use of digital technologies to identify polluters etc.

6. **Positive coherence is reflected by the lack of conflicts between measures to which the PPP is applied. The implementation of the PPP could be enhanced by addressing the existing unequal level of implementation, especially for costs related to environmental damage.**

Findings (based on Section 4.1.3, 4.1.5, 4.1.7 and 4.1.8)

- Coherence of EU policies is positive, in the sense of no identified contradictions or overlaps in the application of the PPP. Indeed, some policies such as the EU ETS provide pricing for environmental damage related to multiple policies and across economic sectors.
- However, the full potential of the PPP application is not deployed in the absence of consistent implementation. There is more variation in the application of the PPP in relation to environmental damage than to the costs of pollution control and reduction and to administrative costs. Best practice examples to address the costs of environmental damage include the EU ETS, environmental taxes at the national level and Extended Producer Responsibility schemes.
- Member States show considerable differences in the use of environmental taxes. Environmental taxes contributed around 5% of total tax revenues in the EU (in 2023) but

were almost 10% in Greece and Bulgaria compared to under 4% for Sweden, Spain and Luxembourg.

- Extended Producer Responsibility (EPR) makes producers responsible for their products at the post-consumer stage of the lifecycle. It is currently most commonly used for waste e.g. from batteries, packaging, and tyres, and was recently introduced for pharmaceuticals and cosmetics in wastewater. The success of EPR in increasing material recovery rates has triggered a debate about expanding the use of EPR to additional product groups, and additional impact categories and of strengthening the eco-modulation of fees.
- The application of the PPP outside the EU varies across countries whilst being recognised as a fundamental principle in international environmental law and many global agreements. The OECD found increasing use of explicit carbon pricing mechanisms both in terms of coverage and marginal prices, and more through emissions trading than through carbon taxes.

Lessons learned

- Experience with market-based instruments across countries points towards their potential for wider application at national level, building on existing good practices to remedy inconsistent national use (different scopes, levels). Similarly, at the EU level, it would be useful to carry out further research into the potential of extended producer responsibility (EPR) to promote coherence and the overall impact of the PPP via the application to a wider range of issues and also through better eco-modulation. It should be further assessed how well-designed environmental tax reforms (focussed on taxing polluting activities) could allow for reductions in labour taxes.

7. Consistency could be improved across priority objectives.

Findings (based on Section 4.1.7)

- The finding above reflected that consistency varies, being strongest for prevention and control costs, and weakest for environmental damage. Consistency also varies within and between priority objective issues: climate policy has introduced the most widespread pricing mechanism covering environmental damage, and this was strengthened over the evaluation period. Other priority objectives lag, and have generally weaker implementation of the PPP, for example, pricing of environmental damage is weak for nature issues.
- Analysis has identified economic sectors with polluting activities (such as transport, agriculture, construction). Reflecting the conclusion that PPP is not fully applied to environmental damage costs, the picture is of partial implementation of the PPP for economic sectors. For example, EU law currently does not apply the PPP to greenhouse gas emissions from agriculture; the Commission is currently exploring whether this is implementable or not and if rather than leading to higher cost for farmers, well-designed implementation could also provide farmers with additional financial incentives for climate action and carbon farming¹³⁴. There are also positive examples over the evaluation period, for example in the transport sector with the switch of subsidies for the use of company cars

¹³⁴ See also the study: Trinomics (2023), [Pricing Agricultural Emissions and Rewarding Climate Action in the Agri-food Value Chain](#), European Commission.

away from internal combustion engines and to greener electric vehicles in many countries¹³⁵.

Lessons learned

- Under the European Climate Law, EU Member States will work collectively to become climate neutral by 2050 and as a first milestone, reduce emissions by 2030 to at least -55% below 1990 levels. The EU ETS has been strengthened and expanded to achieve emission reductions cost-effectively in line with this overarching target. A new ETS 2 for road transport, building and small industry has also been created to help achieve cost-effective emission reductions in the sectors subject to national emission reduction targets of the Effort Sharing Regulation. More effective recycling of the revenue from emissions trading underpins the expansion of emissions trading – Member States are obligated to use all ETS revenue on climate action and energy transformation, additional resources are directed to the Innovation and Modernisation Funds and the new Social Climate Fund is established to support vulnerable households and microenterprises in the decarbonisation.
- The use of price signals is weaker in relation to biodiversity. Limited experience with payments for ecosystem services and biodiversity markets invites to further study the potential of such systems to strengthen price signals and attract private investment.

8. Environmentally harmful subsidies send price signals that contradict the implementation of the PPP.

Findings (based on Section 4.1.3)

- Environmentally harmful subsidies reward the polluter and distort market prices. Fossil fuel subsidies were around EUR 55 billion over much of the evaluation period, before doubling to EUR 123 billion following Russia's invasion of Ukraine and then decreased to EUR 111 billion in 2023. Other environmentally harmful subsidies are not yet consistently identified across Member States (although partial data suggest that they could be as substantial as the energy subsidies¹³⁶).
- The application of Do No Significant Harm (DNSH) principle in EU funds helps to improve their compatibility with the PPP. It has been agreed that the DNSH principle will be applied to the future MFF programmes where feasible and appropriate in accordance with sector-specific legislation¹³⁷.

Lessons learned

- Price distortions by fossil fuel subsidies could be reduced if Member States took action to follow up on commitments to phase out fossil fuel subsidies, including the phase out of temporary untargeted measures in support of consumption of fossil fuels in response to the 2021-2022 energy crisis.

¹³⁵ T&E (2024), [Unveiling Europe's corporate car problem](#).

¹³⁶ See for example data for Italy ([Catalogo dei sussidi ambientalmente dannosi e dei sussidi ambientalmente favorevoli | Ministero dell'Ambiente e della Sicurezza Energetica \(mase.gov.it\)](#)) or Germany ([Abbau naturschaedigender Subventionen.pdf \(cec.eu.int\)](#)).

¹³⁷ Regulation (EU, Euratom) 2024/2509 of the European Parliament and of the Council of 23 September 2024 on the financial rules applicable to the general budget of the Union (recast), OJ L, 2024/2509, 26.9.2024.

- To help ensure that the social and economic objectives of the subsidies are achieved, Member States could identify and catalogue their environmentally harmful subsidies before redirecting them.

9. The PPP is highly relevant to the needs of the EU .

Findings (based on Section 4.3.1 and 4.3.2)

- PPP aims to reduce pollution levels via price signals. As the midterm review of the 8th Environment Action Programme¹³⁸ shows, our environmental objectives have not yet been delivered, and further action is needed.
- A particular strength of the PPP is in promoting technology change through price signals, so it should drive technology change. As the PPP is technology neutral, it can respond to changes in technology and so remain relevant.

Lessons learned

- A better implementation of the PPP can potentially contribute to addressing current, new and emerging environmental issues. As such, the PPP is highly relevant to delivering the EU's climate and environmental objectives and the Sustainable Development Goals.

10. EU action had EU value-added.

Findings (based on Section 4.2.1 and 4.2.2)

- There are consistent benefits from application of the PPP at the EU level, with interventions improving consistency across Member States and ensuring a greater degree of market harmonisation, thus allowing for more efficiently meeting political objectives. Where national policies decide on the degree of implementation, it appears to be less consistent.
- There is a tension between the implementation of the PPP and the subsidiarity principle, reflected in the variety of environmental taxes. An example of good practice to manage this tension is the Plastic Bags Directive, which requires Member States to charge for plastic bags, but allows for better national measures if identified.

Lessons learned

- The analysis suggests there may be scope for strengthening the PPP implementation, especially for addressing the costs from environmental damage. Where consistent with the subsidiarity principle, consideration should be given to the use of market based instruments, perhaps within a co-ordinated or harmonised framework at EU level as this may be an efficient and effective instrument to do this. One needs to take into account that the requirement for unanimity in Council votes on environmental taxes could be a limiting factor, compared to the alternative of Qualified Majority Voting.
- Regardless of where competence sits, the use of environmental taxes and levies could be further explored based on existing Member State best practices. Experience points

¹³⁸ Directorate-General for Environment (2024), [Documents for mid-term review of 8th Environment Action Programme \(EAP\)](#).

potentially towards implementation either through co-ordination mechanisms, or a legal instrument that sets a more robust framework such as minimum rates.

- The PPP is recognised as a fundamental principle in international environmental law and many global agreements and conventions explicitly endorse the PPP, but the application worldwide varies between countries and regions. The EU can play a role in driving a more uniform application of the PPP in the rest of the world.

Annex 1: Procedural Information

a) Lead DG and internal references

The "Fitness Check of the Polluter Pays Principle" is led by DG Environment. It is PLAN/2022/1776 in the Agenda Planning (AP).

An inter-service steering group (ISG) was set up and met first on 11 October 2022. The ISG had representatives from the Directorate Generals for Environment; Agriculture and Rural Development; Climate Action; Competition; Defence Industry and Space; Energy; Economic and Financial Affairs; Eurostat; Employment, Social Affairs and Inclusion; Health and Food Safety; Humanitarian Aid & Civil Protection; Internal Market, Industry, Entrepreneurship and SMEs; Joint Research Centre; Justice and Consumers; Maritime Affairs and Fisheries; Mobility and Transport; Regional and Urban Policy; Recovery and Resilience Task Force; Research and Innovation; Structural Reform Support; Taxation and Customs Union; Trade; the Legal Service and the Secretariat General. The European Environmental Agency was invited to the meetings as experts. In addition, a DG Environment Focus Group was set up with all interested Directorates within DG Environment.

The ISG met frequently and was fully involved in steering the file including comments on the terms of reference and on the interim and draft final reports of the support study, comments on the public consultation questionnaire and was invited to participate in the workshops. At the final ISG meeting, the ISG commented on the draft Fitness Check report (SWD).

b) Consultation of the Regulatory Scrutiny Board

The Regulatory Scrutiny Board held the hearing with DG ENV on the results of the Fitness Check on 24 April 2024. The outcome was a positive opinion with reservations, issued on 26 April 2024. The following table provides information on how the comments made by the RSB were addressed in the Staff Working Document.

RSB opinion	Action taken
The report should be more cautious when drawing conclusions, including conclusions on the efficiency of the application of the PPP. It should be much clearer about how robust the conclusions are and on what specific evidence they are based, including by clarifying when this is a matter of assessment across the 76 policies and when it is about specific sectors/policies/areas. The conclusions should accurately reflect the underlying analysis, the robustness of the related evidence and any other methodological limitations and uncertainties. When the outcome of the analysis identifies an area for possible policy action, the conclusion should be less prescriptive and instead confine itself to flagging the need for further analysis. For some of the findings, the supporting evidence and assessment is not sufficiently developed (e.g. on the lack of legal clarity over the scope of application of PPP and its operationalisation in the fitness check, or on the relevance of the principle at corporate level of a business, or on the role of carbon pricing in the food chain. On such issues, the report should express any	The conclusions of the report have been reviewed, drawing closer to the evidence presented in the report and adding references to further evidence where needed. As recommended, lessons drawn from the report are carefully drafted, reflecting useful findings without inviting to specific action other than further assessment. Also findings and conclusions to various sections in the main report have been reviewed to make sure they fully match with the evidence in those sections. Evidence gaps, for example for impacts on SMEs, have been identified and clearly presented in the conclusions.

forward-looking conclusions in a much more cautious way, reflecting the limitations and uncertainties of the collected evidence or omit conclusions. In cases where any evidence gaps are identified, the conclusion should make this clear.	
The report should improve the presentation of costs and benefits. If further analysis and estimates of costs and benefits cannot be provided on the basis of robust evidence, this should be explained. The report should further develop the analysis of distributional effects, in particular the impact on vulnerable groups and the cost pass-through. The report should provide analysis regarding which (combinations of) policy design elements and situations lead to progressive and regressive effects. It should clarify if any lessons can be drawn regarding the use of environmental taxes and to what extent those taxes have an effect on competitiveness.	The report has been revised regarding cost and benefit analysis and the distinction between the costs of environmental policy and the costs of applying the PPP have been clarified. The difficulties of estimating the benefits have been further explained (section 4.1.6 and annex 8). The analysis of distributional effects (and progressive/regressive effects) has been further developed, such as by adding a specific box on cost pass-through in section 4.1.4 and by adding related information in annex 9. Further information and references to studies on environmental taxes and their impact on businesses' competitiveness have been added in section 4.1.5.
The presentation of the impacts of the PPP application on competitiveness and SMEs including administrative and adjustment costs for affected companies should be further developed by making better use of existing evaluation and recent research findings. The report should be clearer on which (combinations of) policy design elements and situations (areas/sectors/policies) bring about positive outcomes or negative outcomes. This should include looking more thoroughly at level playing field issues in the single market and under which conditions SMEs might be disproportionately affected compared to large companies. The report should also assess to what extent the PPP allocates costs on market actors that are exposed to international competition.	The subsection on the impact of PPP application on competitiveness in section 4.1.3 has been further developed, among other with references to relevant studies (mainly from the OECD). The same section also explains how policy makers shift costs between sectors to maintain effectiveness of the environmental policy in light of competitiveness impacts . The report acknowledges in the conclusions the insufficient analysis of the impacts on SMEs in relevant research and calls for more analysis of SMEs when assessing environmental policies and PPP application to them.
The report should be clearer about the implementation of the PPP across different policies and should clarify if any lessons could be extrapolated between sectors and policies to improve the application of the principle. It should improve the presentation in the overview tables on the implementation of the principle, including by reviewing the usefulness of using any coloured grading system, to avoid simplistic readings and misunderstanding.	The analysis of PPP across different policies has been clarified in section 4.1.1 and annex 7A. The text underlines that the colour codes only refer to the legal texts and does not include a judgement over their implementation. Moreover, the colour code is not applied to costs of environmental damage as this would be confusing (such costs do not stem from the application of environmental policy, and they are often addressed by horizontal policies). The report's conclusions show how the analysis of individual policies confirms the findings of the macroeconomic analysis of the PPP coverage of the different cost categories.

c) Evidence provision

Evidence has been pulled from multiple sources, with as far as possible data triangulation to provide for a strong evidence base (see below the Evaluation question matrix).

A support study was tendered, "Study on the Polluter Pays Principle and Environmentally Harmful Subsidies" under Framework Contract ENV.F.1/FRA/2019/0001. The study was undertaken by the following companies:

- RPA Europe and Risk & Policy Analysts;
- Air Quality Consultants (AQC);
- Metroeconomica;
- CEPS.

The purpose of this study was:

- To provide administrative, organisational and technical support for the Fitness Check; and
- To assist the Commission in the establishment of the methodology for the identification and reporting of Environmentally Harmful Subsidies (EHS).

The specific objectives were:

- To assess the implementation of the polluter pays principle in terms of its effectiveness, efficiency, relevance, coherence and EU added value;
- To support the Commission in developing a methodology for the identification, assessment and reporting of EHS;
- To assist the Commission in gathering evidence through literature review and consultation of stakeholders — including experts and Member State representatives-, in organising workshops and focus groups.

In terms of stakeholder consultation, an open public consultation¹³⁹ took place, along with interviews, two workshops and a literature review. Together these covered both objective information and subjective opinions allowing for informed assessments to be taken and reflected in the answers to the Evaluation questions above.

¹³⁹ [Polluter Pays Principle – fitness check of its application to the environment \(europa.eu\)](https://ec.europa.eu/economy_finance/polluter-principle-fitness-check)

Annex 2. Methodology and Analytical models used

1. Introduction

The methodological approach for this Fitness Check, covers:

- The definition of the scope: PPP and the costs to which it applies, the geographic, temporal dimension and the policies.
- The intervention logic
- The identification of the Evaluation matrix and the approach to evidence gathering including the stakeholder consultation activities

The definition of the PPP has evolved over time, and is now considered to be:

- Pollution is the introduction of substances, vibrations, heat or noise or odour into air, water or land as well as the direct or indirect subtraction or use of environmental resources to an extent which may be harmful to human health or the quality of the environment, result in damage to material property or impair or interfere with amenities and other legitimate uses of the environment.
- Polluters are everyone causing environmental damage, including through releasing harmful substances into the environment, over-abstracting water, or causing deforestation. These polluters should pay for the costs of measures to prevent, control and remedy pollution. They should also pay for the environmental damage costs imposed on society, for example, of greenhouse gas emissions or water pollution such as costs associated with impacts on health, the loss of ecosystem services, or impacts on the economy.
- The principle applies to environmental damage to the climate, air, water, soil, or biodiversity whatever its sectoral origins.

Environmental policies provide measures to prevent, control and remedy pollution. Whether these are the right measures or not for the specific objectives of each legislation is outside the scope of this Fitness Check, and can be considered in an Evaluation of the different pieces of legislation. This Fitness Check focusses on who pays for those measures and the costs of pollution. Underlying the methodology is therefore:

- the need to **evaluate only issues related to who pays**. This differs from a standard Evaluation where questions are asked such as what the appropriate control measures are to be taken, what administrative procedures are required. In this Fitness Check, the focus is on who pays for those control measures and administrative procedures. The assessment covers costs of pollution prevention and control, costs of administrative measures and costs of environmental damage and externalities.
- the need to evaluate this issue across a **wide range of legislation**, as the PPP covers measures taken to prevent or control pollution (such as industrial emission) but also to remedy it (such as liability policies) and the costs it imposes on society (such as energy taxation or emissions trading policies) and these policies can relate to specific environmental issues (such as waste, air or climate policies) but also to specific economic sectors and their associated sources of pollution.

- The Fitness Check covers the objectives of the PPP, and so the **impact on costs and benefits and fairness**. It is about efficiency (does it reduce the cost of attaining a specific environmental objective by ensuring there is an incentive for polluters to act, through developing technologies or changing behaviour and are the costs of applying the principle proportionate) and about fairness (if the polluter does not pay, then who does).
- The Fitness Check needs to **reflect the principle of subsidiarity**. EU policy can require measures to prevent, control or remedy pollution, but these are specified at national level.
- An assessment of whether polluter pays needs to consider both positive and negative payments. **Environmentally harmful subsidies** are in scope, as these are payments to polluters.

2. The scope of the Fitness Check – which costs?

The definition of the PPP used in this report is that '**application of the principle means that polluters bear the costs of their pollution including the cost of measures taken to prevent, control and remedy pollution and other costs for society**'. There is no general agreement on this definition, as sometimes the definition of PPP refers instead to the internalisation of externalities (i.e. the costs imposed on society).

The cost categories incurred by the policies in scope of the Fitness Check, are as follows:

1. **Costs of pollution prevention** (i.e. stop pollution occurring) **and control** (i.e. limit pollution to defined levels and/or mitigate the effects). For example, pollution prevention would include restriction of a substance under REACH, where the use of an environmentally harmful substance is prohibited. An example of pollution control would be compliance with emission limit values by medium combustion plant (MCP) operators to reduce/control emissions to air under the MCP Directive. Another example would be remediation activities.
2. **Costs of administrative activities**, defined as costs borne by businesses, citizens, civil society organisations and public authorities as a result of administrative activities performed to comply with the obligations of the policies. Such costs include labelling, reporting, registration, monitoring, and assessment needed to provide information. An example is the monitoring of permit conditions to demonstrate compliance under the Industrial Emissions Directive (IED). Enforcement costs (monitoring, inspections and litigation) are also administrative costs where they support the functioning of the policy provision to implement the PPP. An example is the obligation on operators to verify annual emission reports by an independent verifier under the EU Emission Trading System (ETS) Directive. Note that some portion of administrative costs in some cases will be directly the result of implementing the PPP (referred to as overhead costs).
3. **Costs of environmental damage including negative externalities of consumption/production activities**, these are the costs of pollution borne by wider society. Such costs include the costs of measures to remedy environmental damage caused, irrespective of whether the pollution causing the damage was within legal limits (called “allowable residual pollution”) or if it was accidental. An example is the polluter being required to comply with compensatory measures to address environmental damage under

the Environmental Liability Directive (ELD). Another example is Extended Producer Responsibility for textiles under the Waste Framework Directive. These costs can also include a price that is put on pollution to act as a disincentive. For example, the Emissions Trading System puts a price on greenhouse gas emissions.

The **geographical scope** of the Fitness Check is the 27 Member States of the EU.

3. The scope of the Fitness Check – which policies and funds?

The PPP can apply to any policy affecting the environment. To allow for clustering of policies, they are first grouped by 8th EAP priority objectives (PO):

- PO1 achieving the 2030 greenhouse gas emission reduction target and **climate neutrality by 2050**
- PO2 enhancing **adaptive capacity**, strengthening **resilience** and **reducing vulnerability to climate change**
- PO3 advancing towards a **regenerative growth model**, decoupling economic growth from resource use and environmental degradation, and **accelerating the transition to a circular economy**
- PO4 pursuing a **zero-pollution ambition**, including for **air, water** and **soil** and protecting the health and well-being of Europeans
- PO5 protecting, preserving and restoring **biodiversity**, and **enhancing natural capital**
- PO6 **reducing environmental and climate pressures** related to production and consumption (particularly in the areas of energy, industry, buildings and infrastructure, mobility, tourism, international trade and the food system)

The way these priority objectives are interlinked is not reflected in the groupings of policies, rather it will be assessed as part of the coherence Evaluation analysis.

Policies are further grouped by area, defined to disaggregate the priority objectives for better analysis. The policy areas are: Climate change; Waste and recycling; Water; Air quality; Noise; Chemicals risk management; Nature, biodiversity, soil and land; Horizontal (environmental liability, environmental crime, built environment); EU funding and State aid. The policy areas defined for this Fitness Check differ slightly from those listed for the 8th EAP¹⁴⁰.

Differences are:

- PO1 and 2: Policies to respond to the first two priority objectives regarding climate change are dealt with together under the policy area of climate change.
- Policies that contribute to accelerating the transition to a circular economy are grouped under the waste management policy area.
- Zero pollution consists of four policy areas: air and noise, water, chemicals.
- Soil is included for the fifth priority objective (nature) which is different to the 8th EAP breakdown.

¹⁴⁰ Specific policies are defined for each of the 8th EAP policy areas: 8th EAP policy areas also include circular economy, plastics, sustainable development and urban environment. Where relevant, circular economy, sustainable development and urban environment are incorporated in thematic terms throughout the analysis as relevant to multiple policy areas. Plastics are grouped with waste and recycling.

- The sixth priority objective is cross-cutting and includes measures in the areas of energy, industry, buildings and infrastructure, mobility, tourism, international trade and the food system. These measures are dealt with under the other five POs to avoid duplication, leaving the truly cross-cutting policies.

The scoping identified relevant EU policy to the environment based on:

- Environmental targets
- Environmental quality standards to protect EU environment from pollution
- Source controls to reduce or prevent emissions at their source
- Risk controls to minimise and manage risks of pollution
- Measures to safeguard from adverse impacts on the environment
- Measures relating to environmental crime and liability; and
- EU funds and their role in safeguarding the environment

Grouping policies by 8th EAP priority objective and by policy area

To make the scope of the Fitness Check manageable, policies have been grouped by 8th EAP priority objective and then by a series of more granular policy areas that the project team has defined for the Fitness Check to disaggregate the priority objectives for clearer analysis. The rationale for how policies are mapped to the priority objectives is explained below. No policies that are considered significant have been omitted in this process. The approach consists of:

- For each priority objective and policy area, **individual policies are set out**. The Fitness Check explicitly considers 76 policies that have material costs and where there is a question over who pays. These policies all: firstly, contribute to the environmental outcomes targeted in European Green Deal (EGD) and the 8th EAP priority objectives, based on an examination of the *acquis* and confirmed through the stakeholder consultation (where stakeholders were asked if a material policy is ignored); secondly, no excluded policies could be identified that relate to significant costs covered under this Fitness Check and so their exclusion is deemed appropriate. Examples of policies not explicitly considered include policies on stakeholder involvement¹⁴¹, relating to Agency operation¹⁴², policies seen as not having a strong link to the delivery of the 8th EAP¹⁴³, targeting environmental management systems¹⁴⁴, policies related to identification of impacts e.g. of sustainable finance¹⁴⁵. Policies which are under negotiation are referred to in italics.
- Reflecting the fact that policies often work together and not in isolation, and to facilitate the analysis, policies are grouped. For example, this reflects environmental policies that support implementation of a broader framework policy such as the Groundwater and Environmental Quality Standards Directives which provide detailed procedures for implementing the requirements in respect of good chemical status of water bodies under the Water Framework Directive. Another example is the Euro Standards Regulation where compliance with the vehicle manufacturing standards contributes towards the achievement of air quality standards and emission reduction commitments under the AAQD and NEC Directive, respectively. **The extent to which the PPP is applied in EU policy is reviewed**

¹⁴¹ [Regulation \(EC\) No 1367/2006](#)

¹⁴² [Regulation \(EC\) No 401/2009](#)

¹⁴³ [Council Directive 1999/22/EC](#)

¹⁴⁴ [Regulation \(EC\) No 1221/2009](#)

¹⁴⁵ [Regulation \(EU\) 2020/852](#)

for all policies identified (as part of the effectiveness analysis): this is therefore a comprehensive analysis, rather than a sampling approach.

- The Fitness Check reviews the **extent to which EU funds and certain environmental State Aids are contributing to clean-up actions that should otherwise be paid for by the polluter**. Clean-up actions are defined, for the purpose of this Fitness Check, as structural investments and rural development schemes. Research and development is not defined as a clean-up action. EU funds and the selected State Aid Rules are in scope of the Fitness Check where they contribute to the achievement of wider environmental policy objectives. These include funds under EU budget headings: 1: Single Market, Innovation and Digital, 2: Cohesion and Values and 3: Natural Resources & Environment. Besides being the most thematically relevant from the point of view of this Fitness Check, these programmes were also picked to represent the large majority of expenditure under the EU budget. The programmes within scope amount to over 70% of the long-term budget and above 80% when taking into account the NextGenEU top-ups and the RRF. In keeping with the categories outlined above, EU funds and the selected State Aid Rules are classified as secondary policies for the Fitness Check.
- Analysis was undertaken of the **relevant impact pathways** (i.e. pollution and its source) respecting the Driver-Pressure-State-Impact-Response (DPSIR) framework. For each policy area, the main economic sectors responsible for the source of pollution and the policies which seek to address these pressures were identified, via literature review.

Although the Fitness Check can only evaluate how the PPP is applied in the current legislation, it also analyses where possible recent legislation and proposals currently in negotiation (for example, further use of EPR for textiles in the recent targeted revision of the Waste FD). Where policies are not yet adopted and implemented, it reflects how the PPP is expected to be implemented and the most significant planned effects, recognising that some of the questions are not yet resolved (e.g. co-decision processes ongoing). Such analysis is necessary to avoid that the conclusions of the Fitness Check would become quickly obsolete by the effects of new legislation entering into force.

Table 6: Mapping of policies in scope of the Fitness Check to the 8 th EAP (<i>new policies proposed at the time of the Fitness Check are in italics – proposals for existing policies are not presented in this table but are assessed in the Evaluation analysis</i>)			
8 th EAP priority objective (PO)	Policy area	Policies in scope of the Fitness Check	Main sources of pollution by economic sector (alphabetic order)
PO1 achieving the 2030 GHG emission reduction target and climate neutrality by 2050 PO2 enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change	Climate change	• EU Emissions Trading System (ETS) Directive 2003/87/EC • Effort Sharing Regulation (EU) 2018/842 • CO₂ emission performance standards for new cars and vans (Regulation (EU) 2019/631) • Ecodesign Directive 2009/125/EC • EU Ecolabel Regulation (EC) No 66/2010 • Energy Efficiency Directive (EED) 2012/27/EU • Energy Performance of Buildings Directive (EPBD) 2018/844/EU • Energy Taxation Directive 2003/96/EC • Fluorinated greenhouse gases Regulation (EU) No 517/2014 • Ozone depleting substances (ODS) Regulation (EC) No 1005/2009 • Renewable Energy Directive (RED) 2018/2001/EU • FuelEU Maritime Regulation No 2023/1805 • ReFuelEU Aviation Regulation (EU) No 2023/2405 • Eurovignette Directive (EU) 2022/362	• Agriculture; • Buildings (energy use) • Construction; • Industry, including particular reference to chemicals, energy, waste management and waste water management; and • Transport
PO3 accelerating the transition to a circular economy	Waste and recycling	• Waste Framework Directive 2008/98/EC (WFD waste) • Batteries Directive 2006/66/EC • End of life Vehicles Directive 2000/53/EC • Landfill Directive 1999/31/EC • Ship Recycling Regulation (EU) No 1257/2013 • Waste Shipments Regulation (EC) No 1013/2006 • Single-use plastics Directive (EU) 2019/904 • Plastic Bags Directive (EU) 2015/720 • Directive 94/62/EC on packaging and packaging waste • Extractive Waste Directive 2006/21/EC • Waste electrical and electronic equipment (WEEE) Directive 2012/19/EU • Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) Directive 2011/65/EU	• Industry
PO4 pursuing a zero-pollution ambition	Water	• Marine Strategy Framework Directive (MSFD) 2008/56/EC • Water Framework Directive (WFD water) 2000/60/EC • Nitrates Directive (ND) 91/676/EEC • Sewage Sludge Directive (SSD) 86/278/EEC • Urban Waste Water Treatment Directive (UWWTD) 91/271/EEC	• Agriculture; • Industry, including particular reference to chemicals

Table 6: Mapping of policies in scope of the Fitness Check to the 8th EAP (*new policies proposed at the time of the Fitness Check are in italics – proposals for existing policies are not presented in this table but are assessed in the Evaluation analysis*)

		- Bathing Water Directive 2006/7/EC - Drinking Water Directive (EU) 2020/2184 - Environmental Quality Standards 2008/105/EC (as amended by Directive 2013/39/EU) - Groundwater Directive 2006/118/EC - Safety of Offshore Oil and Gas Operations (2013/30/EU) - Ship-source pollution Directive 2005/35/EC - Floods Directive (Directive 2007/60/EC) - Water Reuse Regulation (EU) 2020/741	
	Air quality	- Air Quality Directive (AAQD) 2008/50/EC (and 2004/107/EC) - Reduction of national emissions (NEC) Directive 2016/2284/EU - Industrial Emission Directive (IED) 2010/75/EU Medium Combustion Plant Directive (MCPD) (EU) 2015/2193 - Medium Combustion Plant Directive (MCPD) (EU) 2015/2193 - European Pollutant Release and Transfer Register (E-PRTR) Regulation (EC) 166/2006 - Euro Standards Regulation (EU) 2018/858 - Eurovignette Directive (EU) 2022/362 - Fuel Quality Directive (FQD) 2009/30/EC - Petrol Vapour Recovery(PVR) Directives (94/63/EC and 2009/126/EU) - Sulphur content of liquid fuels (Directive (EU) 2016/802)	- Agriculture; - Construction; - Industry, including particular reference to energy; and - Transport
	Noise	- Environmental Noise Directive (END) (2002/49/EC) - Eurovignette Directive (EU) 2022/362	- Industry; - Transport
	Chemicals risk management	- Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Regulation (EC) No 1907/2006 - Classification, Labelling and Packaging Regulation (EC) No 1272/2008 - Biocidal Product Regulation (EU) No 528/2012 - Carcinogens and Mutagens Directive 2004/37/EC - Chemical Agents Directive 98/24/EC - Cosmetics Regulation (EC) No 1223/2009 - Fertiliser Regulation (EU) 2019/1009 - Mercury Regulation (EC) 2017/852 - Persistent Organic Pollutants Regulation (EU) 2019/1021 - Pesticides Directive 2009/128/EC - Plant Protection Products Regulation (EC) No 1107/2009 - Regulation 649/2012 concerning the export and import of hazardous chemicals - Seveso Directive 2012/18/EU - Toy Safety Directive 2009/48/EC	- Agriculture; - Industry, including particular reference to chemicals

Table 6: Mapping of policies in scope of the Fitness Check to the 8 th EAP (<i>new policies proposed at the time of the Fitness Check are in italics – proposals for existing policies are not presented in this table but are assessed in the Evaluation analysis</i>)			
PO5 protecting, preserving and restoring biodiversity, and enhancing natural capital	Nature, biodiversity, soil and land	- Birds Directive (2009/147/EC) and Habitats (Directive 92/43/EEC) (Nature Directives) - Regulation on Invasive Species (EU) 1143/2014 - EU Biodiversity Strategy for 2030 - EU Forestry Strategy for 2030 - EU soil strategy (COM/2021/699) <i>Proposal for Directive on Soil Monitoring (COM/2023/416)</i> <i>Proposal for Regulation on Nature Restoration (COM/2022/304)</i>	- Agriculture; - Construction; - Industry, including particular reference to chemicals and energy
	Horizontal policies (environmental liability, environmental crime, built environment)	- Environmental Crime Directive (ECD) Directive 2008/99/EC - Environmental Liability Directive (ELD) 2004/35/EC - Environmental Impact Assessment (EIA) Directive 2014/52/EU - Strategic Environmental Assessment (SEA) Directive 2001/42/EC	- Agriculture; - Construction; - Industry; and - Transport
	EU funding including environmental objectives	- Horizon 2020 Regulation (EU) 2021/695 - CAP (European Agricultural Guarantee Fund and European Agricultural Fund for Rural Development; Regulation (EU) 2021/2116 and Regulation (EU) 2021/2115 and Regulation (EU) 2021/2117) - Cohesion policy funds under the Common Provisions Regulation (EU) 2021/1060 - LIFE + Regulation (EU) 2021/783 - InvestEU Regulation (EU) 2021/523 - Recovery and Resilience Facility Regulation (EU) 2021/241	- Agriculture; - Construction; - Industry; and - Transport
PO6 reducing environmental and climate pressures related to production and consumption	State aid rules with a significant link to the environment	- General Block Exemption Regulation (GBER) 651/2014 - Communication from the Commission – Guidelines on State aid for climate, environmental protection and energy 2022	- Agriculture (only for aid that is not covered otherwise by the Guidelines for State aid in the agricultural and forestry sectors and in rural areas and the Agricultural Block Exemption Regulation (ABER)); ; - Industry, including particular reference to energy

Summary of the definitions used and of the policies in scope

A summary of the definitions used for the Fitness Check and characteristics of the policies in scope is presented below. These definitions and characteristics are used to frame the Evaluation analysis and present findings in a meaningful way.

Table 7: PPP Fitness Check Typology	
Characteristic	Description
8th EAP Priority Objectives ¹⁴⁶	The six priority objectives are: a) swift and predictable reduction of greenhouse gas emissions; b) continuous progress in enhancing and mainstreaming adaptive capacity [...] strengthening resilience and adaptation and reducing [...] vulnerability [...] to climate change. c) accelerating the transition to a non-toxic circular economy d) pursuing zero pollution [...] to achieve a toxic-free environment e) halting and reversing biodiversity loss and improving the state of ecosystems [...] by improving the state of the environment, in particular air, water and soil f) reducing key environmental and climate pressures related to the Union's production and consumption, in particular in the areas of energy, industry, buildings and infrastructure, mobility, tourism, international trade and the food system.
Policy Areas used for clustering policies in scope of Fitness Check	Climate change; Waste and recycling; Water; Air quality; Noise; Chemicals risk management; Nature, biodiversity, soil and land; Horizontal (environmental liability, environmental crime, built environment); EU funding and State aid
Type of cost where the PPP is applied	• Costs of pollution prevention and control (including preventing and controlling accidental¹⁴⁷ pollution). Costs are incurred from investments and expenses which stem from requirements of environmental policy. These may be required to prevent (i.e. stop pollution occurring) or control that pollution (i.e. limit pollution to defined levels and/or mitigate the effects). • Costs of administrative activities, defined as costs borne by businesses, citizens, civil society organisations and public authorities as a result of administrative activities performed to comply with the obligations of the policies.

¹⁴⁶ [Decision \(EU\) 2022/591](#)

¹⁴⁷ [38.en.pdf \(oecd.org\)](#)

Table 7: PPP Fitness Check Typology	
Characteristic	Description
	Such costs include labelling, reporting, registration, monitoring, and assessment. For the purposes of the fitness check, enforcement costs (monitoring, inspections and litigation) are included within administrative costs. Some of these administrative costs relate directly to the application of the PPP, and are a form of overhead costs. • Costs of environmental damage or externalities, these are the costs of pollution borne by wider society. They include the costs of measures to remedy environmental damage caused, irrespective of whether the pollution causing the damage was within legal limits (called “allowable residual pollution”) or if it was accidental or to address negative environmental externalities. In such cases, the PPP is commonly applied via market-based instruments (auctions, environmental taxes, pollution charges, liability regimes, sanctions) that put a price on pollution to act as a disincentive.
Type of legislative intervention	Aligned with Tool #17 of the Better Regulation Toolbox¹⁴⁸, the main types of instruments include: • Command and control approaches: Legally binding rules and requirements to specify behaviour • Market Based Instruments: Economic instruments which include taxes, levies, penalties, liability and compensation schemes, subsidies and incentives, deposit-refund systems, labelling schemes or tradeable permit schemes. • Voluntary actions: Soft regulation includes recommendations, technical standards, voluntary bottom-up initiatives (self-regulation).¹⁴⁹
Principle Economic Sectors Impacted	Four broad economic sectors identified: Agriculture; Construction; Industry; and Transport. Whilst not a sector per se, we also identify households (i.e. domestic consumption and waste) as an important driver. More granular economic activities were also reviewed as part of the initial screening of policies¹⁵⁰.
National approaches	The Member States have a responsibility to apply the PPP in line with the principle of subsidiarity. The analysis considers where such approaches may result in significant differences in the implementation of the PPP. A key criterion is whether the policy in question is a Directive or Regulation, or where national policies or schemes are used to ensure the polluter pays for action to address pollution, via green taxation, for example.
Footnotes: [2] Based on those identified in the ECA study https://op.europa.eu/webpub/eca/special-reports/polluter-pays-principle-12-2021/en/	

¹⁴⁸ European Commission, [Better Regulation Toolbox](#), Chapter 2.

¹⁴⁹ EEA, [Policy instruments](#)

¹⁵⁰ The full list of NACE Codes are here: https://ec.europa.eu/competition/mergers/cases/index/nace_all.html

There are different approaches to setting prices. These include, primarily:

- Marginal social cost pricing – Under this approach the price is incurred for the marginal (last) infrastructure and/ or external cost. This can be combined with varying prices, for example, for consumption of water or energy, there can be an initial tranche of consumption that is charged at a lower unit price, then the marginal tranche is set at a higher price reflecting the marginal infrastructure and/or external costs whilst avoiding excessive revenue recovery. Under this pricing approach, there is a clear incentive mechanism, and it is found for external cost charging in the Eurovignette Directive, or for water consumption in most Member States.
- Average cost pricing – Under this approach the price is set at the level of the average infrastructure and/or external cost. This can be seen as more fair and simpler to apply, and ensuring that users/polluters pay for the costs they cause.
- Baumol pricing - Under this approach the price is set at the level that is expected to be sufficient to achieve a given (environmental) objective. The intention is to focus on influencing behaviour to achieve specific objectives, and the EU ETS can be interpreted as generating a Baumol price.
- Ramsey pricing - Under this approach the price is set at the level that maximises revenues. This has been applied to minimise the incentive effect of prices, for example, charging a lower price for water for sectors that are more responsive to the price (and vice versa).

4. Approach to evidence gathering

The Fitness Check is based on the combination of various data sources (e.g. support study, research papers and Commission evaluations), validated by stakeholder consultation. A template was developed to compile evidence consistently between policy areas. Key information sources to compile the evidence reviews include legislative texts, policy Evaluation support studies, Impact Assessment support studies, policy implementation assessments, statistical data and other policy reviews and analysis. A list of the policy references reviewed is provided in the support study, grouped by policy area and by policy.

For example, an Evaluation of the Environmental Liability Directive was ongoing during this Fitness Check. This Evaluation provided relevant information that fed into this Fitness Check, which has value added by looking at the issue of liability through the specific prism of the PPP. Whilst much of the legislation in scope has been subject to an Impact Assessment, not all has.

The support study includes standalone evidence review templates to ensure information was consistently gathered across the 8th EAP priority objectives and by policy area. The template was structured as follows:

Overview (by policy area)

- Based on the EEA's 2020 State of Environment Report, description of pollution and how that has evolved (including identification of main economic sectors that contribute to the pollution).
- List of EU policies to govern the pollution. Additional evidence has been gathered as needed for Directives to summarise transposition to national legislation and which has influenced the way the PPP is implemented within the EU 27. Examples of national policies or schemes are included where identified.
- External factors influencing the polluters capacity to prevent, reduce or remedy pollution.

Policy information (by individual policy):

- A description of implementation of the PPP for the individual policy and how implementation has changed during the appraisal period, lessons learned to improve implementation and drivers influencing implementation.
- Costs and benefits related to specific policy mechanisms used to implement the PPP and presented by stakeholder group (where available).
- Monitoring and reporting arrangements to monitor how the PPP is applied and who is responsible for associated costs of such administrative measures.
- Approaches to enforcement for the application of the PPP and who is responsible for associated costs of such administrative measures.
- Additional Evaluation findings from existing Evaluations on the way in which the PPP is applied.

In most cases, the data gaps and limitations were resolved through consultation activity or deeper dives into the literature and available analysis. Where this was not possible, the support study acknowledges the limitations and applied a focussed approach to the Evaluation analysis based on available data.

5. Baseline expenditure on prevention and control

Data on environmental investments and environmental protection expenditure is collected by Eurostat and defined in the Environmental Protection Expenditure Accounts (EPEA). EPEA measure the economic resources devoted to prevention, reduction, and elimination of pollution and any other degradation of the environment. They cover the spending by resident units of a country (i.e. by its households, corporations and government) on environmental protection (EP) services, e.g. pollution abatement (air, water, soil and noise), waste and wastewater management, protection of biodiversity as well as related research and development, education and training activities.

According to Eurostat, *“Used jointly with physical data, information on environmental protection can help to follow up and monitor the efficiency of environmental policy, the application of the 'polluter pays' principle and the costs of compliance with environmental regulations, and to provide a basis for cost/benefit analyses for new environmental policy proposals”*.¹⁵¹

Eurostat has further stated that EPEA ‘assesses the application of the polluter pays principle’¹⁵² and later in the same Handbook that “EPEA measure the economic resources devoted to all activities and actions which have as their main purpose the prevention, reduction and elimination of pollution and of

¹⁵¹ Eurostat, [Environmental protection expenditure in Europe - Data 1995-2009](#).

¹⁵² Eurostat, [Environmental protection expenditure accounts Handbook — 2017 edition](#).

any other degradation of the environment. This assesses the financial commitment of an economy to environmental protection, evaluates how the environmental protection costs influence international competitiveness, assesses the application of the polluter pays principle and the cost-effectiveness of environmental control mechanisms.”

The Handbook also discusses the aspect of ancillary services (activities whose output is intended for use within the enterprise) in the context of EPEA describing that: *“Ancillary activities are often considered as a substitute of paying taxes: enterprises may choose to develop ancillary environmental protection activities as a means to avoid paying pollution taxes. It is therefore interesting to add pollution taxes and ancillary output on environmental protection as a measure of the burden that environmental protection exerts on industries.”*

The environmental protection services are produced by both corporations and government and EPEA data are available broken down by institutional sector, data on production of environmental protection services by environmental domain.

Activities undertaken for the purpose of resource management, such as production of energy from renewable sources, energy efficiency, forest management, fall outside the scope of EPEA, and related expenditure is not included in National expenditure on environmental protection ('NEEP'). NEEP is the sum of the following components:

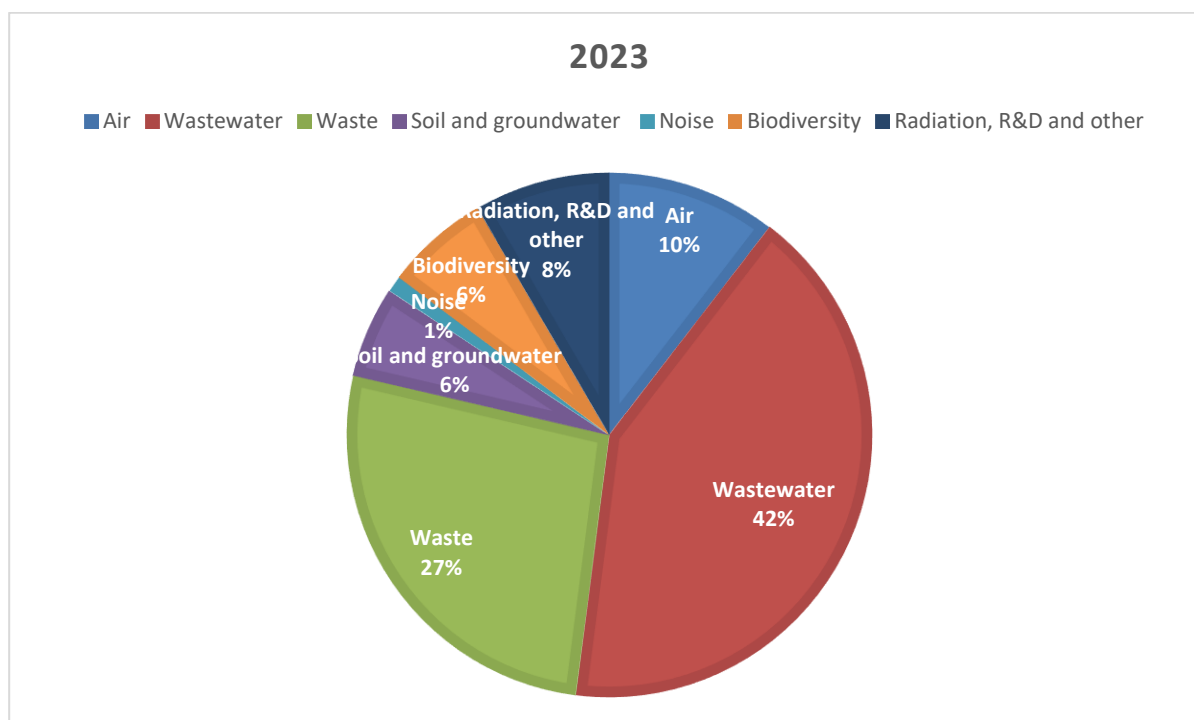
- total output (environmental protection market output, environmental protection non-market output and environmental protection ancillary output),
- plus gross fixed capital formation (GFCF) and net acquisition of non-financial, non-produced assets for environmental protection (EP) activities,
- minus intermediate consumption of EP services by specialist producers (corporations specialist producers and general government producers of EP services)
- plus VAT and other taxes less subsidies on EP services
- plus imports of EP services
- minus exports of EP service
- plus transfers received by the rest of the world from general government
- minus transfers paid by the rest of the world to general government, corporations and households

NEEP measures the resources used by resident units in a given period for protecting the natural environment. It is calculated as a sum of current expenditure on environmental protection (EP) activities and investments for EP activities, including net transfers to the rest of the world.

Note that there is as part of the NEEP government expenditure, which is general government (GG) and non-profit institutions serving households (NPISH) (considered for the purposes of EPEA as one sector) that accounted in 2022 for 28 % of the total. Some of this will be payments that should have been met by the polluter but are not. There are though payments under this total that are being met by the polluter e.g. through charges paid to government or NPISH.

In 2023, EU NEEP amounted to €357 billion, according to Eurostat's estimates (subject to revisions). This includes both CAPEX (around a fifth of the total) and OPEX. The Figure below sets out the split for investment. Some of this would not be considered as relevant for the Polluter Pays Principle (mainly the R&D component).

Figure 11: Investment for environmental protection by environmental domain, 2023



There is also some spending that is not included in NEEP but is relevant for PPP. This is primarily the circular economy spending driven by legislation, rather than by business cases. The Circular Economy indicators report that private investments under the circular economy label are around EUR 120 billion per annum: this is a significant increase from the previous estimate of EUR 20 billion per annum, indicating the methodological difficulty of such estimates. To be clear, only a fraction of this estimate can be considered relevant under the PPP.

There is also EU funding that will be partially reflected in the NEEP, but not entirely (depending on whether it is a loan or direct expenditure). There is EU funding of environmental expenditure (investment), of around EUR 40 billion per annum. Again, this should not be considered as solely driven by legislation or entirely relevant for the PPP and this analysis.

Overall, therefore, the Eurostat produced data on National expenditure on environmental protection ('NEEP') provide a strong estimate of the costs of prevention and control, despite some concerns over their coverage.

6. Desk research

Desk research has comprised three strands: legal review of the policy provisions, qualitative literature/evidence assessment and quantitative assessment for selected indicators relating to costs and pollution trends.

Legal texts were extracted from the Official Journal of the European Union (EUR-Lex).

Evidence and literature was sourced in the first instance by references in the terms of reference for this support study, including in particular the ECA report on ensuring polluters pay as well as a wealth of material on the development of the principle by the OECD. In addition, evidence was sourced from existing Impact Assessments, policy Evaluation, and implementation assessment studies, as well as specific sectoral reports and other evidence signposted by the European Commission. Quantitative data sources were sourced from Eurostat, the EEA and OECD.

Lastly, evidence and literature was sourced from signposting by stakeholders in response to the call for evidence, public consultation, interviews, and workshops.

Legal texts were reviewed for all 76 items of legislation covering policies, EU funding programmes and strategies. The search also would have identified any legal texts referring to PPP but not included in the scope of the Fitness Check, which would then have been added: but none were. Documents reviewed as part of the evidence and literature review number 273 items. Of this total, the majority (172) were existing Impact Assessments (45), policy Evaluation (45) and implementation assessment (87) studies that were reviewed as part of a rapid evidence assessment following a structured template for data extraction.

7. Consultation strategy and consultation activities

a. Consultation strategy

The main objective of the stakeholder consultation is to collect information, data, evidence and opinions on the application of the 'polluter pays' principle in the EU acquis; and also to ensure that findings are evidence based and validated. As first step, the support study carried out a stakeholder mapping by checking the respondents to the call for evidence and to other relevant consultation activities (e.g. public consultation, targeted stakeholder consultation, workshop and additional surveys in support to other Evaluations). This resulted in a list of over 850 people from around 500 organisations.

b. Consultation activities

The public consultation 'Polluter Pays Principle – Fitness Check of its application to the environment' aimed at collecting public views and evidence about the implementation of the Polluter Pays Principle (PPP) in the EU for the Fitness Check, specifically looking at its effectiveness, efficiency, coherence, and the EU added value of its application.

A twelve-week public consultation was launched on 12 May 2023 and closed on 4 August 2023. The questionnaire consisted of sixteen questions organised into the following parts:

- An introductory section that collected information about the demographic profile of the respondents,
- Five thematic sections that gathered opinions about the PPP implementation in the EU,
- A final section where the survey participants submitted general comments and uploaded the supplementary documents.

In September 2023, the study team prepared a factual summary report of five pages that has been published on the ‘Have Your Say’ portal¹⁵³ and an in-depth report with the analysis of the responses to public consultation. 268 respondents completed the survey and, excluding one duplicate answer, 267 responses were considered suitable and included in the analysis.

The respondents represented 27 countries: 95% (253) were from EU Member States, while 5% (14) were from non-EU countries. Six EU countries represented over two-thirds of the responses (68%, 181): Germany (16%, 44), Belgium (13%, 36), Portugal (12%, 31), Italy (9%, 25), France (9%, 23) and Spain (8%, 22).

Most respondents submitted their responses as EU citizens (39%, 104), followed by business associations (29%, 77). Nearly 80% of respondents represented a business entity (i.e., a company or a business association 40%, 107) or an EU citizen (39%, 104).

In the survey, a group that comprised $\geq 5\%$ of respondents and shared at least 50% of the responses was to be considered a campaign. Campaigns were reviewed in Excel by assessing responses to the closed and open-ended questions, sorting the responses by the categories of respondents, and identifying potential patterns in the responses. No campaigns were identified in this survey.

A total of 69 documents were received in the public consultation. Thirty-five of them were position papers, while the remaining 34 documents were academic articles, reports, research papers, pamphlets, brochures, or position papers not focused on the Polluter Pays Principle. Seven identical position papers were submitted by different organisations. For the interpretation of position papers, thematic analysis – a qualitative method for identifying major patterns and themes in texts was applied. Although some position papers were identical, they did not influence the outcomes of the analysis because of a qualitative approach. Thematic analysis resulted in the list of topics identified in the papers, but it did not measure and compare the frequency of mentions of specific topics.

¹⁵³ European Commission, [Polluter Pays Principle – fitness check of its application to the environment \(europa.eu\)](https://ec.europa.eu/eip/polluter-pays-principle_en)

To collect complementary information to the results of the literature review, 30 semi-structured interviews with expert stakeholders were undertaken in November – December 2023. Experts were identified through the analysis of public consultation responses, discussions during the stakeholder workshops, web search and recommendations from the Commission and the interviewed experts. In the list of experts, the study team to the extent possible maintained diversity of the representatives of various stakeholder groups (e.g., public authorities, business entities, non-governmental organisation, research organisations, etc.), from specific sectors/areas (e.g., waste, water, chemicals, transport, etc.) and countries. To effectively summarise the opinions of specific stakeholder membership organisations that represented multiple countries (e.g., European business associations, non-governmental organisations, networks and platforms) were contacted.

Semi-structured interviews included a set of open-ended questions on a topic shared with the respondents in advance. Two thematic interview guides reflected the research needs of the study team:

- The guide ‘Implementation of the PPP’ aimed to get more insight into the issues of practical implementation of the ‘polluter pays’ principle with a focus on costs and impacts.
- The guide ‘Design of policies related to the PPP’ collected insights about the design of the policies and tools for implementing the ‘polluter pays’ principle at the EU level and in the EU Member States.

Thematic analysis was applied to analyse contributions of the respondents.

Two stakeholder workshops aimed to gather stakeholder feedback on the implementation of the PPP, present and validate the findings and emerging conclusions of the supporting study to the Fitness Check as well as disseminating information about development of the methodology for the identification and reporting of non-energy EHS. The workshops were organised online on 4 July and 20 November 2023 and included presentations of the study progress and preliminary findings and thematic discussions with the participants. The study team used panel discussions as the main method for moderating the interaction with the workshop participants.

The first online workshop was organised on 4 July 2023. A total of 194 people registered for the event, with 121 participants joining on the day. Attendees were from competent authorities, EU institutions, industry and trade associations, private companies, non-governmental organisations, researchers and members of the study team. The proceedings have also been published on the event webpage¹⁵⁴ along with the slides used by the speakers.

¹⁵⁴ <https://www.rpa-europe.eu/polluter-pays-principle-and-ehs>

A second online workshop took place on 20 November 2023. A total of 253 people registered for the event, with 169 attendees. The participants were from public authorities, EU institutions, industry and trade associations, business entities, non-governmental organisations, researchers and members of the study team. The proceedings have been published on the event webpage¹⁵⁵ along with the slides used by the speakers.

8. Scope – the appraisal period and points of comparison

As explained in section 2.2, the focus of the Fitness Check is on the current state of play for implementing the PPP, i.e. to what extent it is implemented today. The Fitness Check seeks to identify today's gaps in the application of the PPP as a basis for future assessment of policy action.

The diversity of the legislation covered and the fact that this would involve assuming that the application of the PPP has remained stable since 2014, a quantitative counterfactual ("a dynamic baseline") is unrealistic. Hence the choice for the "point of comparison" approach as recommended by Tool #46 of the Better Regulation Guidelines¹⁵⁶.

According to the BR Toolbox, there is a need to:

Identify the appropriate point(s) of comparison: the different Evaluation questions should be answered against relevant starting points (e.g. benchmarks) or expected achievements for example, comparisons may be drawn against the changes projected or expected under the preferred policy option (as in the Impact Assessment) or changes since measurements made at the start of an intervention.

The **main point of comparison is the theoretical situation in which the PPP were fully applied**, and this in the context of well-functioning markets that transmit correctly price signals to the market participants.

The Fitness Check also assesses how the application of the PPP has evolved over time and what are the factors influencing this evolution. For this purpose, the Fitness Check looks at the period from 2014 to 2023. **The year 2014 is the second (and secondary) point of comparison.** The decision to look back ten years was made because the 7th Environmental Action Programme entered into force in 2014.

Whilst the PPP predates the 7th EAP, it contained a clear commitment to the principle:

¹⁵⁵ <https://www.rpa-europe.eu/polluter-pays-principle-and-ehs>

¹⁵⁶ Tool #46 of the better regulation toolbox, chapter 6, section 2.2 notes: the different evaluation questions should be answered against relevant starting points (e.g., benchmarks) or expected achievements. Where this analysis cannot be quantified, as a minimum, a qualitative description of what was expected to happen is needed. The points of comparison may differ for each evaluation criteria and, in this case, by type of pollution being considered.

- **Art 2, 2.** “The 7th EAP shall be based on the precautionary principle, the principles of preventive action and of rectification of pollution at source and the polluter-pays principle.”

The 7th EAP also included “Priority objective 6: To secure investment for environment and climate policy and address environmental externalities” and stated that

“The Union and its Member States will need to put in place the right conditions to ensure that environmental externalities are adequately addressed, including by ensuring that the right market signals are sent to the private sector, with due regard to any adverse social impacts. This will involve applying the polluter-pays principle more systematically, in particular through phasing out environmentally harmful subsidies at Union and Member State level, guided by the Commission, using an action-based approach, inter alia, via the European Semester, and considering fiscal measures in support of sustainable resource use such as shifting taxation away from labour towards pollution. As natural resources become increasingly scarce, the economic rent and profits associated with their ownership or exclusive use may increase. Public intervention to ensure that such rents are not excessive and that externalities are taken into account will lead to a more efficient use of those resources and will help to avoid market distortions, as well as generate public revenue. Environment and climate priorities will be pursued in the framework of the European Semester, including via lead indicators where those priorities are relevant to the sustainable growth prospects of individual Member States to which country-specific recommendations are addressed. Other market-based instruments, such as payments for ecosystem services, should be used more extensively at Union and national level to incentivise private sector involvement and the sustainable management of natural capital.”

Annex 3. Evaluation matrix¹⁵⁷

Approach to Evaluation questions and sub-questions on effectiveness			
Sub-questions	Assessment criteria	Indicators	Focus of Evaluation analysis
EQ1. The extent to which the PPP is fully applied in all policies impacting on environmental protection and the improvement of the quality of the environment.			
EQ1a. To what extent is the PPP implemented in EU environmental policies?	The PPP is applied consistently in policy to internalise costs for a) prevention and control b) administrative measures c) environmental damage or externalities.	- Percentage of legislation with legal reference to PPP in recitals, and/or articles - Percentage of legislation with policy mechanisms that apply the PPP based on the rating in the state of play	Analysis was grouped by 8 th EAP priority objectives and policy area to conclude on how policies implement the PPP. The analysis first systematically identified references to the PPP in legislation. Second, it reviewed policy mechanisms used to internalise associated costs of pollution to conclude on the gaps and inconsistencies in the application of the PPP by policy area. The policy mechanisms in scope are defined for the state of play. The focus of the analysis was current implementation, including reviewing policies that were entered into force for 2023. The extent to which implementation has improved throughout the appraisal period was addressed under EQ1e.
EQ1b. To what extent is the PPP implemented by Member States for the pieces of legislation covered in 1a?	The PPP is consistently translated into Member State legislation transposing EU Directives. Where Member States have a significant degree of choice in how they implement the PPP, the PPP is applied consistently in policy to internalise costs for a) prevention and control b) administrative measures c) environmental damage or externalities.	- Percentage of legislation where Member States have a significant degree of choice in how they implement the PPP based on - No (%) of directives - No (%) which provide fwk rather than specific measures - No (%) with nationally derived targets etc.	Analysis was grouped by 8th EAP priority objectives and policy area Analysis was grouped by policy area to conclude on extent to which the implementation of the PPP is dependent on decisions taken by Member State competent authorities. Analysis identified first where Member States have a significant degree of choice in how they implement the PPP. Criteria were applied to determine “significance in degree of choice”: - The type of legal act used: the use of a directive indicates a degree of Member State choice (where provisions are transposed by EU Member States to national law giving scope for flexibility in how the provisions are implemented at national level). - The policy mechanism used to apply the PPP. Where Member States have a significant degree of choice in how they implement the PPP (where one or more of the above criteria apply), the analysis identified the reasons why Member State flexibility in implementation is needed, and reviewed what effect the differing approaches have on capacity to internalise the costs of pollution. Specific examples of Member State implementation were used to evaluate the effect of differing approaches for each of the 8th priority objectives and policy areas. The focus of the analysis was current implementation, including reviewing policies that were entered into force for 2023. The extent to which

¹⁵⁷ The evaluation matrix in this annex is shorter and easier to read than the more detailed one in the support study.

Approach to Evaluation questions and sub-questions on effectiveness			
			implementation has improved throughout the appraisal period was addressed under EQ1e.
EQ1c. What policy mechanisms are used to implement the PPP in EU policies?	The PPP is consistently applied between policy instruments.	- Percentage of legislation applying PPP via the following instruments: command and control, market-based instruments, voluntary actions - Percentage of cost categories where the PPP is applied via the following instruments: command and control, market-based instruments, voluntary actions	Analysis was grouped by 8 th EAP priority objective and policy area to identify the different policy mechanisms used to internalise costs for a) prevention and control b) administrative measures c) environmental damage or externalities. Policy mechanisms were grouped by standard typology as regards command and control, market-based instruments, soft regulation, education and information. Conclusions were drawn for the common policy mechanisms used to apply the PPP for each cost category. This categorisation is referred to in analysis for EQ2b to assess how the different delivery mechanisms contribute to environmental protection and the improvement of the environment.
EQ1d. To what extent are costs of pollution met by polluters?	The PPP is consistently applied between economic sectors so that costs of pollution are internalised.	- Share of environmental taxes in total tax revenues¹⁵⁸ - Share of environmental taxes (additional detail to 8th EAP headline indicator will be extracted from Eurostat, [ENV_AC_TAX]) for energy relative to fossil fuel subsidies¹⁵⁹ - Share of environmental taxes relative to environmental protection expenditure¹⁶⁰	Environmental taxes and subsidies were reviewed to assess the extent to which costs of pollution are being met by polluters. This includes qualitative analysis based on existing sectoral assessments (including sectoral perspective of how costs are internalised) and quantitative analysis relating to 8th EAP headline indicators for enabling conditions, including for environmental taxes and subsidies as measure of degree of internalisation of environmental damage. Note that the 8th EAP headline indicator for environmental protection expenditure includes activities beyond clean up actions (e.g. R&D)¹⁶¹. The extent to which the reporting obligation to publish non-financial information for the amount of capital expenditure (CapEx) or operating expenditure (OpEx) associated with taxonomy-aligned activities can strengthen understanding for how costs are internalised will be reviewed (Regulation (EU) 2020/852)¹⁶². The purpose was to establish what insight reporting obligations give for understanding the extent to which costs are internalised for a) prevention and control b) administrative measures c)

¹⁵⁸ EEA (2023), [Share of environmental taxes in total tax revenues](#).

¹⁵⁹ EEA (2023), [Fossil fuel subsidies](#).

¹⁶⁰ EEA (2023), [Environmental protection expenditure](#). If needed, additional detail available via Eurostat [ENV_ESST_GG] for individual environmental activities include (1) protection of air and climate, protection and remediation of soil, groundwater and surface water, noise; (2) wastewater management; (3) waste management; (4) protection of biodiversity; (5) environmental research; (6) resource management; (7) management of waters; (8) management of forest resources; (9) management of energy resources; (10) management of minerals; (11) research and development for resource

¹⁶¹ Eurostat, [Eurostat EEEA technical note \(2018\) - Secondary materials in European MFA-RME \(europa.eu\)](#)

¹⁶² Article 8 of [Regulation \(EU\) 2020/852](#).

Approach to Evaluation questions and sub-questions on effectiveness			
			environmental damage or externalities. NB the first year of reporting was 2023 and data is not available to inform analysis. The analysis was based on review of the policy. The focus of the analysis was the current implementation, reviewing policies as adopted in 2023. The extent to which implementation has improved throughout the appraisal period was addressed under EQ1e.
EQ1e. Has implementation of PPP improved over time?	Implementation of the PPP has improved over time across EU policies.	• Implementation progress in pieces of legislation (Percentage of legislation with legal reference to PPP in recitals, and/or provisions; Percentage of legislation with policy mechanisms that apply the PPP by year of introduction) • Change in environmental subsidies (2014 – 2020) • Change in environmental taxes (2014 – 2021) • Change in costs from perspective of polluting sectors	Analysis was grouped by 8th EAP priority objectives and policy area to first conclude on how policies have implemented the PPP over time throughout the appraisal period (2014-2024) as regards the following changes in policy mechanisms used to apply the PPP. The analysis first assessed changes in references to the PPP in legislation. It reviewed whether the revision has led to changes in the policy mechanisms used to internalise associated costs of pollution, and, whether the revision has influenced where Member States have a significant degree of choice in how they implement the PPP. Interpretation of the OECD's definition of the PPP has evolved as the principle has been implemented, in terms of the types of cost it applies to. The extent to which this is reflected in policy mechanisms was reviewed as part of this analysis. Second, the analysis established whether there are any forward-looking revisions that may influence the way the PPP is referenced in policy and/or applied in policy mechanisms. For this analysis, policy revisions were grouped as follows to reflect the degree of uncertainty in the way the revision may affect the way the PPP is applied: • Policy revisions entered into force in the year 2023 • Policy revisions will be adopted in the appraisal period (where a political agreement has been reached for a revision and entry into force is planned for the year 2023 or 2024) • Planned policy revisions in the appraisal period (where a proposal has been published and negotiations are ongoing) Third, the analysis assessed how the internalisation of costs has improved over time with respect to environmental taxes and subsidies, and sectoral assessments (including sectoral perspective of how costs are internalised). Conclusions were drawn for how the gaps and inconsistencies in the application of the PPP have evolved by policy area (in terms of EU policies)

Approach to Evaluation questions and sub-questions on effectiveness			
			and with respect to national environmental taxes and subsidies), and including a forward looking element regarding planned revisions and how these may address gaps and inconsistencies.
EQ2 The extent to which the PPP is effective in delivering efficient environmental improvements.			
EQ2a. To what extent has the PPP contributed to the reduction of pollution?	By putting a price on pollution, the PPP is contributing to achieving the six priority objectives of the 8th EAP.	• 8th EAP headline indicators for pollution trends and associated damage costs • Rate of internalisation by comparing national expenditure on environmental protection with associated damage costs	Environmental pollution trends are presented for each of the 8th EAP headline indicators used to describe progress towards achieving its priority objectives.¹⁶³ This is accompanied by information on associated damage costs where available. With reference to findings for EQ1, the analysis compared environmental trends and associated damage costs with how the PPP is applied to EU policy throughout the appraisal period to conclude on whether by putting a price on pollution, the PPP has positively influenced broader pollution trends and associated costs of pollution and the extent to which EU policy is a contributing factor.
EQ2b. How do policy mechanisms used to apply the PPP provide environmental protection and contribute to the improvement of the environment?	The PPP is effectively implemented in EU policies across all the mechanisms used to implement the PPP.	• Percentage of legislation applying PPP via the following instruments: command and control, market-based instruments, voluntary actions, budget programmes, other • Percentage of cost categories where the PPP is applied via the following instruments: command and control, market-based instruments, voluntary actions, budget programmes, other • 8th EAP headline indicators for pollution trends • Lessons learned to implementation (success factors and weaknesses)	Analysis was grouped by 8th EAP priority objective and policy area to conclude on the effectiveness of the different policy mechanisms identified for EQ1.c to apply the PPP and provide environmental protection and contribute to the improvement of the environment. Based on existing policy Evaluations, the analysis established what evidence there is that the policy mechanisms are contributing to environmental protection and the improvement of the environment (framed by 8th EAP priority objectives), and that costs of compliance are incurred by the polluter. Analysis assessed the extent to which the design of policy mechanisms is adequate in view of the problem of pollution i.e. whether the price placed on pollution via the PPP is adequate, and identify areas for improvement (e.g. whether penalties are adequate to act as disincentive). Conclusions summarise lessons learned for the way the PPP is effectively implemented in EU policies as regards success factors and weaknesses. Policy mechanisms are grouped by standard typology as regards command and control, market-based instruments, soft regulation, education and information.
EQ3. Any factors limiting the effective application of the PPP.			

¹⁶³ EEA, [Live versions of 8th EAP headline indicators](#)

Approach to Evaluation questions and sub-questions on effectiveness			
EQ3a. To what extent are EHS conflicting with the effective application of the PPP?	Polluters are not benefiting from EHS that promote pollution.	• Level of fossil fuel support and other energy subsidies harmful to the environment • Level of non-energy EHS • By 8th EAP priority objective, pollution trends	Analysis is grouped by 8 th EAP priority objective and policy area. The purpose of this analysis is to assess the specific role played by EHS as an external factor influencing the expected effects of the PPP. First, the analysis concluded on the value of EHS among national expenditure (EU funds do not support EHS). Second, the analysis reviewed the extent to which EHS are affecting the price placed on pollution and the extent to which they are addressing national limitations (e.g. competitiveness and/or capacity and/or fairness concerns). Conclusions were drawn for whether EHS have implications for how effectively the PPP is positively influencing broader pollution trends (i.e. where quantifiable, the extent to which EHS are having a negative impact on wider environmental trends (EQ2a)), and whether the influence is justifiable in view of the national limitations identified.
EQ3b. To what extent are EU funds and State aid rules used to cover costs for environmental protection?	Polluters are not benefiting from EU subsidies to cover costs associated with: • Pollution prevention and control • Remedying damage caused by allowable residual pollution • Remedying damage caused by accidental pollution	• EU subsidies (EUR) • Actions subsidised by EU funds • Beneficiaries awarded EU funds	Analysis is grouped by 8 th EAP priority objective and policy area. The purpose of this analysis is to assess the specific role played by EU funds and State aid rules as an external factor influencing the expected effects of the PPP. Policies in scope are Cohesion Policy Funds, CAP, Horizon Europe, LIFE+, InvestEU, RRF and State Aid Rules. Clean up actions are defined as structural investments and rural development schemes. Research and development is not defined as a clean-up action. First, the analysis defined in more detail the specific types of clean up action receiving EU funds. Second, the analysis concluded on the value of EU funds contributing to clean up actions and the extent that EU or national limitations require/ justify financial intervention. Limitations are identified via policy Evaluations or Impact Assessments as regards challenges in implementing policy, as well as project detail for select examples to understand what action on the ground is occurring compared to headline indicator used to report progress at EU fund level. Third, the analysis reviewed the extent to which EU funds are affecting the price placed on pollution and the extent to which they are addressing national limitations (e.g. competitiveness and/or capacity and/or fairness concerns).
EQ3c. Are there any unintended impacts?	Risk of unintended impacts are monitored and policy mechanisms to implement the PPP are reviewed and amended as appropriate to minimise potential adverse effects and/ or optimise potential synergies.	• By policy area, unintended impacts contributing to the price put on pollution	Analysis was grouped by 8 th EAP priority objective and policy area to first identify what unintended effects may be occurring as a result of the way the PPP is applied. E.g. Where the remediation costs of environmental damage exceed an operator's assets, in case of insolvency, and the operator is unable to complete the remedial action and financial security instruments and markets are used to enable operators to cover their responsibilities. Second was to analyse the extent to which these unintended effects are influencing the price placed on pollution.

Approach to Evaluation questions and sub-questions on effectiveness			
EQ3d. What is the impact on competitiveness (within the EU and compared to third countries)?	Sectoral competitiveness is not hindered by implementation of the PPP and the price placed on pollution.	• Productivity growth (labour and capital) • Technological development and innovation • Access to markets • Market shares in international markets	Analysis was grouped by 8 th EAP priority objective and policy area. Analysis established whether the implementation of the PPP and the price placed on pollution has affected competitiveness for economic activity. Quantitative data were compiled to describe the sectoral competitiveness, and expert judgement were applied to assess the extent to which the price placed on pollution is impacting on the indicators selected was evaluated in qualitative terms.

Approach to Evaluation questions and sub-questions on efficiency			
Sub-questions	Assessment criteria	Indicators	Focus of Evaluation analysis
EQ4. The extent to which the PPP is fair and consistent with a just transition including how it affects different stakeholder groups, including vulnerable groups.			
EQ4a. What have been the costs of the PPP (overall and between different stakeholder groups)?	The majority of compliance and administrative costs incurred by the PPP are borne by the economic operator responsible for the pollution. Costs incurred by national competent authorities and the European Commission are comparatively minor.	Indicators on the following and who bears the costs: • Costs of pollution prevention and control (ranges for policy areas) • Costs of damage (including damage caused by allowable residual pollution and accidental pollution) (quantitative where possible and qualitative where not) – sometimes called the costs of non-action • Costs of environmental taxes¹⁶⁴ • Costs of administrative measures for policy instruments used to implement the PPP.	Cost data was compiled for the policy mechanisms identified as applying the PPP (EQ1). Where available, compliance costs were gathered for EU policy mechanisms to address prevention and control costs, and costs of environmental damage or externalities, and costs of environmental taxes. Administrative costs were gathered for administrative measures used to apply the PPP. Cost data were compiled for two stakeholder categories (economic operator, national competent authorities and the European Commission, where relevant). NB the majority of policy mechanisms identified to apply the PPP are targeted to the economic operator. Information was extracted from existing policy. Evaluation, or Impact Assessment. Ranges were used to present the costs by type of cost, by stakeholder category and by policy area. In the absence of a policy Evaluation or Impact Assessment, the estimated costs were included in the range by policy area together with a description of assumptions made and uncertainties. Estimates are based on costs for comparative policy mechanisms in the policy area, or in the absence of data, in other policy areas. Comparisons were made on the type of legal act used, the type of policy mechanism used, and synergies with other related policy mechanisms (where cost savings are possible).
EQ4b. Are the costs of the PPP fair and consistent with a just transition?	The PPP is contributing to the transition towards a climate-neutral economy without	• Costs incurred by the most carbon-intensive regions or those with the most people	The analysis established the extent to which the costs of applying the PPP are fair and consistent with a just transition towards a climate-neutral economy. It recognised that the transition entails a wider social, economic and environmental impact for those

¹⁶⁴ EEA (2023), [Share of environmental taxes in total tax revenues](#).

Approach to Evaluation questions and sub-questions on efficiency																			
	significant wider social, economic and environmental impact for those regions that rely heavily on fossil fuels for energy use - especially coal, lignite, peat and oil shale - or greenhouse gas intensive industries.	working in fossil fuels, compared to EU average.	regions that rely heavily on fossil fuels for energy use - especially coal, lignite, peat and oil shale - or greenhouse gas intensive industries, and that there is a need for a fair and just transition for these regions. To establish whether the costs of the PPP are fair and consistent in this way, the analysis identified the extent to which costs of the PPP (as identified for EQ4a) were incurred by the most carbon-intensive regions (aligned with the just transition mechanism performance indicators) or those with the most people working in fossil fuels. Based on the evidence compiled, conclusions were drawn for whether the costs of the PPP are fair and consistent with a just transition.																
EQ4c. How do the costs incurred compare to the benefits?	Benefits exceed costs (monetary and non-monetary) associated with the implementation of the PPP across all stakeholder groups.	- Costs of applying the PPP (EQ4a) - Benefits of applying the PPP (EQ2a)	Costs were presented in ranges by policy area (EQ4a). Benefits include a qualitative description with quantitative data where available (EQ2a). To enable systematic comparison, the following qualitative rating was applied to the costs and the description of benefits (separate rating for costs and for benefits): <table><tr><td>++</td><td>Significant direct positive impact</td></tr><tr><td>+</td><td>Small direct positive impact</td></tr><tr><td>(+)</td><td>Indirect positive impact</td></tr><tr><td>+/-</td><td>Both direct positive and negative impacts, and balance depends on how implemented</td></tr><tr><td>0</td><td>No impact or only very limited impacts</td></tr><tr><td>(-)</td><td>Indirect negative impact</td></tr><tr><td>-</td><td>Small direct negative impact</td></tr><tr><td>--</td><td>Significant direct negative impact</td></tr></table> Conclusions were drawn for how the costs and benefits compare, identifying the extent to which costs are comparable with the benefits identified.	++	Significant direct positive impact	+	Small direct positive impact	(+)	Indirect positive impact	+/-	Both direct positive and negative impacts, and balance depends on how implemented	0	No impact or only very limited impacts	(-)	Indirect negative impact	-	Small direct negative impact	--	Significant direct negative impact
++	Significant direct positive impact																		
+	Small direct positive impact																		
(+)	Indirect positive impact																		
+/-	Both direct positive and negative impacts, and balance depends on how implemented																		
0	No impact or only very limited impacts																		
(-)	Indirect negative impact																		
-	Small direct negative impact																		
--	Significant direct negative impact																		
EQ4d. Could measures have been taken to improve the fairness of the implementation?	Lessons learned from implementation of the PPP in all EU policies are applied across the board. Opportunities for simplifying implementation of the PPP are realised.	Lessons learned for implementation (strengths and weaknesses)	Costs and benefits compiled for EQ4c were reviewed to conclude on how the costs and benefits compare for the most carbon-intensive regions (EQ4b). The factors that play a role in determining the significance of impacts for the most carbon-intensive sectors were reviewed to identify lessons learned for the way the PPP is implemented in EU policies as regards success factors and weaknesses.																
EQ5. Whether (and if so, why) there are significant differences in the (efficient) application of the PPP across EU policies and between Member States.																			
EQ5a. Are there significant differences in implementation between	Implementation of the PPP is consistent between policy areas and Member States.	Percentage of legislation where Member States have a significant degree of	Differences in implementation of the PPP by Member State were reviewed in terms of how the PPP is applied (EQ1b) and environmental taxes and subsidies (EQ1d) (to assess the extent to which costs are internalised and whether there are significant																

Approach to Evaluation questions and sub-questions on efficiency			
policy areas and Member States affecting efficiency?		choice in how they implement the PPP. (EQ1b) - Costs of environmental taxes (EQ1d) - Environmental protection expenditure (EQ1d) - Comparison of costs and benefits (EQ4c)	differences between Member States). Differences between Member States were not systematically reviewed, rather analysis was targeted to draw out key drivers of consistency and inconsistency between Member States. As a measure of efficiency, the extent to which the costs and benefits of applying the PPP (EQ4c) vary by Member State was examined. Conclusions were drawn for the way approaches to implementing the PPP impact on the range of costs and benefits between policy areas and Member States.
EQ5b. If so, what are the main reasons for this?	Significant differences in implementation are relative to the scale of pollution.	Lessons learned for implementation (strengths and weaknesses)	If differences were noted by Member State (compared to the wider EU economy) (EQ5a), the factors that play a role in determining the significance of impacts were reviewed to identify lessons learned for the way the PPP is implemented in EU policies as regards success factors and weaknesses.
EQ6. Whether policy could be made more efficient via recourse to the PPP.			
EQ6a. Is there scope for improvements in efficiency via simplification and/ or burden reduction?	The PPP is implemented with appropriate level of administrative burden relative to the benefits achieved.	Comparison of costs and benefits (EQ4c)	Costs and benefits compiled for EQ4c were reviewed together with the different Member State efficiency in implementing the PPP (EQ5) to determine which factors play a role in determining the significance of differences in efficiency identified. Factors with potential to influence the efficiency were in the first instance identified from lessons learned for implementation (EQ2b and EQ5b) and factors limiting the effective application of the PPP (EQ3). Conclusions were drawn on lessons learned for the way the PPP is efficiently implemented in EU policies as regards success factors and weaknesses related to simplification and/ or burden reduction. Lessons learned took into account the Commission's initiative of One-In-One-Out, which seeks to minimize the impact on producers and users (e.g. polluters).

Approach to Evaluation questions and sub-questions on relevance			
Sub-questions	Assessment criteria	Indicators	Focus of Evaluation analysis
EQ7. Whether the PPP is able to respond to current, new or emerging environmental issues and changes in technology.			
EQ7a. To what extent are the objectives of the PPP appropriate for helping internalise pollution costs in the appraisal period?	Risk of pollution and environmental damage remains significant	- Extent to which pollution costs are internalised (linked to EQ 1 analysis) - Member State authority perception on relevance of EU policy incentives for producers and consumers to address pollution	The analysis examined the rationale, needs and objectives behind the PPP, starting from the intervention logic. Relevant pollution cost categories and the extent to which they exist as externalities were investigated to determine the relevance of the principle in relation to the needs.

Approach to Evaluation questions and sub-questions on relevance			
EQ7b. To what extent are the objectives of the PPP appropriate for internalising continuing, new or emerging pollution costs and incentivising changes in technology?	Risk of pollution and environmental damage remains significant	- Expect development of pollution costs - Extent of innovation across Member State belonging to different categories (technological, regulatory, financial, etc.) - Stakeholder assessment on incentive provided by the PPP to innovate	The analysis investigated how pollution costs were expected to evolve and what impact this could have on the level of internalisation of these costs. Strengths and weaknesses of design were assessed by analysing whether the PPP framework takes note of new and emerging environmental and technological challenges, and adequate response mechanisms. In addition, it was evaluated whether relevant policies are conducive to producing innovative and adequate responses not foreseen at their design stage they help close the investment gap.
EQ8. The extent to which the PPP is consistent with the needs of the EU as set out in the European Green Deal			
EQ8a. To what extent are the scope and objectives of the PPP relevant to the needs of the EU as set out in the EGD?	The scope and objectives of the PPP are relevant to address the needs as set out in the EGD. In the absence of the PPP, the needs set out in the EGD would need additional measures to be addressed.	Extent to which PPP objectives contribute to the attainment of the EGD headline targets and relevant EU quantitative or qualitative targets, e.g. through Fit for 55, 8th EAP, etc represented by the 8th EAP priority objectives.	Analysis evaluated whether the objectives (as defined in the intervention logic) are relevant to the EGD's headline targets. Strengths and weaknesses of the PPP design were assessed by investigating whether the PPP's objectives and its implementing mechanisms are relevant to meet the targets set out in the EGD. To the extent relevant, the analysis examined whether there are EU objectives potentially conflicting with the logic of the PPP.

Approach to Evaluation questions and sub-questions on coherence			
Sub-questions	Assessment criteria	Indicators	Focus of Evaluation analysis
EQ9. The extent to which the application of the PPP is consistent and coherent within the EU, across policies impacting on environmental protection and the improvement of the quality of the environment.			
EQ9a. Is the PPP coherently and consistently applied across policies contributing to the 8th EAP priority objectives at EU level and Member State level?	The PPP is coherently and consistently applied across EU policies contributing to the 8th EAP priority objectives, with minimal overlaps or contradictions. The PPP is coherently and consistently applied within and across Member States through policies contributing to the 8 th EAP priority objectives, with minimal inconsistencies/differences in implementation.	- Numbers of overlaps, contradictions/inconsistencies and/or synergies of PPP application identified across policies contributing to the 8th EAP priority objectives at EU level - Numbers of overlaps, contradictions/inconsistencies and/or synergies of PPP application identified across Member States policies contributing to the 8th EAP priority objectives	Analysis at EU level looked at how well the PPP works across the different policies, policy areas and 8th EAP priority objectives with a view of identifying synergies and/or tensions potentially evident in overlapping or contradictory objectives/approaches. Furthermore, the analysis focussed on how well the policies on EU level work with those at Member States level and if the PPP is applied consistently within and between Member States while looking for inconsistencies/differences in approach and potential effect on the capacity to address the three categories of costs.
EQ10. The extent to which the application of the PPP is consistent and coherent outside the EU.			

Approach to Evaluation questions and sub-questions on coherence			
EQ10a What environmental costs are being triggered outside the EU by the EU economic activity and to what extent are those being addressed by EU policies through application of the PPP?	Environmental costs in third countries triggered by EU economic activity are adequately addressed by EU policies through application of the PPP.	- Selected key environmental impacts outside the EU as a result of EU economic activity and whether these are being addressed by EU policies through application of the PPP - Extent to which the PPP is referred to in Trade and Sustainable Development chapters of EU trade agreements - Adequacy of accompanying sustainability Impact Assessment in trade negotiations	The analysis focussed on the extent to which trade agreements adhere to the PPP. Information was initially identified from evidence reviews, the State of play (Annex 7), rules on Trade and Sustainable Development (TSD) in selected limited number of EU trade agreements, Sustainability Impact Assessments (SIAs), supplemented by targeted consultations. Information is mainly qualitative.
EQ10b Is the PPP applied outside the EU, and is this supported by EU interventions?	Green taxation instruments are implemented in selected third countries and are effectively internalising the external costs of pollution and/or incentivising pollution reduction. The European Commission is engaged in international policy dialogue on green taxation with third countries in international fora and through EU in-country delegations.	- Types and extent of application of environmental taxes, charges and fees in selected third countries - Evidence of green taxation instruments effectively internalising external costs of pollution - Evidence of EU-led initiatives in international fora and interventions in developing countries aimed at strengthening the PPP application in third countries	The analysis focused on green taxation in selected non-OECD countries and how effectively various green taxation instruments in those countries internalise the external costs of pollution or incentivise pollution reduction. Additionally various forms of EU interventions in developing countries aimed at supporting internalisation of external costs of pollution were examined. This includes the European Commission's engagement in international policy dialogues within international organisations and platforms as well as EU in-country delegations' activities. European Commission Report on green taxation in non-OECD countries¹⁶⁵ provided the principal source of information, supplemented by targeted consultation as well as any other relevant sources identified through these.

¹⁶⁵ Report on Green taxation in non-OECD countries: A review of experience and lessons learned, Directorate-General for Environment (2023). The report underlines that environmental taxes have the potential to deliver multiple benefits by addressing the economic drivers behind the environmental challenges facing non-OECD countries, enhancing efficient use of resources, and mobilizing revenue. This report collates the results of a literature review in non-OECD countries, focusing on environmental taxes that are not carbon or energy taxes. The report also includes the results of five “deep dives” to examine five environmental tax instruments in depth in Ghana, Guyana, Morocco, Vietnam and Zambia.

Approach to Evaluation questions and sub-questions on EU added value			
Sub-questions	Assessment criteria	Indicators	Focus of Evaluation analysis
EQ11. Is the current split of responsibilities between the EU and Member States for the PPP the right split?			
EQ11a. In the absence of EU level action, to what extent would Member States be able to apply the PPP?	Internalising associated costs of pollution can be achieved by national-level intervention	Challenges in applying the PPP that are not addressed by national level intervention	Analysis is presented by priority objective and policy area. The review first summarised the extent to which the internalisation of pollution costs is being addressed by EU intervention compared to Member State intervention (EQ1b). The analysis then established whether Member States are facing specific challenges when applying the PPP to ensure costs of pollution prevention and control, costs of administrative measures, costs of environmental damage or externalities are internalised. Challenges were reviewed to establish the extent to which they are driven by a need for (further) EU-intervention, thus providing a point of comparison against which progress in the absence of EU level action can be evaluated. Examples of challenges may include transboundary pollution, residual pollution, legacy pollution, legal clarity, among others. To respond to this question, the analysis for EQ2 as regards pollution trends and associated costs by priority objective was analysed in view of the role Member State authorities have for determining how the PPP is implemented and whether these differences help address the challenges or further exacerbate them.
EQ 11b. Were there clear benefits from EU level action?	Intervention at EU level facilitates a uniform implementation of the PPP and ensures a fair playing field between Member States and across sectors	Success factors for applying the PPP as a result of EU intervention	The analysis explored the extent to which EU policy is helping to address the challenges identified by EQ11a. For each policy area, the analysis identified what are the benefits from EU intervention compared to national intervention (based on the EQ11a review of national implementation). Where clear benefits were identified, the analysis reviewed the specific features of the EU intervention to understand what specific characteristics of the EU policy intervention is contributing to the benefits identified. E.g. whether explicit reference to the PPP in the provisions of a policy is a success factor contributing to the benefits identified. Gathering evidence to understand what features are delivering the benefits identified fed into the lessons learned (EQ12b).
EQ12. Do current national and EU competences and Treaty legal bases support the implementation of the PPP in environmental policy?			
EQ12a. Is the current split leading to the most effective and efficient implementation?	EU level action and national level action is contributing to the application of the PPP to ensure costs of pollution are effectively and efficiently internalised.	Lessons learned in EU and national levels of implementation (success factors and weaknesses).	Analysis is presented by priority objective and policy area. Based on the split of responsibilities between the EU and Member States for determining how the PPP is implemented (EQ11b), the analysis assessed the extent to which the split is appropriate in view of the progress towards internalising costs of pollution (with reference to EQ2 analysis) and the extent to which progress is being efficiently achieved (with reference to EQ5 analysis). Conclusions were drawn on lessons learned in implementation to identify where EU level action is most effective and efficient in applying the PPP compared to national level action.
EQ12b. How could the current split have been improved to ensure the	Lessons learned from implementation of the PPP in all EU and national policies are	Drivers of success factors and weaknesses in EU and national levels of implementation.	Building on analysis undertaken under EQ11b and EQ12a, analysis was conducted by priority objective and policy area to identify the drivers of successes and shortcomings in the implementation of the PPP through EU-level and national interventions. How success factors can

Approach to Evaluation questions and sub-questions on EU added value			
most effective and efficient implementation?	applied to ensure best possible implementation.		be more broadly applied was considered by policy area, and the split of EU-level and national intervention by policy area was classified according to whether: • There is scope for EU-level action where currently there is none to improve effectiveness and efficiency in the implementation of the PPP; • There is room for further EU-level intervention beyond existing EU-interventions to improve effectiveness and efficiency. This may include introducing the PPP as a specific item for consideration in the EU's Better Regulation agenda; and • EU-level action has not delivered benefits beyond those that would have likely been achieved through national interventions alone.

Annex 4. Overview of benefits and costs

Table: Overview of costs and benefits identified in the Fitness Check

	Citizens/Consumers		Businesses		Administrations		Society	
	Quantitative	Comment	Quantitative	Comment	Quantitative	Comment	Quantitative	Comment
Description:								
Direct costs: Costs of prevention and control and administrative costs (these are costs that the polluter pays, plus the costs of making the polluter pay ie overhead costs – this second category is likely to be a small fraction of the total)	Recurrent	EUR 61 billion per annum	Costs for this line are taken from ESTAT estimates of national expenditure on environmental protection ¹⁶⁶ . This is the best available estimate but needs to be treated with caution. Data for consumers, business and administrations is for 2023. Administrative costs includes costs of ensuring that the PPP is applied (eg costs of identifying the polluter for the purpose of applying the PPP, separate from the purpose of implementing the legislation)	EUR 186 billion per annum		EUR 110 billion per annum	General government and non-profit institutions serving households (largely recouped through charges to polluters)	Overall expenditure (best estimate) of EUR 357 billion per annum (sum of other three columns)
Costs of environmental damage (these are costs that the polluter should pay for, however, they are only partially internalised through environmental taxes)	Recurrent						-Estimated external cost for industry between EUR 268 and 428 billion per annum ¹⁶⁷ . -External environmental costs of transport of EUR 400 billion per annum ¹⁶⁸ . -Soil degradation costs of EUR 16.5 to 68.8 billion per annum , excluding the costs of soil contamination. Soil contamination is more uncertain and increases the range by EUR 3.4 to 292.4 billion per annum ¹⁶⁹ .	Estimates for environmental damage costs are approximate (see Section 3). They are not comprehensive and are subject to methodological challenges of monetary valuation. Nevertheless, they provide an indication of scale.

¹⁶⁶ [Environmental protection expenditure accounts - Statistics Explained \(europa.eu\)](#)

¹⁶⁷ Data reflect facilities in the European Industrial Emissions Portal (2012-2021). [Technical note: Estimating the external costs of industrial air pollution-Trends 2012-2021](#).

¹⁶⁸ [SWD\(2020\)331 final](#).

¹⁶⁹ [SWD/2023/417 final](#).

Environmental taxes (these are a transfer payment and not an actual resource cost, so payments equal receipts)	Recurrent	Payments of EUR 321 billion per annum (no split available between households and corporations) Values for this line are taken from ESTAT estimates of environmental taxes by Member States ¹⁷⁰ . Data are for 2022.	Receipts of EUR 321 billion per annum	Government collects this as revenue, paid by corporations and households		
Environmentally harmful subsidies (these are a transfer payment and not an actual resource cost, so subsidies equal receipts)	Recurrent	Receipts of EUR 123 billion per annum (no split available between households and corporations) Source is reporting under the Governance Regulation ¹⁷¹	Subsidies provided of EUR 123 billion per annum	Government subsidies to corporations and households (estimate covers just fossil fuel subsidies)		
Benefits		- Costs of prevention and control and administrative costs met by polluters do not need to be funded by society. - Price signals lead to innovation and efficient environmental policy (so reduced costs of obtaining a given environmental objective). Estimates of such efficiency gains are provided in Section 4.1.2 but are difficult to quantify. Nevertheless, they are considerable and some legal instruments exist solely to provide such incentives. - The overhead costs of making the polluter pay are considered through specific evaluations and Impact Assessments and have been considered proportionate in all of those cases (in the sense that the benefits of action exceed the costs). - Reduced pollution leading to a better environment and improved human health. The costs of environmental damage above provide an indication of the significance of such costs, though it is not possible to estimate overall the benefits of environmental policy (though again, specific evaluations and Impact Assessments have considered this). - Contribution to Sustainable Development Goals				

¹⁷⁰ [Environmental tax statistics - detailed analysis - Statistics Explained \(europa.eu\)](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental_tax_statistics) – the revised data are published https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental_tax_statistics (July 2024)

¹⁷¹ [COM/2023/651 final](#)

Annex 5. Stakeholders consultation - Synopsis report

In accordance with the Better Regulation Guidelines, the synopsis report provides an outline of the consultation strategy, consultation activities undertaken, methods and tools used for collecting and analysing the data, stakeholder groups that participated in consultation activities, and the findings of consultation activities.

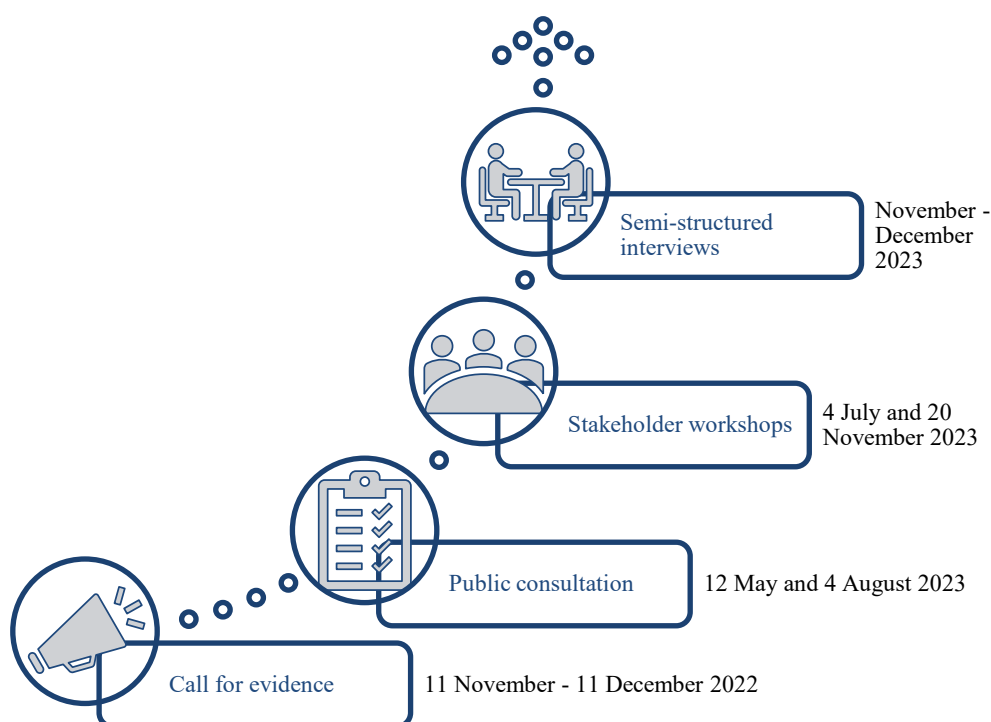
This annex should be regarded solely as an overview of contributions received during the stakeholder consultation activities of the 'polluter pays' principle Fitness Check. It cannot, in any circumstances be regarded as the official position of the Commission or its services. Responses to the consultation activities cannot be considered as a representative sample of the views of the EU population.

Consultation strategy

The Fitness Check considers how well the PPP is applied. This includes looking at a wide range of activities and policies that relate to the environment in terms of their primary objectives (such as climate change, water policy, air policy, waste policy or environmental liability requirements), and sectoral policies in other areas that mainstream and integrate environmental considerations, such as activities in and policies for industry and the circular economy, agriculture, fisheries, energy and transport, to name just a few.

The main **objective** of the stakeholder consultation is to collect information, data, evidence and opinions on the implementation of the 'polluter pays principle' in the EU *acquis*. It included call for evidence, online public consultation, two online stakeholder workshops and semi-structured interviews.

Figure 12: Overview of consultation activities



The following **major stakeholders groups** were identified to support the recruitment of respondents to the public consultation, online workshops and semi-structured interviews:

- **Stakeholders engaged in occupational activities that can produce environmental damage** cover business entities and business associations representing their interests that carry out activities defined in Annex III of the ELD and Annex I of the IED. These stakeholders obtain obligations under the relevant environmental legislation to comply with the PPP principle in terms of prevention and remedy of environmental damage.
- **Public authorities** that are responsible for the implementation and enforcement of the ‘polluter pays principle’ under the different pieces of environmental legislation.
- **Financial security and risk management organisations** that work in the field of risk management related to environmental damage or provide financial security instruments enabling the operators that can produce environmental damage to use financial guarantees to cover their responsibilities.
- **Environmental non-governmental organisations** active in the fields of water, land, air, and habitat protection.
- **International organisations** engaged in developing and implementing international documents and agreements related to liability for environmental damage.
- **EU institutions and agencies** that play an important role in the PPP implementation and enforcement.
- **Research and academia** that conducted studies concerning economic, legal and environmental aspects of the PPP.
- **Citizens** – members of the public (both EU and non-EU citizens) who are interested in the issue of the implementation of the PPP in Europe.

The strategy for compiling the **database of stakeholders** followed the advice of the Better Regulation Guidelines, Tool #52, which recommends considering several criteria for selecting relevant stakeholders: level of interest, nature of impact (direct, indirect, potential), influence and expertise related to the PPP. It should be noted that stakeholders who experience direct impact have more expertise and interest to influence the PPP’s future development than those who are affected indirectly or only under certain conditions.

The stakeholder database covered most comprehensively those **target groups who were directly affected by the PPP** because they have the highest interest in the PPP and have high levels of expertise on the subject.

Methods and tools used for collecting and analysing the data

A **Call for evidence**¹⁷² was followed by a **public consultation**¹⁷³ ‘Polluter Pays Principle – Fitness Check of its application to the environment’ aimed at collecting public views and evidence about the implementation of the PPP in the EU for the Fitness Check, specifically looking at its effectiveness, efficiency, coherence, relevance, and the EU added value of its application. The public consultation was accessible through the EU Survey between 12 May and 4 August 2023.

The questionnaire consisted of 16 questions organised into the following parts:

- An introductory section that collected information about the demographic profile of the respondents,

¹⁷² [Polluter Pays Principle – fitness check of its application to the environment \(europa.eu\)](#)

¹⁷³ [Polluter Pays Principle – fitness check of its application to the environment \(europa.eu\)](#)

- Five thematic sections that gathered opinions about the PPP implementation in the EU,
- A final section where the survey participants submitted general comments and uploaded the supplementary documents.

Two online stakeholder workshops aimed to discuss the state of play in the implementation of the PPP, present and validate the findings, evidence collected and emerging conclusions of the supporting study to the Fitness Check as well as disseminating information about development of the methodology for the identification and reporting of non-energy environmentally harmful subsidies (EHS). The workshops were organised on 4 July and 20 November 2023 and included presentations of the study progress and preliminary findings and thematic discussions with the participants.

Semi-structured interviews with stakeholders involved in the implementation of the PPP aimed to complement the evidence gathered through literature and legislation review as well as other consultation activities with insights on the following:

- the design of the policies and tools for implementing the PPP at the EU level and in the EU Member States.
- the issues of practical implementation of the PPP with a focus on costs and impacts.

The interviews contained 15 questions that were thematically organised in two templates – one focused on the practical implementation issues and the other – on the design of policies. The semi-structured interviews were carried out in November-December 2023.

Quantitative data collected in consultation activities were analysed by using the descriptive **statistics method**. For the interpretation of qualitative data (e.g., open-ended survey questions, position papers, the feedback of semi-structured interviews and workshop discussions) **thematic analysis** – a qualitative method for identifying major patterns and themes in texts was applied.

Stakeholder groups that participated in consultation activities

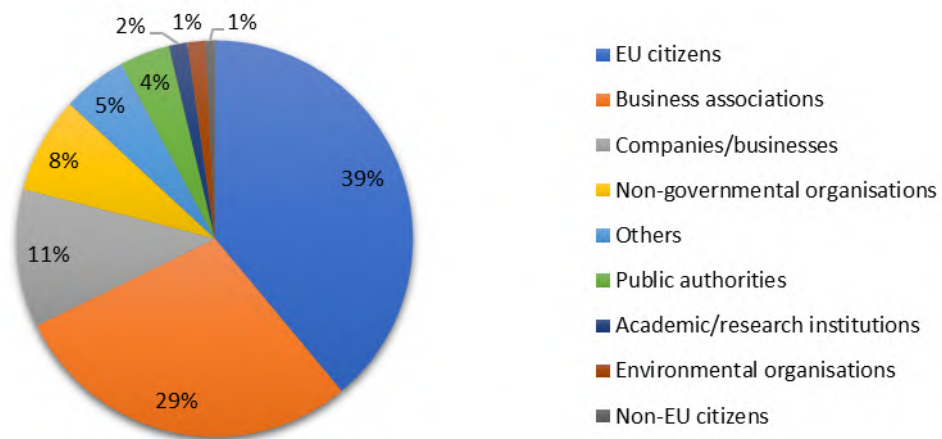
106 stakeholders provided feedback to the **call for evidence**. They represented 19 countries: 17 EU Member States and 2 non-EU countries (Norway and Switzerland). More feedback originated from Belgium (22%, 23), Slovakia (15%, 16), and France (15%, 16). Most stakeholders were EU citizens (40%, 42), business associations (24%, 25) and non-governmental organisations (20%, 21). Fewer responses were received from companies (8, 8%), environmental organisations (4%, 4), public authorities (2%, 2), academic/research organisations (1%, 1) and non-EU citizens (1%, 1). Two stakeholders (2%) categorised themselves as ‘other’ type of respondents.

268 respondents completed the **online public consultation** questionnaire and, excluding one duplicate answer, 267 responses were considered suitable and included in the analysis¹⁷⁴. The respondents represented 27 countries: 95% (253) were from EU Member States, while 5% (14) were from non-EU countries. Six EU countries represented over two-thirds of the responses (68%, 181): Germany (16%, 44), Belgium (13%, 36), Portugal (12%, 31), Italy (9%, 25), France (9%, 23) and Spain (8%, 22).

Most respondents submitted their responses as EU citizens (39%, 104), followed by business associations (29%, 77). Fewer responses were received from companies/businesses (11%, 30), NGOs (8%, 21), others (5%, 14), public authorities (4%, 11), academic/research institutions (1%, 4), environmental organisations (1%, 4) and non-EU citizens (1%, 2). Nearly 80% of respondents represented a business entity (i.e., a company or a business association 40%, 107) or an EU citizen (39%, 104). Organisations (60%, 161) of various sizes participated in the survey.

¹⁷⁴ Two responses were received after the closure of the consultation period; they were not counted in the results of the public consultation but were still taken into account as input for the fitness check.

Figure 13: Respondents by organisation type, N=267



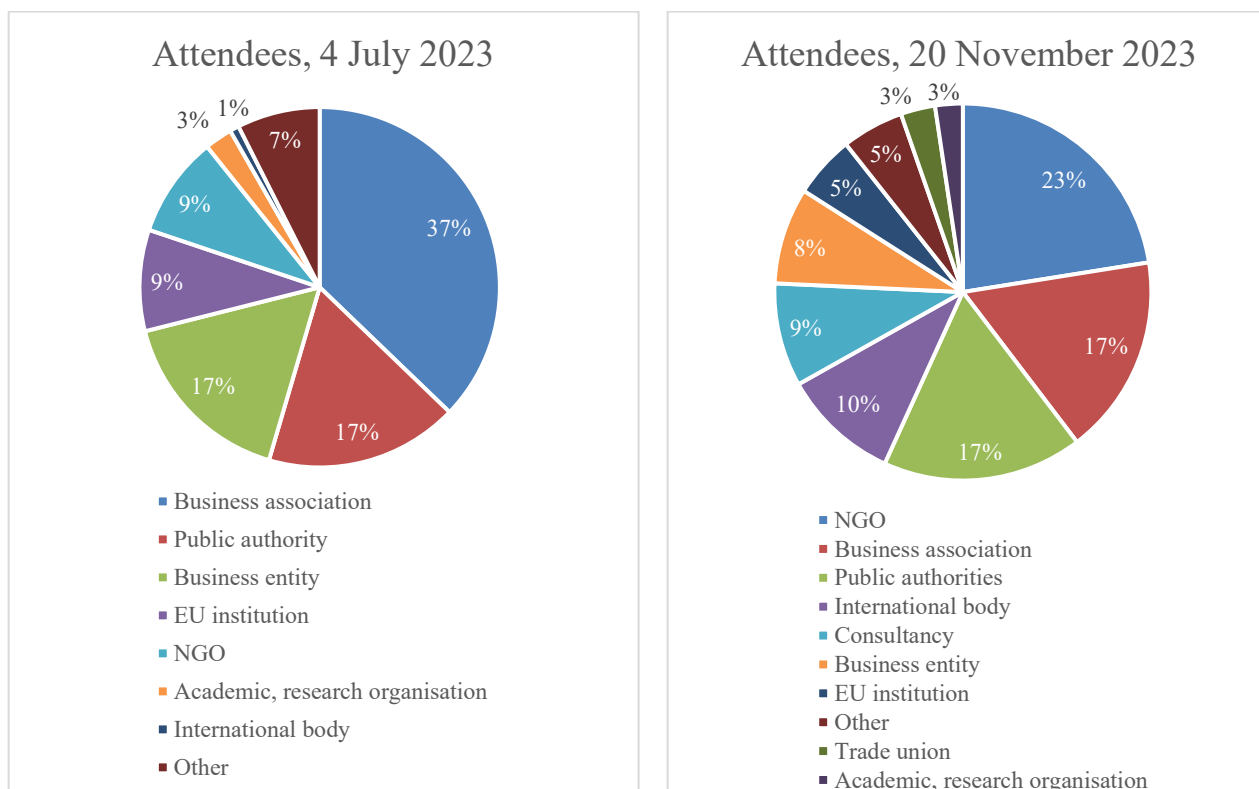
The number of participants representing micro (31%, 50), small (26%, 42) and large (26%, 42) organisations was similar, while fewer medium organisations (17%, 27) took part in the public consultation.

In the online public consultation, a group that comprised $\geq 5\%$ of respondents and shared at least 50% was considered a campaign. Campaigns were reviewed in Excel by assessing responses to the closed and open-ended questions, sorting the responses by the categories of respondents, and identifying potential patterns in the responses. **No campaigns were identified in the online public consultation.**

A total of 194 people registered, and 121 participants (62% of registrants) participated in the **first online workshop** held on 4 July 2023. The participants represented 22 countries including 19 EU Member States, and 3 non-EU countries: the UK, Norway and Iraq. Many participants represented Germany (11%, 13), Austria (7%, 8), and France (5%, 6). Attendees were from competent authorities, EU institutions, industry and trade associations, private companies, non-governmental organisations, researchers and members of the study team. Many attendees were from business associations (37%, 44), public authorities (17%, 21) and business companies (17%, 20).

The **second online workshop** held on 20 November 2023 attracted the attention of 253 registrants and 169 participants (67% of registrants). A total of 22 countries were represented during the workshop. This number included 20 EU Member States, and 2 non-EU countries: the UK and Norway. Many respondents were from Germany (9%, 15), the Netherlands (8%, 13), and the UK (6%, 10). Attendees were from competent authorities, EU institutions, international bodies, industry and trade associations, private companies, non-governmental organisations, researchers, consultants, and members of the study team. Three attendees did not provide their affiliation and country of operation and were not included in the detailed workshop attendance statistics. Many respondents were from non-governmental organisations (23%, 38), business associations (17%, 29), and public authorities (17%, 29).

Figure 14: Attendees of online workshops by organisation type



Twenty-nine interviews with 39 interviewees (some of the interviews were held with 2 or three respondents) were carried out in November-December 2023. In addition, one stakeholder was consulted on specific questions related to the collection of evidence without using the semi-structured interview template.

Many interviewees represented organisations of a European focus, i.e., European business associations, non-governmental organisations, research organisations and think . Few organisations were international and sixteen national interviewees from the following countries participated in the conversations: France (5), Germany (4), Austria (2), Spain (1), Denmark (1), the Netherlands (1), Lithuania (1), the UK (1).

Organisations that took part in the interviews in many cases were business entities, i.e., business associations or companies (17%, 44 respondents), non-governmental organisations (11%, 28 respondents) and academic, research organisations and think tanks (18%, 7 respondents). Few interviewees represented public authorities, European institutions and platforms and networks.

Twelve interview participants sent links to studies, excerpts or translations of documents relevant to the PPP topics after the interviews. This material was reviewed in the context of evidence collection.

Limitations

Several limitations of stakeholder consultation research should be considered in the interpretation of the findings:

- Consultation activities employed a quantitative public consultation survey based on non-probability sampling and qualitative consultations (i.e., stakeholder workshop and interviews). Therefore, the **findings of these consultation activities reflect only the opinion of their participants and cannot be generalised** to the EU population or specific stakeholder groups.

- **There was uneven participation of various organisations and countries in the consultation activities.** Some types of organisations and countries prevailed in certain consultation events.
- Stakeholders represented **specific (but not all potentially relevant) sectors** where the PPP has been implemented. The PPP is a horizontal element of the EU environmental policies and is relevant to multiple sectoral policy areas. The consultation activities captured opinions of some of those sectors in more detail than others.
- The respondents could not **comprehensively answer all questions** due to the broadness and complexity of the PPP topics. The consultation activities contained a wide range of questions covering the design of policies and their implementation on different – EU and national levels, as well as required specific knowledge of the costs not borne by the polluter, legal and non-legal instruments, etc. Therefore, the respondents typically could not answer some questions or give a comprehensive response.

Findings of the call for evidence

The **overall impression** of the feedback is that the PPP is seen as in theory a **good principle** to ensure the green and just transition, but stakeholders ask for improvement regarding its implementation.

One of the most recurring comments was that the polluter is not paying or is paying less than the costs of his pollution. Some stakeholders also stress that currently the PPP leads to **environmental unfairness** because rich people or big enterprises can afford polluting, whereas this is not the purpose of the PPP. This opinion appears to mainly refer to market based instruments as the same stakeholders ask for a better implementation strategy that would be accompanied by other instruments (such as quotas and limits).

Respondents to the call for evidence often gave sector-specific comments. Some stakeholders find that the PPP is badly applied when it comes to **plastic pollution**, especially micro plastics. They find that plastic producers and those who put plastic products on the market currently only pay for the emissions during the production while there is insufficient policy to take care of the waste streams in the whole product chain.

A lot of the feedback concerns the **transport sector**, focussing on the internalisation of all key external costs across all transport modes. The lack of internalisation hinders the modal shift and meeting the objectives of the Green Deal. PPP is seen as a key mechanism to manage the traffic demand, boosting the transition to cleaner vehicles and to place the right incentives to mobility.

Another topic mentioned several times is the **diffuse pollution of surface water and sediments**. This is a problem for owners and managers (public or private) of reservoirs and canals. They are disturbed by pollutants emitted upstream which are stored in the reservoir/canal sediments. EU policy is perceived as not making the polluter pay for the environmental damage done by **pervasive litter in the marine environment** and the **ongoing entry of plastic waste into the ocean**.

Many stakeholders indicated that the PPP is not well applied in the **agricultural sector** (especially use of pesticides, GMOs, nitrogen fertilisers, non-essential use of antibiotics).

Many stakeholders found that carbon pricing is very fragmented. In sectors not covered by the ETS carbon pricing varies widely across the Member States. ETS free allowances hinder the application of the PPP. In addition, the EU and Member States are paying polluters through **fossil fuel subsidies (FFS)**. In general, **environmentally harmful subsidies (EHS)** are seen as at odds with PPP.

Stakeholders also commented on the problem of **hidden polluters** for the application of the PPP. Polluters releasing pollution with no current legislation and where it is difficult and costly to prove the polluter in court or that the polluter has no longer the financial strength to pay.

Findings of the public consultation

The respondents were to **various degrees familiar with the PPP**. 85 per cent of respondents (227) indicated that they were familiar with the PPP. When asked about their level of knowledge, 45% (120) of the respondents were familiar with the PPP implementation in various pieces of the EU legislation, while 21% (57) of the respondents were aware of the PPP implementation in at least one piece of the EU environmental legislation. Finally, 22% (59) of respondents were familiar with the implementation of the PPP in the national legislation.

A substantial number of respondents believed that **ensuring the implementation of the PPP is a major priority** (67%, 180) and **that it was important** (22%, 58).

According to many respondents, **market-based/economic instruments** (61%, 162 responses) and **command and control measures** (56%, 150) were sufficiently or fully effective for **preventing/reducing** pollution. A small number of respondents indicated that market-based/economic instruments (18%, 48) and command and control measures (15%, 38) were ineffective or insufficiently effective.

Similarly, over half of the respondents considered **market-based/economic instruments** (54%, 144 responses) and **command and control measures** (53%, 140) sufficiently or fully effective for **remedying** the remaining pollution. For a small number of respondents, market-based/economic instruments (19%, 49) and command and control measures (16%, 44) were ineffective or insufficiently effective.

More than half the respondents distinguished **three very important obstacles** to ensuring that polluters pay for the pollution they are responsible for: lack of political willingness to introduce and enforce implementation of the principle (59%, 157), the price of products and services does not fully reflect (internalise) the environmental damage (externalities) of the products and services' lifecycles (55%, 147) and national authorities fail to enforce environmental legislation and to make the polluters pay (51%, 136). Additionally, the respondents were invited to elaborate on other factors that may have hindered the effective implementation of the PPP and prevented it from meeting its objectives. The **lack of a robust definition of a polluter** was highlighted in multiple comments. This issue prevailed in the responses of business associations and individual business companies. Various respondents, including businesses, public authorities, NGOs and EU citizens, mentioned the **'lack of implementation' of the PPP**, i.e., the lack of a joint/unified approach to the PPP implementation on the EU level, the **national PPP implementation issues**, and **implementation gaps in specific policy areas** (e.g., agriculture, textile, waste management, etc.).

What concerns costs, 61% of the respondents (161) believed that the implementation of the **PPP has not led to disproportionate costs of products and services for EU consumers**. Similarly, 56% of the respondents (149) **completely or mostly disagreed that the PPP implementation caused disproportionate costs in the production of products and provision of services by EU companies**.

However, respondents were more divided on whether the implementation of the PPP caused negative effects on some social groups. A **similar number of respondents indicated that the implementation of the PPP has been to at least a certain extent** (35%, 93 responses as 'Yes' and 'In part') and **has not been** (40%, 107 responses as 'No') **to the detriment of some social groups**.

Over two thirds of the respondents emphasised the full or sufficient PPP's contribution to the following objectives of the Green Deal: **a zero-pollution ambition for a toxic-free environment** (66%, 175), **mobilising industry for a clean and circular economy** (68%, 182) and **preserving and restoring ecosystems and biodiversity** (62%, 167).

The respondents had diverging opinions about the **adequacy of the EU acquis for tackling new of emerging environmental issues and changes in technology**. Forty-two per cent of respondents (112) believed that the implementation of the PPP in the EU acquis is adequate to tackle new or

emerging environmental issues and changes in technology. Twenty-three per cent (62) of respondents thought the implementation of the PPP in the EU acquis was inadequate and 19% (52) were neutral.

Opinions of the respondents varied considering the extent to which the EU PPP requirements were implemented on the national level. Seventy-eight per cent (207 responses) of respondents indicated that their country has implemented the PPP to a limited (51%, 135) or large extent (27%, 72) compared to 6% (15 responses) who thought that their country has not implemented the PPP in its policies at all.

At the end of the questionnaire, the respondents were offered an opportunity to submit general comments and suggestions regarding the Evaluation of the implementation of PPP in the EU legislation. 111 respondents (42%) submitted text to the suggestions and comments field. Of those 13 respondents directed the study team to their position papers or links to relevant academic studies, and several respondents answered that they don't have any more feedback. Main themes in the respondents' feedback included **appropriately identifying and defining the polluter, competitiveness within the EU and with non-EU countries** (mainly raised by business associations and companies), **mechanisms (e.g., environmental taxes, etc.) that could have been used for the PPP implementation, insufficient implementation of the PPP in specific sectors** (e.g., waste, water supply, textile, packaging, pharmaceuticals, transport, fishing and energy) or insufficiently addressed **types of pollution** (e.g., air pollution, noise pollution, etc.).

A total of 69 documents were received in the public consultation. **35 of them were position papers**, while the remaining 34 documents were academic articles, reports, research papers, pamphlets, brochures, or position papers not focused on the Polluter Pays Principle. Seven identical position papers were submitted by different organisations. Two position papers were received after the end of public consultation. They were not considered in the analysis but were consulted as part of evidence collection activities.

Most position papers were submitted by **business associations (16)** and **NGOs and environmental organisations (11)**, while the lesser number of papers were by companies (5), public authorities (1), Chamber of Commerce (1), and non-EU citizens (1).

Most authors of position papers were based in Belgium (10), representing organisations and associations operating at the EU level. The remaining 25 submissions were received primarily from European countries, including Germany (5), France (4), Austria (3), Hungary (3), Italy (2), Sweden (2), the Netherlands (1) and Spain (1), while a small number of position papers were by respondents based in non-European countries, including the USA (2), Australia (1), and South Africa (1).

Position papers focused on the **issues** related to the implementation of the PPP, including specific measures & implementation requirements in certain legal acts, exemptions and derogations, diffuse pollution and legacy pollution, the granularity of the PPP-related definitions and the use of the EU and national funds. Some position papers also discussed **potential solutions** to the identified issues, including operationalisation of the PPP in the relevant legislation, improving/expanding the Extended Producer Responsibility schemes, and working on preventive measures.

Findings of the stakeholder workshops

The main topics in the discussions of both stakeholder workshops focused on the issues/gaps and solutions (instruments/measures) in the PPP implementation. The participants of both stakeholder workshops emphasised the following issues in the PPP implementation:

- **Identifying (and defining) a polluter** in the situations of legacy, chronic and diffuse pollution. According to the participants, in such cases, determining a polluter is not a straightforward and often a complex process that requires clear and standardised approaches in key pieces of legislation.

- The participants of both workshops recognised that the **EU funds have been used to finance projects that should be paid for by the polluter**. At the first workshop, the stakeholders highlighted the reasons of such issue that included limited capacity of the national competent authorities to appropriately implement the PPP, the issues of inappropriate distribution of the EU funds in shared management programmes, explicit mentioning of the PPP in the funding mechanism legislation, etc.
- **Insufficient communication and public awareness raising about the PPP**. The lack of proper communication about the rationale, objectives, and benefits of the principle has been one of the possible reasons for misunderstandings or resistance from various stakeholders.

Some of the PPP implementation issues were discussed during one of the stakeholder workshops (see the summary in Table 9).

Table 9: Other PPP issues mentioned at the workshops

4 July 2023 workshop	20 November 2023 workshop
The PPP impact on small and medium-sized enterprises (SMEs). The implementation of certain environmental regulations or sustainability practices increased costs for businesses, particularly smaller ones with limited resources or economies of scale.	Treatment, administrative and monitoring costs have not been borne by the polluter. From the perspective of some participants, treatment costs under water and waste legislation are often borne by operators and citizens, rather than by the polluters. Some participants provided examples of administrative costs for monitoring not borne by the polluters in ship recycling and shell farming.
Fairness and cost allocation: some stakeholders argued that imposing environmental taxes disproportionately affected certain groups or industries, placing an unfair burden on them.	The lack of a strategic approach to the PPP. Some participants noted that a fundamental challenge was the absence of a sense of urgency, with a lack of prioritising the collective well-being of the population and of the businesses that have clean technologies and clean ways of producing. Moreover, there has been often a focus on short-term implications, rather than on the long-term perspective.
Outdated permits granted by national authorities: an obstacle to the application of the PPP stemming from permits granted by national authorities that have been no longer aligned with current environmental standards or regulations.	Subsidies and free allowances. Some attendees underlined the issue of subsidies, e.g. fossil fuel subsidies, and free allowances granted under different pieces of legislation and schemes. Lack of application of the principle in specific areas/sectors due to gaps in legislation. Participants provided examples of sectors (drinking water supply, shellfish farming, transport, ship recycling, energy, etc.) where the PPP has not been fully or correctly applied.

While not relevant for a (backward-looking) Evaluation, it must be noted that the participants of both workshops highlighted the **legal and non-legal instruments** for effective implementation of the PPP:

- **Environmental (green) taxes** were highlighted by the workshops' participants as effective and important instruments for the PPP implementation. The participants claimed that the introduction of environmental taxes or levies on polluting activities facilitates the internalisation of the costs associated with pollution, making polluters bear the financial burden of their actions. The revenue generated from these taxes could then be used to fund environmental initiatives, promote sustainable practices, and support the transition to a greener economy.
- The participants believed that the application of **Extended Producer Responsibility (EPR)** schemes and the increase of their coverage (e.g., in terms of sectors and pollutants) could have helped define and assign responsibility to a polluter.

Some of the PPP implementation instruments/measures were discussed during one of the stakeholder workshops (see the summary in Table 10).

Table 10: Other PPP instruments/measures mentioned at the workshops

4 July 2023 workshop	20 November 2023 workshop
Redistribution of resources among citizens. According to the participants, the redistribution of resources generated through the PPP implementation (taxes and charges) would have been a way to recognise the social dimension of the PPP. This would involve directing a portion of the financial contributions received from polluters towards initiatives aimed at benefiting affected communities or financing environmental protection and restoration projects.	Emphasis on preventive and control-at-source measures. Such measures were seen by some participants as the most effective solution from a societal point of view (e.g. taking downstream measures such as additional drinking water treatment requires more resources and is more energy-intensive and costly than applying preventive measures).
EU-wide registry for compensation claims. Establishing an EU-wide registry for stakeholders to submit compensation claims could have improved the implementation of the PPP. This registry would serve as a centralised platform for individuals, communities, or organisations affected by pollution to seek compensation from the responsible parties.	EU-wide database showcasing which environmental taxation, pricing mechanisms and other instruments have been implemented or foreseen for the future in each Member State.

Two contributions to the public consultation were received after the closure of the public consultation. They were not counted into the above results of the public consultation but were nevertheless taken into consideration in the overall consultation activities.

Findings of the stakeholder interviews

The respondents approached the **effectiveness** of the PPP from several perspectives. Some of them highlighted the developments and gaps in specific legislation, while others focused on the issues related to the implementation of the PPP.

Few interviewees provided examples where, in their opinion, the **implementation of the PPP has been improved**. These examples covered policies in the areas of cement industry, waste, and single-use plastics. Some interviewees referred to **specific gaps or lack of the application of the PPP** in specific legal acts, such as the Energy Taxation Directive, REACH, the Environmental Liability Directive, and the Water Framework Directive. Many respondents indicated **general issues**, such as identifying and defining the polluters that have affected the effectiveness of various PPP instruments and the focus of the existing PPP measures on supporting the linear business models instead of encouraging businesses to move towards sustainable and circular business models.

Furthermore, the respondents indicated sectors/policy areas where the PPP has not been (sufficiently) applied. Several sectors were mentioned by the interviewees, including **aviation, maritime shipping, drinking water, wastewater management, waste generation, agriculture and aquaculture**.

A lot of interviewees discussed the specific **PPP legal and non-legal instruments** and identified their shortcomings. Many interviewees discussed the Emission Trading System (ETS), Extended Producer Responsibility (EPR) and environmental taxes. Some interviewees only briefly mentioned Carbon Border Adjustment Mechanism (CBAM), biodiversity offsetting and emission thresholds.

Many respondents described the **Extended Producer Responsibility (EPR)** schemes. The respondents had **mixed opinions about the effectiveness of the EPR schemes**. Some of them considered it an **effective tool** for implementing the PPP, while others had serious **doubts about its effectiveness**. According to the interviewees, the scope of EPR schemes did not cover significant polluters, the EPR fees were not sufficiently harmonised in the EU Member States, and the EPR fees were too low to cover the costs of pollution.

The **attitudes to the ETS among the respondents were mixed** with some of them positively and others – negatively evaluating this instrument. The interviewees highlighted several **constraints** of the ETS: insufficient scope of the ETS with many emitting sectors not covered, availability of free emission allowances that had not incentivised the polluters to move to sustainable business models, and the price of the emissions that had not been sufficiently high to change the polluters' behaviour.

Several respondents discussed **environmental taxes** in more detail. The respondents viewed environmental taxes largely positively; however, they also pointed out some of the **shortcomings that reduce their effectiveness**. According to the interviewees, the **charges applied in environmental taxes (or revenues raised from environmental taxes) have been too low** to a) encourage the transition from polluting to sustainable activities and/or b) tackle the issues of environmental pollution. Some respondents believed that **derogations and exemptions weakened the effect of green taxes**.

The opinions of the interviewees concerning the **competitiveness within the EU and with non-EU countries** diverged. Although most respondents who commented about competitiveness represented business associations, their opinions varied. Some respondents believed that the existing legal and non-legal instruments ensured a level playing field, while other interviewees indicated that there were issues related to competition between the EU and non-EU economic operators and the competitiveness of sustainable businesses.

The interviewees discussed the **distributional effects of specific legal and non-legal PPP instruments**. The **areas where distributional effects were discussed** included the use of fossil fuels, transport, agriculture, pharmaceuticals, food, energy and water. Several commonly **affected audiences** usually included specific industry sectors or social groups (e.g., low-income populations). The respondents highlighted that **both positive and negative distributional effects were the outcomes of the design of environmental policies or instruments**.

Responses about the **examples of costs (or benefits) caused by economic operators** and have not been borne by them substantially varied in the level of detail. Moreover, quite many respondents were

not able to answer this question. Therefore, the limited number of responses mostly covered the **drinking water and waste sector**.

According to the interviewees, the **costs of drinking water treatment have been mostly paid by consumers** but not the economic operators who caused the pollution. Costs of **quaternary treatment** of water for removing chemical pollutants (e.g., active substances in medicines, pesticides, etc.) from water were highlighted by many respondents. In addition, the respondents noted that the use of quaternary treatment caused higher consumption of energy and additional emissions.

The respondents from waste management sectors outlined two problems considering the costs that have not been borne by polluters – the **uncovered costs of particular waste management processes** and the **low waste management charges to tackle the consequences of pollution**.

The respondents listed several **useful measures** for internalising the externalities. These included measures for **preventing pollution**, such as monitoring and reporting pollution, controlling the pollution at source, putting efforts into **calculating externalities** to ensure that the instrument covers the relevant costs and using **financial security instruments** that enable economic operators to bear the costs of environmental pollution.

Three coherence issues were prominent in the answers of the stakeholders – environmentally harmful subsidies, the use of public funds to tackle environmental pollution that should be paid for by polluters and different levels of ambition to implement the PPP in the EU Member States. The interviewees claimed that some policies in the Member States or at the EU level enabled **environmentally harmful subsidies (EHS)** that conflicted with the PPP and mentioned diverse instances of what they considered such subsidies (for instance, EHS in the field of energy and fossil fuels. Some respondents emphasised that the **use of EU funds (e.g., through various funding mechanisms) to cover the costs to be paid by the polluters** contradicted PPP. Finally, a few respondents highlighted that the **national policies substantially varied in the level of ambition** to implement the PPP in the EU Member States.

The respondents discussed **the emerging pollutants and pollution types that generated externalities** and elaborated on the **role of innovation and technologies** in preventing, controlling or remedying environmental pollution. The overwhelming majority of interviewees mentioned **perfluoroalkyl and polyfluoroalkyl substances (PFAS)** as (emerging) manufactured in various sectors that generated costs in preventing, reducing and eliminating environmental pollution. The main reasons for considering these substances were their **volatility, persistence in the environment and negative effects on health and the environment** coupled with their **wide use in a variety of products**. Although the respondents often recognised that the issue of PFAS was not new (to be considered emerging), they believed that the situation with the use and phase-out of PFAS was alarming.

Other topics, that emerged in several interviews included the emerging environmental issues associated with the activities in **IT, mobile communications and electronics**. According to the interviewees, their effects have been underscored. According to a few interviewees, there was **a potential pollution issue (or a threat) of mining critical raw materials in Europe** to reduce the dependency on third countries. Several respondents indicated that **plastics** in general or specific plastic materials have been problematic due to recycling issues.

Several respondents reflected on whether the instruments for implementing the PPP encouraged the use of emerging technologies and innovation for preventing, reducing and remediating environmental pollution. The opinions expressed by the interviewees **substantially varied**. Some respondents considered that **the PPP had a positive effect on the application of new technologies or innovation**. Other interviewees emphasised that the **economic feasibility of sustainable business models** was more important than the application of innovative technologies *per se*. Finally, some

respondents draw attention to the **emerging risk of greenwashing** related to specific technologies (e.g., carbon capture).

Asked about the **EU added value** of the PPP, most interviewees evaluated it positively and highlighted the role of the EU in the **coordination of efforts of the Member States**, facilitating the **solution of transboundary issues** and **driving the development of the environmental policies all over the EU**. In addition, some respondents highlighted that the **EU has been extending its influence on environmental policies on a global scale**.

Recurring and diverging opinions in consultation activities

The problematic definition of **‘who is the polluter’** was **prominent in all stakeholder consultation activities** (i.e., call for evidence, public consultation questionnaire, stakeholder workshops and interviews). The stakeholders emphasised that the definition is an important pre-requisite of the PPP implementation effectiveness.

Similarly, **the respondents of all consultation activities highlighted that the PPP has not been sufficiently implemented in some policy areas of sectors**. Typically, the stakeholders mentioned transport (especially, aviation and maritime shipping), waste management, water supply, agriculture, textile, aquaculture, and energy.

Extended Producer Responsibility (EPR) schemes were discussed as an instrument for the PPP implementation by the participants of all consultation activities. In various consultation activities, the stakeholders expressed the opinion that the scope of EPR should be expanded. While in the call for evidence, public consultation, and stakeholder workshops, the approach to EPR was largely positive, in the interviews, the opinions concerning the effectiveness of EPR diverged.

Other important PPP instruments were mentioned by stakeholders in several consultation activities. In the call for evidence and interviews, the stakeholders elaborated on the **Emission Trading Schemes (ETS)**. The respondents highlighted two limitations of ETS – insufficient scope that has not covered certain emitting sectors and free emission allowances that weakened the PPP implementation. At online workshops and in the interviews, the stakeholders discussed **environmental (green) taxes** that were viewed largely positively. The stakeholders saw the environmental taxes as an effective means to making the polluters bear the financial burden of their action and emphasised that the revenues generated from the taxes can be used to fund environmental initiatives. The interviewees also expressed some criticism of environmental taxes concerning low charges and derogation and exemptions.

Annex 6. What is the Polluter Pays Principle?

There is no single version of the PPP. Instead, the PPP has various forms depending on the jurisdiction in which it is applied, the governmental body that applies it, and the type of legislation to which it is applied – including international, EU, and national legislation. Some jurisdictions such as the EU, France, and Canada have codified the PPP. Whereas other jurisdictions such as the US have not done so, the PPP has heavily influenced their environmental legislation.

1. Scope: What is pollution?

Pollution according to this Polluter Pays Principle Fitness Check is defined as:

“The direct or indirect introduction, as a result of human activity, of substances, vibrations, heat or noise or odour into air, water or land as well as the direct or indirect subtraction or use of environmental resources to an extent which may be harmful to human health or the quality of the environment, result in damage to material property or impair or interfere with amenities and other legitimate uses of the environment”.

This definition reflects the extensive scope of application of the Polluter Pays Principle in EU law. It does not just mean traditional forms of polluting activities, e.g. the introduction of waste into the environment. Additionally, other harmful activities are included such as soil sealing, soil degradation because of extensive use, deforestation or over abstraction of water.

“Quality of the environment” means the quality of land/soil, air, water, biodiversity and climatic conditions. **“Biodiversity”** is defined according to the Taxonomy Regulation which is also cross-referenced in the Guidelines on State aid for climate, environmental protection and energy 2022¹⁷⁵ (‘CEEAG’), as the variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part and includes diversity within species, between species and of ecosystems.

The unified definition in this paper also reflects the heterogeneous economic and legal meanings of the Polluter Pays Principle, as it was developed overtime in environmental law (see below) which calls for an extensive definition.

The definition of pollution above is not limited to environmental policies, but also applies when enacting EU policy in areas other than that of the environment, which might have a significant environmental impact, e.g. transport, fisheries, or agriculture policy. Article 191(2) of the 2007 Treaty on the Functioning of the European Union (TFEU) states that: *“Union policy on the environment shall be based on the principle that the polluter should pay”*. The PPP is explicitly referenced in the Eurovignette Directive 1999/62/EC as a transport policy and can help with the fair development of all policies impacting the environment.

The definition does not include neutral activities which do not cause harm to but also do not maintain or restore the environment as there is no general obligation to positively contribute to the environment. This is reflected in the Habitats Directive 92/43/EEC which states that the PPP is of limited relevance for measures to maintain or restore natural habitats as it only covers environmental damage. So, excluded from the definition are improvements to the environment e.g. nature restoration or maintenance.

¹⁷⁵ [C/2022/481](#).

1.1 The definition of pollution according to the Polluter Pays Principle: a legal assessment

Article 191(2)¹⁷⁶ of the 2007 Treaty on the Functioning of the European Union (TFEU)¹¹ states that: *“Union policy on the environment (...) shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay”*.

The Treaty does not provide a strict definition of the scope regarding the PPP within the Treaties. Art. 191(2) TFEU just states that Union policy on the environment should be based *inter alia* on the fact that the polluter should pay, without further details.

Pollution is defined directly or indirectly in EU environmental legislation from which a general definition can be taken.

The Industrial Emissions Directive 2010/75/EU and its predecessor Council Directive 96/61/EC defines ‘pollution’ as the *“direct or indirect introduction, as a result of human activity, of substances, vibrations, heat or noise into air, water or land which may be harmful to human health or the quality of the environment, result in damage to material property, or impair or interfere with amenities and other legitimate uses of the environment”*. The proposed revised IED will further expand the term ‘pollution’ to include **odour**.

The Environmental Liability Directive announces in its recital its implementation of the PPP to environmental damage. Environmental damage is defined as *“damage to protected species and natural habitats, which is any damage that has significant adverse effects on reaching or maintaining the favourable conservation status of such habitats or species and water damage, which is any damage that significantly adversely affects the ecological, chemical or quantitative status or the ecological potential of the waters concerned or the environmental status of the marine waters concerned and land damage, which is any land contamination that creates a significant risk of human health being adversely affected as a result of the direct or indirect introduction, in, on or under land, of substances, preparations, organisms or micro-organisms”*.

Whereas the Commission rejected extending liability to damage to **biodiversity** as defined in the Convention on Biological Diversity when it proposed the ELD in 2001 due to that definition (that is, “biological diversity”) including the concept of variability among living organisms, CEAG uses the convention’s broader definition by cross-referring to the definition of “biodiversity” in the Taxonomy Regulation. The definition of ‘biodiversity’ in the Taxonomy Regulation is materially the same as the definition in the convention by defining the term “biodiversity” as *“the variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part and includes diversity within species, between species and of ecosystems”*.

The Polluter Pays Principle is also explicitly mentioned concerning the introduction of pollutants into water in the Water Framework Directive 2000/60/EC. More concretely, it requires Member States to apply water pricing policies for the purpose of efficient use of water resources, as well as to apply cost recovery of water services to different water uses, taking into account the polluter pays principle.

Concerning the climate, the Polluter Pays Principle is referenced in the ETS Directive (EU) 2023/959 as well as the FuelEU Maritime Regulation (EU) 2023/1805 concerning the **emission of greenhouse gases** contributing to **climate change**.

All other provisions where the PPP is mentioned describe the introduction of substances into the environment:

¹⁷⁶

Article 191(2) of [the 2007 Treaty of the European Union \(TEU\)](#).

- Waste: in general according to the Waste Framework Directive 2008/98/EC, Waste batteries according to the Batteries Regulation (EU) 2023/1542, waste ships according to the Ship Recycling Regulation (EU) No 1257/2013, single use plastics according to the Single-use plastics Directive (EU) 2019/904, extractive waste according to the Extractive Waste Directive 2006/21/EC, waste electrical and electronic equipment according to the WEEE Directive, 2012/19/EU, end-of-life vehicles according to the End of life Vehicles Directive 2000/53/EC, packaged and packaging waste according to the Directive 94/62/EC, waste in a landfill according to Landfill Directive 1999/31/EC.
- Other pollutants: according to the Environmental Quality Standards (EQS) Directive 2013/39/EU, the Safety of Offshore Oil and Gas Operations (2013/30/EU), the Eurovignette Directive (EU) 2022/362
- Invasive species according to the Regulation on Invasive Species (EU) 1143/2014

Note that going beyond this legal analysis, many legal acts do not refer to the PPP even but are clearly environmental policy and help to apply it. Note also the decision on the degree to which to reflect the PPP has obviously been weighed against other concerns such as enforceability, costs of doing so etc.

1.2 The definition: an economic assessment

The direct or indirect impact on or use of environmental resources to an environmentally harmful extent was also included in the above definition as it reflects the meaning of “pollution” originally established for the Polluter Pays Principle.

“Polluters” was used as a shorthand for anyone creating environmental costs, not limited to pollution in a narrow sense. This common understanding about markets and their misallocation of resources reflects the fact that the principle is relevant in all contexts affecting the environment. Given the broad scope including all environmental policies in Article 191 (2) TFEU, which only partially concern the introduction of environmentally harmful substances, such a broader definition is a logical consequence of the importance of the internalisation of externalities to achieve environmental fairness in EU legislation.

The concept of internalisation of externalities was first established by British economist Arthur Pigou. A tax on any market activity that generates negative externalities, i.e. external costs incurred by the producer that are not included in the market price, is therefore called a Pigouvian tax. The tax is normally set by the government to correct an undesirable or inefficient market outcome and does so by being set equal to the external marginal cost of the negative externalities.

The Recommendation of the OECD Council on OECD Legal Instruments Guiding Principles concerning International Economic Aspects of Environmental Policies Guiding Principles¹⁷⁷ first described the Polluter Pays Principle for Cost Allocation:

*“The **Environmental resources** are in general limited and their **use in production and consumption activities may lead to their deterioration**. When the cost of this deterioration is not adequately taken into account in the price system, the market fails to reflect the **scarcity of such resources** both at the national and international levels. Public measures are thus necessary to **reduce pollution and to reach a better allocation of resources** by ensuring that prices of goods depending on the quality and/or quantity of environmental resources reflect more closely their relative scarcity and that economic agents concerned react accordingly. In many circumstances, in order to ensure that the environment is in an acceptable state, the reduction of pollution beyond a certain level will not be practical or even necessary in view of the costs involved. The principle to be used **for allocating costs of pollution prevention and control measures to encourage rational use of scarce environmental resources** and to avoid distortions in international trade and investment is the so-called “Polluter-*

¹⁷⁷ OECD (2024), [Recommendation of the Council on OECD Legal Instruments Guiding Principles concerning International Economic Aspects of Environmental Policies](#).

*Pays Principle". This principle means that the **polluter should bear the expenses of carrying out the above-mentioned measures decided by public authorities to ensure that the environment is in an acceptable state.** In other words, the cost of these measures should be reflected in the cost of goods and services which cause pollution in production and/or consumption. This Principle should be an objective of Member countries."* Thus, pollution was seen as a loose term, describing any use of environmental resources in production and consumption activities which the markets do not reflect. It signifies the application of the Pigouvian tax to negative environmental externalities.

In 1975, the Council of the European Communities issued a recommendation concerning the PPP on the allocation of costs and action by public authorities:

*"Charging to polluters the costs of action taken to combat the pollution which they cause encourages them to reduce that pollution and to endeavour to find less polluting products or technologies thereby enabling a more **rational use to be made of the resources of the environment.** Moreover, it satisfies the criteria of effectiveness and equitable practice. **A polluter is someone who directly or indirectly damages the environment or who creates conditions leading to such damage.***

*If identifying the polluter proves impossible or too difficult, and hence arbitrary, particularly where environmental pollution arises from several simultaneous causes or from several consecutive causes, the cost of combating pollution should be borne at the point in the pollution chain or in the cumulative pollution process, and by the legal or administrative means which offer the best solution from the administrative and economic points of view and which make the most effective **contribution towards improving the environment.**"* This identification of the polluter as someone who directly or indirectly damages the environment shows the broader economic understanding established by the OECD.

The Rio Declaration 1992 also included based on this understanding that "*national authorities should endeavour to promote the **internalization of environmental costs** and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution.*"¹⁷⁸

This economist understanding of the Polluter Pays Principle can also be found in EU guidelines. Article 4.6.3, point 284, CEEAG¹⁷⁹ states that:

*"Without prejudice to [the ELD] or other relevant Union rules, aid for the remediation of environmental damage, the rehabilitation of natural habitats and ecosystems, the protection or restoration of biodiversity and the implementation of nature-based solutions for climate change adaptation and mitigation may be regarded as having an incentive effect only **when the entity or undertaking at the origin of the environmental damage** cannot be identified or be held legally liable **for financing the works necessary to prevent and correct environmental damage in accordance with the [PPP]**".* The CEEAG thus reflect the continually expanding nature of the PPP by referring to the increasing scope of environmental damage for which 'polluters', instead of the public purse, must pay the costs.

Article 9 of the Water Framework Directive also requires Member States to "*take account of the principle of recovery of the costs of water services, including environmental and resource costs, and in accordance in particular with the polluter pays principle*". The over abstraction of water creating resource cost is therefore both directly and indirectly recognised as a harmful activity to which the PPP is applied.

Such a broad definition of pollution can be found in other jurisdictions as well. The UK government explicitly indicated in their description of different environmental principles that the terms

¹⁷⁸ United Nations (1992), [Report of the United Nations Conference on Environment and Development. Rio Declaration on Environment and Development.](#)

¹⁷⁹ [C/2022/481.](#)

environmental pollution, damage and environmental harm are used interchangeably to refer to a negative environmental effect¹⁸⁰.

2. Scope – what is meant by environment policy?

The question is if EU legislators are bound by the Polluter Pays Principle when enacting EU policy in areas other than that traditionally understood as the environment (i.e. managed by DG ENV¹⁸¹), even when they might have a significant environmental impact, e.g. transport, construction, fisheries, or agricultural policy and as a result it has to be defined what environment policy means under these circumstances from a legal perspective.

Firstly, Art. 191 (2) TFEU states that “*Union policy on the environment (...) shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay.*” The principle only provides attention concerning environmental legal aspects and therefore is non-binding in general.

From a legal perspective a systematic approach is provided: the PPP is one of the guiding principles not only in environmental but in European law in general. This follows from its constitutional status. In combination with the environmental integration principle of Art. 11 TFEU, which states that environmental protection requirements must be integrated into the definition and implementation of the Union’s policies and activities, in particular with a view to promoting sustainable development, this shows the importance not only of the PPP but also of environmental protection within the EU legislation.

The PPP is therefore a guiding principle applicable to a wide range of EU policies. The Member States and the European institutions are obliged to consider PPP and all the remaining environmental principles when acting in all the competence domains and every EU policy fields.

Therefore, environmental policy in a European context must be defined broadly. To ensure that the constitutional status of the PPP is taken into account, environmental policy applies to all policies likely having environmental effects. That means it has a binding effect concerning the EU legislators and the national authorities responsible for implementing the EU law. Concerning sectors like transport, fisheries or agricultural policies, there is an impact on the environment and so the PPP is relevant for them. As an example, the PPP is explicitly referenced in the legal text of the Eurovignette Directive 1999/62/EC which is a transport policy, but is relevant for environmental policy as understood in the context of the PPP.

EU funding policies which finance the achievement of EU objectives (e.g. CAP, Cohesion Policy, RRF, CEF) and the application of environmental principles are designed to ensure that both Treaty and environmental objectives are observed and considered. This means that the EU financing should at least preserve the existing EU laws and/or be consistent with EU policies and future initiatives. The EU funding policies and tools introduce spending mechanisms, the EU co-legislators should put in place specific arrangements to effectively implement the PPP. To a certain extent, this has been reflected by the DNSH, the targets for financing climate/biodiversity, the introduction of tracking mechanisms. However, this was not translated to all EU policies and there are inconsistencies in the mechanisms envisaged. In addition, the PPP was not reflected by specific tools which would limit the EU financing in a proportionate way depending on the generated costs or refuse it for actions/operations projects which are incompatible with EU environmental objectives.

¹⁸⁰ [Environmental principles policy statement - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/policies/environmental-principles-policy-statement)

¹⁸¹ Note that DG ENV also manages legislation under different legal bases, in particular the internal market legal base.

This is also supported by the Charter of Fundamental Rights of the European Union requiring the EU to protect the fundamental right to life (Article 2(1) of the Charter) and provides that “a high level of environmental protection and the improvement of the quality of the environment must be integrated into the policies of the Union and ensured in accordance with the principle of sustainable development” (Article 37 of the Charter). The consistency requirement of articles 7 and 11 TFEU, and obligations under international law, also legally require the European Commission to take environmental benefits fully into account.

As a final comment on what is environmental policy, environment action programmes have led the development of EU environment policy since the early 1970s. The 8th Environment Action Programme¹⁸² sets out six priority objectives related to climate neutrality, climate adaptation, circular economy, zero pollution, protecting and restoring biodiversity, and reducing environmental and climate pressures related to production and consumption. Policies contributing to these objectives can be understood as environmental.

In conclusion, there is an obligation for the EU institutions to respect the PPP in all policies concerning an environmental issue.

3. Scope – Which type of costs?

What are the type of costs that the PPP may impose on polluters and how those costs are or could be recovered? In practice, the PPP has a **wide range of applications** with diverse methods to ensure that the polluter pays, covering:

- Costs of pollution prevention and control
- Administrative costs borne by polluters and by competent authorities to enforce environmental controls
- Costs of environmental damage

As well as polluters needing to pay for their costs, the PPP also means that polluters should not be paid to pollute. So, if an operator receives a subsidy that supports pollution (so a fossil fuel subsidy or other environmentally harmful subsidy) then this is inconsistent with the PPP. the PPP is implemented by proofing mechanism in the case of policies for EU funding streams, i.e. to ensure that polluters do receive EU funding to cover the costs of pollution.

Pollution is a term that is used as shorthand for all policies that affect environmental protection and the improvement of environmental quality.

4. Scope – which type of interventions?

In general, the following mechanisms are applied to recover costs from polluters:

- **Taxation of pollution** (e.g. Eco tax: shifting taxation from labour to pollution) and pricing of the use natural resources (e.g. water pricing);
- Reforming environmentally harmful **subsidies**;
- Environmental **funds**, just transition funds etc (the PPP is implemented by proofing mechanism in the case of policies for EU funding streams, i.e. to ensure that polluters do not receive EU funding to cover the costs of pollution);
- **Extended Producer Responsibility** (EPR): shifting responsibility for e.g. waste from governments to producers.
- **Prevention**: Public and private measures for strategic environmental management such as environmental information systems;
- **Command and control measures**: since these also shift the cost of prevention towards the operators.

182

[8th EAP Programme](#)

5. Tracking the origins

5.1. Adoption and evolution of the polluter pays principle by the OECD

5.1.1 Adoption

The first significant official recognition of the Polluter Pays Principle (PPP) came from the Organisation for Economic Co-operation and Development (OECD) in 1972¹⁸³. It re-affirmed it in 1974 in the wider context¹⁸⁴. The purpose of the PPP was to charge the polluter for the costs of measures determined by public authorities to prevent and control pollution.

The aim of the PPP was to persuade businesses to adopt a harmonised approach to internalise the costs of complying with the substantial amount of environmental legislation that was being introduced at that time and to reflect the costs of complying with it in the market price of goods and services. A corollary aim was progressively to reduce chronic pollution from substances lawfully emitted into the environment to an acceptable level.

The OECD issued a recommendation on guiding principles for international economic aspects of environmental policies (see above) stating that the polluter should bear the costs of pollution, prevention and control measures (the latter referring to administrative costs borne by competent authorities to enforce environmental controls)¹⁸⁵.

The OECD text requires the polluter to bear the expense of pollution prevention and control measures introduced by public authorities (which presumably was not always the case in the 1970s). But it is also a recognition of the market failures at play, and the need to respond by incentivising polluters to avoid environmental damage as well as being held responsible for the pollution that they cause. At the same time, there is a pragmatic recognition that the principle should be only applied where reasonable to do so.

The OECD was both reflective of the developments in environmental economics at the time, but also influential of them. An academic survey of the principle is beyond this Fitness Check, but the two are interlinked. Seminal works¹⁸⁶ advocated valuing environmental effects and making use of market incentives through market-based instruments such as pollution taxes, tradable permits and conservation payments.

5.1.2 Extension to accidental pollution

In 1981, the OECD Council extended the focus of the PPP from chronic pollution to include accidental pollution by recommending that the PPP should apply to measures carried out by public authorities to respond to accidental marine oil spills, especially those that affect more than one country. Thus the definition was further extended to hold polluters liable in the case of accidental pollution, noting that managing both the risk and the consequences of accidental pollution should not be paid from public funds¹⁸⁷.

This meant that the OECD extended the PPP from internalisation of the costs of pollution in the market price of goods and services (the efficiency interpretation of the PPP) to the distribution of costs between a polluter and a victim or a victimised society (the equity interpretation of the PPP). The equity interpretation is basically a principle of equity (as applied in common law jurisdictions) or

¹⁸³ 1972 Recommendation [OECD/LEGAL/0102], abrogated in 2023

¹⁸⁴ 1974 Recommendation [OECD/LEGAL/0132]

¹⁸⁵ OECD (2004), [Recommendation of the Council on Guiding Principles concerning International Economic Aspects of Environmental Policies](#).

¹⁸⁶ Pearce D., Markandya A. and Barbier E. (1989), Blueprint for Green Economy.

¹⁸⁷ OECD (2024), [Recommendation of the Council concerning the Application of the Polluter-Pays Principle to Accidental Pollution](#).

fairness. That is, the PPP “seeks to assign responsibility to a polluter and to hold him accountable for the pollution he has created in order to avoid passing on costs to third parties who did not contribute to the creation of that pollution”.

A purpose of the recommendation concerning accidental marine oil spills was for countries to agree in advance how the costs of prevention and control actions by one country should be reimbursed by another country after an oil spill. A subsequent report by the OECD’s Environment Committee stated that application of the PPP at domestic level to the prevention and control of oil spills meant that the person or entity responsible for a spill or the risk of a spill should bear the full cost of such measures following a spill and should not benefit from any direct or indirect financial assistance from public authorities that would alleviate the financial burden of the measures.

The report further stated that consideration should be given to including “an appropriate fraction” of fixed costs related to the measures.

In 1988, the concluding statement of an OECD conference on accidents involving hazardous substances stated that the PPP should be applied as far as possible in connection with them.

Also in 1988, the OECD Council issued a declaration specifically to recognise that the PPP applies to accidental pollution. In 1989, the OECD Council followed the declaration by a recommendation to extend the PPP to “accidental pollution” at “hazardous installations”, with a focus on off-site pollution. The Guiding Principles Related to Accidental Pollution which were appended to the recommendation defined the term “accidental pollution” as “*substantial pollution resulting from an accident in a hazardous installation*”. They defined the term “hazardous installation” as:

“fixed installations which are defined under applicable law as being capable of giving rise to hazards sufficient to warrant the taking of precautions off-site, excluding nuclear or military installations and hazardous waste repositories”.

The Guiding Principles further stated that the PPP implies that the “operator” of a hazardous installation, that is “*the legal or natural person who under applicable law is in charge of the installation and is responsible for its proper operation*”, should bear the costs of “reasonable measures” for “administrative convenience or for other reasons”. If a third party was liable for the accident, that party should reimburse the operator for the costs of the measures carried out to control pollution caused by the accident. The Environment Directorate of the OECD subsequently stated that an operator has a claim against the person to whom an accident is wholly or partially attributable for reimbursement of all or part of the costs paid by the operator to authorities. The Directorate further stated that unless civil liability legislation channels liability solely to the operator, the operator or public authorities may invoke the alleged civil liability of third parties for all or part of the accident, noting that the operator may be required to pay compensation to victims of an accident even when the operator is not liable.

The Guiding Principles thus separated responsibility for remediating environmental damage from liability for remediating it. That is, the operator of the installation is designated as the “polluter” for economic and administrative reasons and is responsible for remediating the environmental damage or reimbursing the authority for its costs in remediating it. The operator could then seek reimbursement of its costs from the person that was partially or fully liable for the damage.

The Guiding Principles also stated that allocating the cost of reasonable measures carried out by public authorities to control accidental pollution to the operator (or other person that caused an accident) does not affect the possibility that such a person is also required to pay other costs connected with the public authority’s response to an accident, such as the supply of potable water. Further, public authorities may also seek compensation from a liable person for costs incurred by them that have not already been reimbursed.

The Guiding Principles further stated that measures to prevent and control pollution include “*acting promptly following an accident in order to protect human health and the environment, carrying out clean-up operations and minimizing without undue delay the ecological effects of accidental pollution*”. Such measures include “*reasonable pollution control measures*” determined by the authority following an accident that are taken “*without undue delay*” by the operator or, in an emergency by the authority (at the cost of the operator) to prevent further environmental damage such as stopping emissions from the operator’s installation, installing floating booms/barriers on a river to prevent the spread of pollutants, carrying out clean-up or decontamination measures, and “*rehabilitating the polluted environment*”. The OECD thus extended the PPP to the cost of measures to rehabilitate (restore) the environment.

The OECD Secretariat noted that the definitions of measures to prevent and control pollution were not comprehensive and did not, for example, include measures that were not directly related to pollution, general administrative measures for specific hazardous installations, or compensation to victims. The Secretariat defined “prevention measures” in the context of accidents involving hazardous substances as:

“measures taken to prevent the occurrence of accidents capable of causing accidental pollution, and the measures taken prior to an accident to ensure that, if an accident does occur, damage is mitigated outside the site of the accident. They comprise on-site measures to improve the safety of the installation and accident preparedness, to reduce the rate of accidents and limit the release of pollutants from the installation in the event of accident, installation-specific emergency plans, and certain off-site measures such as the acquisition of land around the installation or the cessation of building in the vicinity of the installation so that a sufficient distance separates the installation from the neighbouring area that could be affected in the case of an accident from the neighbouring area that could be affected in the case of an accident (for example the release of pollutants, materials or hazardous substances, or the generation of heat or pressure waves).”

The Secretariat described other prevention measures that could be covered by the PPP as “administrative measures” implemented by public authorities to prevent accidents in specific hazardous installations or subsequently carrying out remedial measures if accidental pollution occurred. Examples of such measures were the following measures for specific hazardous installations: special studies before an environmental permit/licence was issued, detailed inspections, preparation of specific emergency plans, and purchasing equipment to handle an accident.

The Secretariat defined “control measures” as:

“measures taken without undue delay after an accident to control the pollution caused by the accident, with a view to limiting possible damage which accidental pollution might cause anywhere. They comprise, first, measures to halt the release of pollutants, to prevent the pollution from spreading, to remove the pollutants released outside the installation as a result of the accident and to clean up the polluted environment, and second, measures taken without undue delay after the accident to rehabilitate the environment.”

The PPP was slowly but surely evolving into a principle fully to internalise the costs of pollution by among other things extending it to include compensation to victims and other pollution-related expenses, including damage at installations themselves as well as the unowned environment.

In 1990, the organisation, Business at OECD (BIAC), stated that:

“the principal objective of liability regimes should be to promote environmental protection. This can best be achieved by linking liability to operational control” in order to create an “*incentive for the controlling entity to adopt all precautions for environmental protection*”.

In other words, the PPP channels liability for remediating environmental damage from potential accidents to an operator to induce the operator to adopt measures to prevent such accidents as well as to identify the “polluter” for administrative convenience.

The OECD Secretariat inferred that there was no need to apply the PPP to measures carried out by operators on their own initiative, but that the PPP related in essence to measures carried out by authorities within the limits of their competence before a possible accident or after an accident in a specific installation in order to protect human health and the environment. Such measures could be carried out by the operator or public authorities (at the cost of the polluter) according to applicable law. The Secretariat referred to the need for the costs of measures to be “reasonable”, commenting that criteria could be established to determine reasonableness, whilst noting that authorities should bear the costs of measures determined by courts not to be reasonable because the requirement to carry them out was an abuse of an authority’s discretionary power or was without a legal basis.

In 1992, the Environment Directorate of the OECD stated that the PPP had evolved from an economic principle to a legal principle that had not, at that time, been codified. The Directorate stated that the cost of measures to prevent and control pollution should be borne by the potential originators of the pollution regardless of whether they or public authorities carry out the measures, and that the originators of “actual accidental pollution” should bear the reasonable costs of controlling it, including remediating the environment. The Directorate recognised that the polluter may sometimes be prevented by competition from passing on the costs of pollution control measures.

The Directorate further stated that the *“predominant trend [was] to place further liability on the polluter and to alleviate the economic burden which pollution places on the authorities”*, including costs from damage when the polluter had carried out all the measures ordered by the authorities but the level of pollution was still “quite substantial” or the damage was “significant”. If however the residual pollution was not substantial, the Directorate stated that it seemed that the damage would *“not as a rule be compensated for”*, commenting that greater use of strict liability systems for pollution cases should assist in increasing the number of cases in which polluters were required to pay the cost of damage.

In 2002, the Joint Working Party of the OECD on Trade and Environment stated that clean-up costs and compensation *“are generally paid in the event of non-compliance with permits, or of excessive pollution”*. The Working Party also stated that:

“Holding the polluter liable for the cost of restoring the contaminated site to its prior state once it has been cleaned and decontaminated (e.g. reintroducing species, replanting, re-vegetation, etc.), and for compensating the victims of the pollution (for direct and indirect economic losses and loss of amenities), is consistent with the purpose assigned to the PPP in the broad sense. However, it derives essentially from liability regulation that determines the responsible party and sets the scale of the payments due for site restoration and compensation for damages.”

5.1.3 Continued extension

The OECD version of the PPP continues to evolve and expand. For example, a background note for the OECD stated that the PPP applies in the form of mandatory financial security for environmental responsibilities and liabilities. Environmental responsibilities to which the PPP has been applied include the costs of closure and post-closure measures at landfills to ensure that funding for them is available after the operational phase and the closure and restoration of sites where extractive mining has been carried out.

There is also an argument that the failure to have financial security for the costs of remediating accidental pollution breaches the PPP because it raises the potential that the State will be required to pay such costs if the operator becomes insolvent or otherwise cannot pay the costs. For example, in Croatia, the cost of remediating pollution has often been borne by state-owned companies or

government agencies because the company or agency remediated the damage when the polluter became insolvent.

A further expansion of the PPP is corporate law that imposes liability on persons such as directors and officers of a company if the company becomes insolvent or is not sufficiently financially viable to remediate environmental damage caused by its operations. A background note for the OECD stated that such legislation is aligned with the PPP because it incentivises business with potential polluting activities to avoid decisions on environmental damage by holding them liable for pollution resulting directly or indirectly from the decisions.

Still further, creation of environmental offences including the crime of ecocide is a further application of the PPP.

5.1.4 Identification of the polluter

The “polluter” under the OECD’s version of the PPP is the person designated by the relevant legislation taking into account economic and administrative expediency considerations, not equity.

A note by the OECD Secretariat, drafted in 1989, stated that application of the PPP meant that the person that should reimburse a public authority for its costs after an accident is the “polluter”, that is, *“the person at the origin of the accidental pollution”*. The Secretariat referred to EU law to state that the person designated as the “operator” of a hazardous installation is generally the person in charge of the installation who is responsible for its proper operation. If this person is a legal person, employees of the installation are not responsible in a personal capacity. The reason for designating the operator as the polluter is because the operator is usually in the best position to prevent and limit the consequences of pollution in a cost-effective way. The Secretariat stated that if the operator is *“not in a position to prevent the accident, i.e. when the operator is clearly not at the origin of the accident, the costs could be charged to another person”*. The Secretariat commented that the PPP does not require the operator necessarily to be *“the only person who may have to bear the cost of control measures”*. If another person contributed to all or part of the accident, the operator has a claim against them for monies paid to the authority for its costs in controlling the accident.

In 1992, the OECD’s Environment Directorate referred to the European Council’s recommendation that identified the “polluter” as *“someone who directly or indirectly damages the environment or who creates conditions leading to such damage”*. The Directorate commented that the polluter was *“simply the first to pay”* the costs of pollution.

The Directorate further stated that the PPP:

“does not deal with liability since it does not point to the person “liable” for the pollution in the legal sense. When a polluter is identified he does have to bear certain costs and compensate the victims, but he may pass the costs on to the actual party liable for the pollution, whoever it may be. The polluter accordingly acts as the guarantor of compensation, but not as the party liable for the pollution. In order to ensure that a liable party who is not the polluter reimburses the latter’s costs, the polluter will need to secure financial safeguards and/or insurance. In some cases, the State has to step in to ensure that the cost of damage is paid out to victims, when the polluter and the party liable and their insurers fail to do so. Compensation funds financed by potential polluters are not contrary to the [PPP]”.

The OECD Secretariat stated that identifying the polluter who should pay compensation has the advantage of making it easier for victims to identify the person who should pay their claims for damage from pollution but has the disadvantage of requiring an operator to compensate victims without necessarily being able to obtain reimbursement from the liable person due to not being able to identify them or because they are insolvent. The Secretariat considered however that such a situation was:

“exceptional since it is rare for such person, if he is not the operator, to be unable to meet his financial obligations. As the operator generally has contractual relations with this other person, he can reduce the risk of the latter causing an accident and being unable to bear the costs by monitoring his activities closely and requiring him in the contract to provide security or take out insurance. Where the risk of non-repayment to the operator of the cost of pollution damage caused by such person is insured, the premium would be lower if the insurance were taken out by the operator than if it were taken out by the vast numbers of potential victims”.

The Secretariat had previously stated that purchasing insurance is not contrary to the PPP because the operator contributes to the average cost of pollution control measures by way of premiums for the insurance.

In 2022, a non-attributable background note on implementation of the PPP by the OECD commented that the PPP *“is rarely applicable to legacy pollution”* because, as noted by the European Court of Auditors in its special report on the PPP, the persons responsible for the pollution no longer exist, cannot be identified, or are insolvent. The background note commented that the insolvency of a polluter limits application of the PPP, causing costs to be covered by the public purse.

In contrast, the US Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) is based on a different version of the PPP in that it imposes retroactive, strict, and joint and several liability for the costs of cleaning up historic contamination on persons that are most likely to have been responsible for the contamination. Instead of channelling liability to a single person, CERCLA has a broad definition of a “polluter” or “potentially responsible party” (PRP) as:

- current owners and operators of facilities;
- owners and operators of facilities at the time at which the disposal of hazardous substances took place;
- persons who arranged to dispose of or treat a hazardous substance (often called generators); and
- transporters that selected the facility at which the hazardous substance was disposed or treated.

The terms “facility” and “hazardous substances” are extremely broad. A “facility” includes, for example, a roadside, stables, and a residential subdivision. Over 700 substances are designated as “hazardous substances”.

Establishment of a broad categories of liable persons was intentional due to CERCLA’s retroactive liability and thus the need to include a broad range of persons under its provisions. As the US Supreme Court stated in *Pennsylvania v Union Gas Co*, *“[t]he remedy that Congress felt it needed in CERCLA is sweeping: everyone who is potentially responsible for hazardous waste contamination may be forced to contribute to the costs of cleanup”* (emphasis original).

5.1.5 Exceptions

The OECD’s version of the PPP does not apply to all pollution or other environmental damage. The OECD’s Guiding Principles stated that measures to remediate pollution do not include *“humanitarian measures or other measures which are strictly in the nature of public services and which cannot be reimbursed to the public authorities under applicable law nor measures to compensate victims for the economic consequences of an accident”*. Humanitarian services include evacuation and shelter. Emergency services include medical, police, and fire services to protect human life and property.

The Guiding Principles further stated that:

“If the accidental pollution is caused solely by an event for which the operator clearly cannot be considered liable under national law, such as a serious natural disaster that the operator cannot

reasonably have foreseen, it is consistent with the [PPP] that public authorities do not charge the cost of control measures to the operator.”

The OECD Secretariat’s report on compensation for victims of accidental pollution, dated 1992, reiterated that it was not justified to allocate the cost of serious pollution damage to an operator if the operator had no influence over an event. The Secretariat stated that the operator could not clearly be held under national law to be the origin of an accident because, for example, the accident arose solely from a major natural disaster such as an earthquake, an external cause such as an aircraft crash; or acts of third parties such as sabotage. The Secretariat qualified the statement however by adding that the operator should not be liable if the operator had taken all the measures, it could reasonably be expected to take. The Secretariat stated that the same principle would apply if accidental pollution was caused solely by the fault or negligence of an authority.

The Secretariat further specified the following as events to which the PPP does not apply:

- a) an act of war, hostility, civil war or insurrection
- b) an act of a third party (including victims);
- c) an act performed in compliance with an order or a compulsory measure of a public authority; and
- d) natural phenomena of an exceptional, inevitable and irreversible character’.

Further, the OECD’s Environment Directorate stated that a polluter should only have to pay for “reasonable” measures so that the polluter *“adopts the most economically efficient decisions”*. That is, the Directorate stated that the purpose of the PPP was not to transfer all public expenditure to the polluter, or someone who could not avoid accidental pollution, but rather *“to allocate the financial burden to the party best able to take the most effective decisions”*.

The OECD Secretariat noted that limiting the civil liability of polluters for compensation to victims results in victims bearing part of the cost of major accidents and a reduction in the internalisation of the costs of damage. The Secretariat stated that the limitation of compensation could be an acceptable exception if the limit was set at a sufficiently high level so that it did not undermine the incentive value of the liability risk.

5.2. The EU version of the polluter pays principle

This section examines the adoption and evolution of the PPP in the EU and preliminary rulings that concern the PPP by the CJEU.

5.2.1 Adoption and evolution

Environmental policy was not included in the Treaty of Rome of 1957, which established the European Economic Community (now the EU). In 1973, the European Council adopted the PPP (and the preventive action principle) when it established the first environmental action programme for the following three years. Adoption of the PPP (and other environmental principles) by the Council followed a note by the German delegation on 25 September 1972 requesting the Council to base its resolution on a Community policy for the environment *“on a general environmental conception”*. The resolution contained a general part that determined the *“basic principles of a European environmental policy”* and an action programme that set out specific actions. The PPP was included in the general part (together with nine other environmental principles). On 31 October 1972, environment ministers for the Member States agreed eleven *“principles of a Community environmental policy”*, including the PPP. The environmental action programme envisaged application of the PPP to measures to remediate pollution, the proposal for the programme having referred to payment for the costs of pollution and remedial measures by persons that damage or pollute the environment. Principle 5 of the first environmental action programme stated in pertinent part that *“[t]he cost of preventing and*

eliminating nuisances must in principle be borne by the polluter". The programme also stated that the (now) EU would act in collaboration with the OECD to establish a common method to estimate the cost of anti-pollution measures.

The environmental principles were subsequently included in the second, third and fourth European Community environmental action programmes without any detailed discussion as well as further action programmes.

In 1975, the Council issued a recommendation concerning the PPP on the allocation of costs and action by public authorities. The recommendation identified the polluter as *"someone who directly or indirectly damages the environment or who creates conditions leading to such damage"*.

The recommendation stated that:

"If identifying the polluter proves impossible or too difficult, and hence arbitrary, particularly where environmental pollution arises from several simultaneous causes ("cumulative pollution") ... or from several consecutive causes ("pollution chain") ... the cost of combating pollution should be borne at the point in the pollution chain or in the cumulative pollution process, and by the legal or administrative means which offer the best solution from the administrative and economic points of view and which make the most effective contribution towards improving the environment.

Thus, in the case of pollution chains, costs could be charged at the point at which the number of economic operators is least and control is easiest or else at the point where the most effective contribution is made towards improving the environment, and where distortions to competition are avoided."

The recommendation thus implied that application of the PPP should be channelled, when possible, to a single person even when the person identified as the "polluter" was not the person that caused the pollution.

The recommendation further stated that *"[t]he concept of polluter ... does not affect provisions concerning third-party liability"*. As the OECD Joint Working Party on Trade and Environment subsequently commented, it is thus possible to designate a polluter to bear the costs of preventive measures and a third party that is responsible for the pollution to pay compensation.

In July 1987, the Single European Act included the PPP in article 130r(2) of the Treaty establishing the European Economic Community (subsequently article 174(2) of the Treaty on the Functioning of the European Union (TFEU)).

Article 130s(5) (subsequently article 175(5) of the TFEU) recognised the need for reasonableness in applying the PPP by stating that:

"Without prejudice to the principle that the polluter should pay, if a measure based on the provisions of paragraph 1 involves costs deemed disproportionate for the public authorities of a Member State, the Council shall, in the act adopting that measure, lay down appropriate provisions in the form of:

- *Temporary derogations, and/of*
- *Financial support from the Cohesion Fund."*

The current version of the PPP (now in article 191(2) of the TFEU) states that:

"Union policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Union. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay."

The PPP does not apply to the remediation of all environmental damage in the EU. For example, the European Court of Auditors' Special Report on the PPP commented on difficulties faced by competent

authorities in applying the cost recovery principle to pollution that originates from diffuse sources such as agricultural practices, noting that diffuse agricultural pollution from nitrates and pesticides is the main cause of groundwater failing to achieve good chemical status.

The Commission considered in its official reply¹⁸⁸ and in relation to the previous CAP (2014-22) that was based on cross compliance, that the PPP is implemented in the Common Agricultural Policy (CAP) through, inter alia, the sanction system of cross-compliance where reductions of CAP payments are applied when farmers do not respect applicable EU relevant law on the environment and climate including certain statutory rules (e.g. the Nitrates Directive). In addition, the CAP can directly support practices, investments, etc., in the service of the environment and climate that compensates only for action going beyond relevant legal obligations. To be noted that in the CAP 2023-2027 the system of cross-compliance was replaced by the conditionality rules, which include a higher level of ambition through its strengthened green architecture (see p. 179-180 with details about current CAP).

The Court of Auditors' 2021 special report also referred to the 2014 EU guidelines on State aid for environmental protection and energy regarding application of the PPP to legacy pollution, including the situation where the persons responsible for the pollution no longer exist, cannot be identified, or are insolvent.

Under the EU version of the PPP, a landowner that purchased an interest in a contaminated site and did not contribute to the pre-existing contamination is not liable because the landowner did not contribute to the contamination. Under the version of the PPP that applies to the national law of most if not all Member States, however, the landowner may be held liable. Further – and crucially – there is no need for the current owner or occupier of land on which there was pre-existing contamination to have breached any laws or indeed, for such laws to have existed at the time of the disposal or treatment of pollutants/contaminants that caused the contamination. Although a person that caused land to be contaminated or water to be polluted may be prosecuted for causing the contamination or pollution, legislation that imposes liability for remediating the contamination or pollution is separate and independent of such legislation.

Another example is the introduction in the ELD of primary, complementary, and compensatory remediation. Primary remediation is the remediation of biodiversity and/or waters and services rendered by them to other natural resources and the public to or towards their baseline condition, that is, their condition at the time of the damage that would have existed if the environmental damage had not occurred. If primary remediation does not restore the damaged biodiversity or waters to their baseline condition, the liable operator must carry out complementary remediation, that is measures to provide a similar level of biodiversity and waters and services provided by them, including at an alternative site if appropriate, that would have been provided if the damaged site had been returned to its baseline condition. The alternative site should be geographically linked to the damaged site if possible and appropriate. In addition, the liable operator must carry out compensatory remediation, that is, additional improvements at the damaged site or an alternative site to compensate for the interim loss of the damaged biodiversity or waters and services provided by them from the time of the damage until recovery to their baseline condition.

Prior to introduction of the ELD, a person that caused damage to biodiversity and waters, was not required to carry out, or pay the costs of, complementary or compensatory remediation.

Further, the ELD introduced liability for remediating environmental damage caused by intentional authorised activities in addition to accidental damage, as evidenced in *Folk v Unabhängiger Verwaltungssenat für die Steiermark*, which concerned alleged water damage by a hydroelectric power plant on the River Mürz in Austria, and *Naturschutzbund Deutschland — Landesverband*

¹⁸⁸ European Court of Auditors (2021), [The Polluter Pays Principle: Inconsistent application across EU environmental policies and actions](#). Replies of the European Commission, p. 42.

Schleswig-Holstein eV v Kreis Nordfriesland, which concerned damage to a population of black tern (*Chlidonias niger*), listed in annex I of the Birds Directive, at a bird sanctuary in Germany.

5.2.2 Rulings by the Court of Justice of the European Union

The CJEU has ruled on application of the PPP in the EU in the context of accidental pollution and other environmental damage by stating that a polluter is only responsible for remediating the pollution to which they have contributed. That is, unlike application of the PPP by some Member States and CERCLA in the US in which the owner of a contaminated site can be liable even though the owner did not cause or acquiesce in the contamination, or even in some cases know that the site was contaminated when it acquired it, there must be a causal link between a polluter and environmental damage under EU law.

In the combined cases of *Raffinerie Mediterranée (ERG) SpA v Ministero dello Sviluppo economico* (both of the same name), the CJEU stated that Member States have broad discretion in establishing a causal link. They may for example, create a rebuttable presumption that reverses the burden of proving that a causal link exists from the competent authority to an operator. Evidence to establish the link may include the location of the operator's facility near a contaminated site and correlation between substances used by the operator and those identified at the contaminated site. In such a case, the operator is liable for remediating the pollution unless it rebuts the presumption of liability.

The CJEU also recognised proportionality in its ruling in *R v Secretary of State for the Environment (ex parte Standley)*, which concerned water pollution by nitrates. The court stated that:

“Member States are to take account of the other sources of pollution when implementing the [Nitrates] Directive and, having regard to the circumstances, are not to impose on farmers costs of eliminating pollution that are unnecessary. Viewed in that light, the [PPP] reflects the principle of proportionality”.

The CJEU has extended the designation of a polluter to include more than one person in the context of liability for remediating accidental damage. In *Van de Walle v Texaco Belgium SA*, which involved hydrocarbons accidentally spilled in land at a service station, causing soil and groundwater contamination, the CJEU stated that the manager/operator of the service station that was in possession of the hydrocarbons was responsible as a holder of waste as well as the oil company that supplied petrol to the service station if the poor condition of the service station's storage facilities and the leak of hydrocarbons could be attributed to a breach of the oil company's contractual provisions with the owner or operator of the service station.

The CJEU further ruled in *Commune de Mesquer v Total France SA*, which involved a marine oil spill, that previous holders or producers of the product that became waste *“may, in accordance with the [PPP] be responsible for bearing the cost of disposing of waste”*. Such persons could include the owner of the ship carrying hydrocarbons (heavy fuel oil) that was in possession of them immediately before they became waste, the company that sold the hydrocarbons, and the company that chartered the ship that carried the hydrocarbons when the spill occurred, provided they *“contributed to the risk”* that pollution would occur and failed to take measures to prevent the incident.

Extending the PPP in *Commune de Mesquer* to persons that *“contributed to the risk”* of pollution injected a proportionality approach to the PPP in respect of producers of products that become waste when they no longer control or hold the product when it becomes waste. Arne Bleeker commented that, in such a case, courts will need to establish the extent to which the product contributed to damage caused by the waste through their negligence or (as in *Van de Walle*) through a breach of contractual obligations. He further stated that, although at least in the context of the Waste Framework Directive, the “risk responsibility” notion makes it easier for courts to impose responsibility on a producer of a product that becomes waste – and thus to induce them to reduce such a risk – establishment of such

risk liability could be difficult to prove, thus increasing the costs of victims in claims against product producers.

In *Naturschutzbund Deutschland — Landesverband Schleswig-Holstein eV v Kreis Nordfriesland*, which concerned damage caused by management of a Natura 2000 site, the CJEU referred to the PPP in the context of the interpretation of the term “occupational activity” under the ELD. The court rejected an argument that, according to the German language version, the ELD implied that an occupational activity was covered by the ELD only if the activity had a purely economic meaning instead of also including activities carried out in the public interest pursuant to a statutory assignment of tasks. The CJEU stated that such an interpretation would exclude many activities that posed a risk to human health or the environment and would thus deprive the ELD of part of its practical effect in holding operators financially liable for causing environmental damage and thus inducing them to adopt measures and to develop practices to minimise the risk of such damage.

Application of the PPP in EU legislation does not inhibit application of a different version of the PPP by Member States. For example, in *Ministero dell’Ambiente e della Tutela del Territorio e del Mare v Fipa Group Srl*, the CJEU stated that if a causal link cannot be established between environmental damage and an activity of an operator, the situation is governed by national law. The court further ruled that the ELD does not preclude national legislation in cases in which it is not possible to identify the polluter of the site or to require the landowner that is not responsible for the pollution to carry out preventive or remedial measures. Under the Italian law at issue in the case, a competent authority cannot require the owner of contaminated land to carry out remedial measures unless the owner caused the damage. If the competent authority cannot identify the polluter or require the polluter to carry out remedial measures, the authority may carry them out. If the competent authority carries them out, the landowner must reimburse the authority for the increase in market value of the site after the measures have been carried out.

Advocate General Kokott mentioned the potential for owners of contaminated/polluted sites, as holders of waste under articles 14 and 15 of the Waste Framework Directive, being responsible for remediating the waste/contamination in *Ministero dell’Ambiente e della Tutela del Territorio e del Mare v Fipa Group Srl*. She recommended to the court however that it should not address the “*difficult and, in part, delicate questions*” because their possible significance for the case was unclear. The issue has not arisen in any other case heard by the CJEU.

5.3 Member State versions of the polluter pays principle

Member States refer to the PPP in different ways. For example, the Bulgarian Cabinet referred to the PPP in approving amendments to legislation that raised the level of penalties for causing damage to air, water, soil, landscapes, biodiversity, and other environmental components in January 2024. A statement accompanying the amendments commented that low penalties had resulted in the payment of fines instead of taking measures to stop pollution.

The main difference between application of the PPP under EU law and the national law of Member States, however, is its application to the remediation of legacy contaminated land. Under the national law of Member States, the scope of persons to which the PPP applies is extended from a person that causes or contributes to such contamination also to include the owner or occupier of contaminated land. The differences between application of the PPP to the remediation of damage to waters and biodiversity are much less than they are for land.

5.3.1 Land damage

Under the law of many Member States, a person that owns or occupies land that was contaminated when they acquired an interest in it may be liable for remediating the legacy contamination despite the lack of a causal link between them and the contamination. The legislation focuses on the

remediation of contaminated land. It does not tend to apply to land that is damaged by any other causes.

The issue for the application of the PPP to liability for remediating legacy contamination first arose in the EU in the early 1980s when seriously contaminated sites were discovered in Denmark, the Netherlands, and Sweden. Denmark and the Netherlands established public funds to pay to remediate the sites but were largely unsuccessful in recovering funding under tort law because they could not prove that the companies that had caused the contamination many years before were negligent when they had caused it. Gradually, countries in Europe began to introduce strict liability systems for remediating legacy contamination, not only for persons that caused it but also, liability (generally secondary liability) for current owners and occupiers of contaminated sites.

Inclusion of current owners and occupiers of contaminated sites assists in avoiding difficulties noted by the OECD and the Court of Auditors in that persons that caused the contamination may no longer exist or may be insolvent. Inclusion of current owners and occupiers does however mean application of a different version of the PPP to the OECD and the EU versions that extends liability for remediating contamination beyond persons that caused or otherwise contributed to the contamination.

Member States extended liability for remediating legacy contamination to owners and occupiers in various ways, especially by reducing or removing the requirement for causation. The following is a very brief overview of the national legislation for remediating legacy land/soil contamination by some Member States to demonstrate differences in application of the PPP between them.

As noted above, the tendency is for the national liability legislation of Member States to impose primary liability for remediating contamination on persons that contaminated land, and secondary liability on owners (and sometimes also occupiers) of land that did not cause the contamination.

For example, as a general rule in Austria, a landowner is liable for remediating contaminated land if the person that caused the contamination cannot be found, no longer exists or is insolvent and the landowner permitted or acquiesced in the contamination and failed to carry out reasonable measures to prevent it, or if the landowner acquired contaminated land and, when it did so, knew or should have known about the contamination.

The three regions of Belgium have sophisticated regimes to remediate legacy contamination. In the Flemish Region of Belgium, the operator of a facility subject to an environmental permit is primarily responsible for remediating contaminated land. If the site is not subject to an environmental permit, the user of the land is secondarily responsible. If there is no user or the user is exempt from liability, the owner of the land has tertiary responsibility unless the owner can show that another person controls the land. There is thus a difference between responsibility and liability. If a person that is responsible for remediating contamination remediates it, that person may claim against the person that polluted it – assuming of course that the liable person can be found and is financially viable.

A similar system exists in the Walloon Region, in which the person that caused contamination is primarily liable for remediating it. If that person cannot be located or cannot pay to remediate it, the operator of activities subject to an environmental permit is secondarily liable. If neither person can be located or pay to remediate the contamination, the owner of the freehold or leasehold of the land has tertiary liability.

In the Brussels-Capital Region, the operator, owner, or occupier of land that contaminated it is primarily liable for its remediation unless that person had stopped activities on the land before 1 January 1993, or after that date provided that the person had carried out the activities in compliance with applicable legislation. If more than one person caused the contamination, the person who last contributed to it is responsible for the remediation. If the person that caused the contamination cannot be identified, or is no longer liable for the remediation, the owner of the freehold or leasehold interest in the land is secondarily liable for its remediation. They may however claim the remediation costs

against the person that caused the contamination, provided that person can be found and is financially viable.

If contamination in the Netherlands occurred before or after 1 January 1987, the person that caused the contamination is liable for its investigation and remediation. If the contamination occurred between 1 January 1975 and 1 January 1987, the owner of the contaminated land is also liable for its investigation and remediation. If the contamination occurred before 1 January 1975, the owner of the contaminated land is not liable unless it caused the contamination, was at fault in doing so, and knew or should have known that causing the contamination would lead the State to suffer financial harm in the form of clean-up costs (known as the relativity principle).

Under German law, the following persons are jointly and severally liable for investigating and remediating soil and groundwater:

- the person that caused the pollution;
- the legal successor of the person that caused the pollution, for example by a merger or inheritance;
- the owner of the contaminated land;
- the tenant or other occupier of the contaminated land; and
- the former owner provided that it transferred the land on or after 1 March 1999 when the Act entered into force.

Persons in the first two categories are called “disturbers by conduct”; persons in the following three categories are called “disturbers by status”. There is no hierarchy in the above categories. The competent authority may require persons in any category to investigate and remediate contaminated land. As a practical matter, authorities tend to require the person that is most able promptly and efficiently to remediate the contamination to do so subject to the constitutional principle of proportionality.

Under Hungarian law, the owner and possessor/user of real property are jointly and severally liable for remediating damage to it. The landowner may avoid liability by identifying the actual user and proving beyond any reasonable doubt that the owner was not liable for the imminent threat of, or actual, environmental damage.

Under Polish law, the owner of contaminated land is jointly and severally liable with the operator that caused the damage for carrying out preventive and remedial measures if the damage was caused with the consent and knowledge of the owner. The landowner may avoid liability by notifying the competent authority of the imminent threat of, or actual, environmental damage immediately upon learning about it.

Some Member States have a so-called “innocent purchaser” defence in their contaminated land legislation. The defence applies if land was contaminated before the person acquired an interest in it and did not know and could not have known that the land was contaminated when it acquired it. There are various versions of the defence.

In Finland, the owner or occupier of land on which contamination exists before they acquired the land is not liable unless: (1) the order to remediate the contamination was issued or predicted before their acquisition of the land, and the order was not complied with notwithstanding that such compliance was emphasised and the circumstances were reported to the police; (2) they knew or should have known that an order to investigate or remediate the land had been issued when they acquired the land, or (3) the acquisition was made by a person which itself was or could be required to comply with the order. If land was contaminated between 1 April 1979 and 31 December 1993, the landowner is liable for its remediation if the person that caused the contamination cannot be found or cannot pay. If the contamination ceased completely before 1 April 1979, the current landowner is primarily liable

regardless of whether it caused the contamination; a former landowner who did not cause the contamination is not liable.

In Latvia, liability applies to a person that acquired an interest in a site after the site was registered under the regime for remediating land contaminated by historic pollution.

In Sweden, the owner of a contaminated site that did not cause the contamination has a defence to liability for remediating it if the owner carried out investigations to show that it did not know and should not have known that contamination existed when it acquired the contaminated site. The defence only applies, however, if the source of contamination no longer exists and the contamination is not ongoing. For example, if the contents of a pit continue to seep into groundwater or migrate, the landowner is considered to be an operator even though it is not continuing to operate the pit.

5.3.2 Water damage

Differences between application of the PPP between EU and Member State law for the remediation of water damage tend to be less than for the remediation of land damage. There are two main reasons for this.

First, the primary cause of damage to water is pollution, which tends to dissipate much more quickly than pollution/contamination of land. There are, for example, no regimes to remediate legacy water pollution as there are regimes to remediate legacy contaminated land, with the caveat that national contaminated land legislation in some Member States (e.g., Belgium, Denmark, Finland, Germany, the Netherlands, Romania, Slovakia) includes requirements for the remediation of polluted groundwater, and to a lesser extent surface water. Thus, at least to this extent, the version of the PPP applied to the remediation of water differs from the version of the PPP in EU legislation.

Second, EU legislation that requires the remediation of polluted water (notably conditions of permits under the IED and, to a much lesser extent, provisions of the ELD), tends to be applied to the remediation of water pollution. There are limited exceptions to this general rule. For example, Irish law imposes liability for preventing of remediating pollution on persons that cause or permit 'polluting matter' to enter waters as well as persons that breach relevant authorisations in allowing the discharges. Ireland is however in the minority of Member States in this regard.

5.3.3 Biodiversity damage

Application of the PPP to national law that requires the remediation of damage to biodiversity differs from its application to EU law only to a limited extent. There are two main reasons for this.

First, the ELD and to a much lesser extent articles 6(2) and 6(3) of the Habitats Directive tend to be applied for the remediation of damage to protected species and natural habitats. Member State legislation does not tend to require owners and occupiers of sites on which protected species and natural habitats are damaged to remediate the damage, although there is at least one exception. Irish legislation imposes liability for remediating protected species and natural habitats on the owner, occupier, and user of the relevant land as well as the person that carried out the activity that caused damage to a Natura 2000 site.

Second, only a few Member States have national legislation that requires the remediation of damage to protected species and natural habitats below the significance criteria of the ELD. This legislation does not tend to extend liability beyond the person that caused the damage.

There is an exception to the above if land on which there are protected species and natural habitats is damaged by pollution with the result that they are contaminated land under national law. In such a case, however, the focus is on the remediation of the contaminated land and not ecological systems on that land.

5. National Responsibility for implementing the PPP

As the PPP is a fundamental principle of EU environmental law it is also the responsibility of the Member State to implement it on a national level.

In general, the Member States are bound by the goals of the different Directives, so especially implementing the PPP in the way the specific directives specify. It is up to the Member States to devise their national laws on how to reach the directive's goals. Once adopted at EU level, they are then transposed by EU Member States, so they become law in the Member State.

Article 288 of the Treaty on the Functioning of the European Union states that a directive is binding, as to the result to be achieved, in the Member States to whom it is addressed (one, several or all of them), while leaving national authorities the power to choose the form and methods to achieve the result. So it is the responsibility of the Member State to achieve the objectives set by the directive and to communicate the measures taken to the European Commission. Therefore, there needs to be at least some information from every Member State concerning the different directives implementing the PPP.

Furthermore, it is worth noting that all OECD Member Countries should apply the PPP and this is a consideration during their accession process. Currently, 23 EU Member States are also Member Countries with 3 more going through the accession process.

The principles of subsidiarity and proportionality¹⁸⁹ govern all EU actions. In all areas, in line with the principle of proportionality, Union actions should be restricted in their content and form to what is necessary to achieve the objectives defined in the Treaties. The principle of subsidiarity ensures that decisions are taken as closely as possible to the citizen by the most appropriate level where the intended objective(s) can be most effectively achieved. Subsidiarity means that the Union should only act if, and in so far as, the objective of the action cannot be achieved sufficiently by the Member States (at national, regional and local levels). This principle aims to ensure that policy measures are decided at Union level only where necessary and as close as possible to the citizen, which makes it a relevant question as to how Member States apply the PPP.

6. European Court of Auditors

The European Court of Auditors revised the application of the Polluter Pays Principle as a key principle underlying the European Union's (EU) environmental policy¹⁹⁰. They noted that "Application of the principle means that polluters bear the costs of their pollution including the cost of measures taken to prevent, control and remedy pollution and the costs it imposes on society. By applying the principle, polluters are incentivised to avoid environmental damage and are held responsible for the pollution that they cause. It is also the polluter, and not the general taxpayer, who covers the cost of remediation."

The ECA report focuses on whether the principle was well applied in four EU environmental policy areas: industrial pollution, waste, water, and soil. There was also an assessment of whether the Commission's actions related to the Environmental Liability Directive for regulating environmental damage from economic activity brought results. Also, an assessment of whether the Commission and Member States protected the EU budget from being used to bear expenses that polluters should have paid.

Their conclusions were:

Overall, we found that the Polluter Pays Principle is reflected and applied to varying degrees in the different EU environmental policies and its coverage and application was incomplete. With regards

¹⁸⁹ Article 5(1) of the Treaty on European Union

¹⁹⁰ European Court of Auditors (2021), [The Polluter Pays Principle: Inconsistent application across EU environmental policies and actions](#).

to environmental liability, the Commission's actions to support Member States' implementation of the Environmental Liability Directive had not solved key weaknesses, such as unclear key concepts and definitions and the absence of financial security in cases of insolvency. The EU budget is sometimes used to fund clean-up actions, that should under the Polluter Pays Principle have been borne by polluters.

We recommend the Commission to:

- o assess the scope for strengthening the integration of the Polluter Pays Principle into environmental legislation;*
- o consider reinforcing the application of the Environmental Liability Directive ; and*
- o protect EU funds from being used to finance projects that should be funded by the polluter*

The Commission responded in its Zero Pollution Action Plan with a commitment to undertake this Fitness Check and to use it to make recommendations on how to better implement the PPP¹⁹¹.

A 2021 report by the European Court of Auditors concluded that EU law does not apply the polluter-pays-principle to agricultural emissions and recommends that the Commission should “*assess the potential of applying the [...] principle to agricultural emissions, and reward farmers for long-term carbon removals*”. In the replies of the Commission, the Commission accepted the recommendation and clarified that the [current] CAP, the Farm to Fork Strategy and the Green Deal do foresee positive incentives to reward farmers for long-term carbon removals. The Commission has also carried out a study to assess the polluter pays principle in relation to agricultural greenhouse gas emissions, which was published on 13 November 2023.

7. Current political commitments

The Green Deal 2019 called for: “*Well-designed tax reforms can boost economic growth and resilience to climate shocks and help contribute to a fairer society and to a just transition. They play a direct role by sending the right price signals and providing the right incentives for sustainable behaviour by producers, users and consumers. At national level, the European Green Deal will create the context for broad-based tax reforms, removing subsidies for fossil fuels, **shifting the tax burden from labour to pollution**, and taking into account social considerations.*”

The European Semester 2020 Communication underlines: “*Moreover, simplifying the tax system can help limit economic distortions and reduce the administrative burden for companies. Since an efficient and fair tax system is particularly important to support an effective economic recovery in the medium term, some Member States are recommended to reform their tax system, **including through shifting from labour to environmental taxation.***”

In response to the COVID-19 crises, many countries took unprecedented steps and introduced broad fiscal measures to keep the economy alive. Once recovery is well underway, governments should shift from crisis management to more structural tax reforms. “*Once the recovery is firmly in place, rather than simply returning to business as usual, governments should seize the opportunity to build a greener, more inclusive and more resilient economy,*” quote Pascal Saint-Amans, Director of the OECD Centre for Tax Policy and Administration. “*One path that should be urgently prioritised is environmental tax reform and tax policies to tackle inequalities*”.

On 15 July 2020, the Commission adopted an ambitious Tax Package for fair and simple taxation (europa.eu) The package underlines **well-designed tax systems' important role in supporting the green transition** by creating the right incentives for sustainable and environment-friendly behaviour,

191

[Zero Pollution Action Plan - European Commission \(europa.eu\)](#)

including sustainable investment, and ensuring that the polluter pays principle is respected. It subsequently adopted a proposal for a [revision of the Energy Taxation Directive](#).

The Commission's guidance to help Member States prepare and present their recovery and resilience plans (RRPs) includes potential reforms such as: **For instance, shifting away from labour taxation into well-designed environmental taxation**, with due consideration to possible distributional effects, has the potential to stimulate employment, change behaviour towards more sustainable consumption and production and to help the EU and Member States achieve their environmental and climate objectives [Guidance to Member States - Recovery and Resilience Plans - Part 1 \(europa.eu\)](#)

8. Conclusions on the scope of PPP

In summary, the PPP in EU environmental policy is generally applicable. In terms of scope, PPP currently concerns mainly fiscal aspects, as well as preventive measures (including permits) and the comprehensive cost implications of environmental damage already caused (criminal, civil and environmental liability). As a Treaty principle it is relevant for all policies affecting the environment (whether it is mentioned in their recitals or not), including internal market policies, climate policies, agricultural policies, transport policies etc. It reflects the idea that the environmental costs of economic activities, including the cost of preventing potential harm, should be internalized rather than imposed upon society at large. Environmentally harmful subsidies, where the State pays the polluter to pollute are inconsistent with the PPP. All issues related to responsibility for cost for environmental remediation and compliance with pollution control regulations involve this principle.

Many Directives and Regulations refer explicitly to the PPP, but others do not. This seems to reflect the legal practices at the time, but in itself is not material as secondary legislation (Directives and Regulations) that does not explicitly include the PPP in its recitals is still bound by primary legislation (the Treaty) and should implement the PPP.

The PPP should also be applied by Member States, in line with the principle of general applicability. Any assessment of the PPP therefore needs to also consider if in line with the principle of subsidiarity, Member States are best placed and actively implementing the principle, for example, to internalise environmental externalities.

Annex 7. Assessment of implementation

Assessment of implementation is considered from three perspectives: the EU legislation (who pays for the actions it requires); the polluting sectors (do they pay their costs); the environmental damage (are externalities internalised?)

A. EU legislation – do polluters pay for it?

In the tables below, we examine the legal provisions for each individual policy and indicate in how far they apply the PPP. This analysis is limited to the legal provisions, it does not include a judgement of the effectiveness and implementation of these provisions.

For the costs of prevention/control and for the administrative costs, we have applied a **Red-Yellow-Green** colour coding to denote the extent to which the PPP is currently applied for these two cost categories and for each policy in scope. This rating is an expert judgment based on secondary evidence review and assessment of the policies in question. It is based on two elements. First, a policy perspective, which examines the extent to which the PPP is applied by the *policy* in question. Second, an economic sector perspective, which examines the extent to which the sectors in question incur the external costs associated with the activities via the PPP:

- **Red**: the policy contains measures which incur a cost, but that cost is not, or largely not, met by the polluter.
- **Yellow**: The policy in question contains measures which incur a cost and that cost is partially met by the polluter. The policy in question establishes a duty for the Member State competent authority, hence the extent of application of the PPP depends on national plans and legislation.
- **Green**: The policy in question contains measures which incur a cost which is met or largely met by the polluter. So, a high degree of application of the PPP.
- **White** : The policy contains no measures which result in costs to be met by the polluter. So, the PPP cannot be applied.

For the costs of environmental damage, these costs are not generated by the environmental policy itself but may be addressed by it. The tables below therefore use no colour coding but they do indicate when policies address environmental damage costs. The colour code was avoided as it would be confusing, given that the costs for environmental damage are often already addressed by horizontal policies.

The following analysis is based on the situation in the year 2023 for each policy, grouped by 8th EAP priority objectives.

Table 11: State of play for policies contributing to the 8th EAP climate change priority objectives

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
EU Emissions Trading System (ETS) Directive¹⁹²	Energy supply, energy intensive industry and aviation. Accidental releases are also an issue where large-scale accidental release of GHG emissions are emitted from industrial sites.	GHG emissions	GHG emissions are contributing to global temperature increases. As a result, GHG emissions also result in impacts on human health, ecosystems and buildings where increased frequency and/or severity of extreme weather events such as heatwaves can contribute to greater number of hospital appointments and mortality rates due to heat stress, damaging ecosystems, biodiversity and infrastructure including transport infrastructures and buildings.	The cap on GHG emissions limits the supply of allowances to the carbon market. This ensures that allowances have a market value - price for the externality of GHG emissions. The level of carbon price determines the incentive for companies to reduce their GHG emissions. Companies incur the costs of buying allowances, albeit in industry and aviation sectors, some allowances are also allocated to installations and operators for free. .	Operators have an obligation to monitor their emissions using a monitoring plan and submit annual emission reports, and to commission an independent verifier to verify monitoring. The costs are incurred by the industries that are the primary source of the GHG emissions. Based on the reports, installations and operators surrender allowances for their emissions every year.	The price put on GHG emissions acts as a disincentive for companies, thereby addressing costs of externalities. The costs of trading are incurred by the industries that are the primary source of the GHG emissions.
Effort Sharing (ES) Regulation	Domestic transport (excluding aviation), buildings, agriculture, small industry (including industrial processes, product use, and waste sectors), and waste.	GHGs	Between 1980 and 2020 over 220 000 people in the EU died as a result of extreme weather and climate related events. The combined damage costs of these events is estimated to be EUR 650 billion (EEA,	Legally binding national level GHG emissions reduction targets are set for non-ETS1 sectors. Member States can trade in GHG emissions allocations among each other to support cost efficient achievement of the EU objective. Abatement measures are then implemented at source to reduce pollution. Costs are primarily incurred by the	Member States report annually on their national GHG emissions and every three years on the policies and measures adopted and implemented to achieve their targets. These costs are not incurred by the industries responsible for GHG emissions.	The requirement put on Member States to reduce GHG emissions acts as a disincentive for companies, thereby addressing costs of externalities. However, trading is at national level and the carbon price varies by Member State.

¹⁹² Including Directive (EU) 2023/958 amending Directive 2003/87/EC as regards aviation's contribution to the Union's economy-wide emission reduction target and the appropriate implementation of a global market-based measure .

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
			2023) ¹⁹³ . Costs of pollution include non-market costs (costs of a statistical life, quantified based on willingness to pay method) and market costs (measured by health expenditure).	industries that are the primary source of the GHG emissions.		
CO₂ emission performance standards on new cars and vans	Transport (Road)	Carbon Dioxide emissions from the road transport sector, specifically passenger cars and new light commercial vehicles	The costs of abatement of GHGs to achieve the Paris Agreement were estimated at €100/tonne of GHG emissions. Based on GHG emissions emitted in 2017, the estimated annual cost of environmental externalities for the EU27 was EUR 402 752 million (IEEP, 2021).	Vehicle manufacturers are required to comply with EU fleet-wide CO ₂ emission targets applying from 2020, 2025, and 2030. Financial penalties apply to vehicle manufacturers if targets are exceeded. Costs of compliance are primarily incurred by the vehicle manufacturers and passed onto consumers as the primary source of the GHG emissions.	Manufacturers are required to ensure correspondence between the CO ₂ emissions recorded in the certificates of conformity of their vehicles and the CO ₂ emissions of vehicles in-service. Costs are primarily incurred by the vehicle manufacturers and passed onto consumers as the primary source of the GHG emissions.	The costs of environmental damage are not addressed by the legislation.
Energy Efficiency Directive (EED)	Energy	Greenhouse gas emissions related to low energy efficiency		Requires Member States to achieve cumulative end-energy savings, with targets set at EU level. Includes provisions on minimum requirements for efficiency in energy use and for efficiency in energy supply, aiming to promote energy-efficient technologies and practices. Cost of compliance is primarily incurred by energy consumers.	It establishes a framework for energy audits and management systems for large industrial energy consumers, and district heating and cooling. Cost of compliance is primarily incurred by energy consumers.	The costs of environmental damage are not addressed by the legislation.

¹⁹³ European Environment Agency (2023), [Economic losses from weather- and climate-related extremes in Europe](#).

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
Energy Performance of Buildings Directive (EPBD)	Construction, Building, Transport, Energy	Greenhouse gas emissions related to low energy efficiency		Requires Member States to establish minimum energy requirements for new and existing buildings, and sets EU target for energy efficient renovations, which property developers are required to adhere to. Cost of compliance primarily incurred by property developers.	When a building is sold or rented, energy performance certificates must be issued and inspection schemes for heating and air conditioning systems must be established (the cost is incurred by seller or landlord).	The costs of environmental damage are not addressed by the legislation.
Energy Taxation Directive (ETD)	Manufacturers and consumers of energy products	Greenhouse gas emissions related to low energy efficiency		Costs of pollution prevention and control are not addressed by the legislation.	Costs of administrative and enforcement measures are not addressed by the legislation.	Establishes framework for the taxation of energy products including electricity, motor and most heating fuels to avoid potential distortions of competition across the EU. Including minimum rates of excise duty, encouraging a low-carbon and energy efficient economy. Member States can set their own tax rates within the framework of the ETD thereby addressing costs of externalities (but have flexibility allowed to them over the degree to which this happens). Taxes are levied from the manufacturers and consumers of energy products.
Fluorinated gas (F-gas) Regulation	Semiconductor manufacturing sector and refrigerant manufacturing/supply	Fluorinated GHG (F-gases), including hydrofluorocarbons (HFCs)		Producers and importers of F-gases are required to meet limits for the amount of F-gases on the market and bans its use in certain cases. Where F-gases are in use in existing equipment, it	Producers and importers of F-gases are required to report on placing F-gases on the market and cover the costs of doing so.	The costs of environmental damage are not addressed by the legislation.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
				prevents emissions. Cost of compliance is primarily incurred by producers and importers of F-gases.		
Renewable Energy Directive (RED)	Transport, Development, End-use	Greenhouse gas emissions related to low energy efficiency		Sets binding EU renewable energy target. Includes rules to ensure the uptake of renewables in the transport sector and in heating and cooling. Suppliers are required to adhere to rules and incur the compliance costs. Includes provisions on sustainability criteria for biofuels and bioliquids which are intended to ensure that these fuels are produced in an environmentally sustainable way. Producers of biofuels and bioliquids are required to meet standards and incur the compliance costs.	Economic operators are required to submit reliable information regarding the compliance with the GHG savings thresholds set and are required to verify reporting via independent auditing of the information submitted. Operators incur the compliance costs.	The costs of environmental damage are not addressed by the legislation.
Ozone Depleting Substances (ODS) Regulation	Mainly used in a range of industrial and consumer applications (refrigerators, air conditioners and fire extinguishers)	Ozone depletion	Ozone layer depletion causes increased UV radiation levels at the Earth's surface, damaging to human health (increases in certain types of skin cancers, eye cataracts and immune deficiency disorders). UV radiation also affects terrestrial and aquatic ecosystems, altering	To phase out ODS, restrictions placed on the production, import, export and placing on the market of these substances and products and equipment containing or relying on them. Restrictions also apply to recovery, recycling, reclamation and destruction of ODS. Cost of compliance is	Annual reporting is required from producers, importers and exporters of controlled substances. Operators incur the costs or reporting.	The costs of environmental damage are not addressed by the legislation.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
			growth, food chains and biochemical cycles. Elevated ozone concentrations at ambient levels cause paint to wear off resulting in higher maintenance costs.	primarily incurred by producers and importers of ODS.		
Ecodesign Directive	Manufacturing industry (energy related products)	Burden of resource consumption on the environment, particularly energy consumption.	Unsustainable consumption behaviours due to lack of reliable information about products' environmental sustainability, reparability, lifespan and consumer choice (European Commission, 2020).	Sets standards at the product level (through Implementing Measures) that all manufacturers in scope must comply with to be placed on the internal market. Manufacturers and, where relevant, importers, are responsible for ensuring their products are compliant with the regulation and they must absorb any costs associated with compliance.	Independent competent bodies are assigned by public authorities to verify that products are compliant with the legislation. Manufacturers are responsible for overseeing verification process and the cost of employing the independent verification.	The costs of environmental damage are not addressed by the legislation.
Ecolabel	Manufacturing industry	Burden of resource consumption on the environment, during full life cycle of various products.		Manufacturers are responsible for ensuring their products adhere to minimum standards, helping consumers make informed choices and opt for environmentally friendly products, boosting the market for sustainable products in a circular economy. Costs to adhere to the standards are incurred by the manufacturer. Voluntary	It is the responsibility of manufacturers to ensure their products meet the minimum requirements for an EU Ecolabel, and to initiate proceedings to be granted the label. Participants pay a fee that covers the administrative cost.	The costs of environmental damage are not addressed by the legislation.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
				nature of the scheme will affect level of participation meaning that there is no guarantee that the polluter is targeted.		
Regulation on land use, land use change and forestry (LULUCF) sector	Land use sector (the management of cropland, grassland, wetlands, forests, settlements)	GHG emissions	In 2021, not including carbon sinks, the land use sector emits 97.1 million tonnes of CO2 equivalent per annum (from cropland, settlements, grasslands, and wetlands) (EEA, 2023) ¹⁹⁴ .	The Regulation sets a land-based net carbon removals target which is to be implemented through binding net removal national targets for the LULUCF sector. The specific actions taken to meet the targets set are determined by Member State authorities via their National Energy and Climate Plans. However, the provisions do not explicitly address how the land use sector will bear the costs.	There is emphasis on enhancing the quality of monitoring, reporting and verification (MRV) of emissions and removals but the provisions stipulated apply to the Member State authorities rather than directly to the land use sector.	The costs of environmental damage are not addressed by the legislation.

Table 12: State of play for policies contributing to the 8th EAP priority objective for accelerating the transition to a circular economy

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
Waste Framework Directive (Waste FD)	Construction, mining, waste and water services, manufacturing and households	2.7 billion tonnes of waste generated per annum in EU, with 4% of this being classified as hazardous	Solid waste causes air and water pollution, enhances GHG emissions, produces hazardous gases and leachates, massive land use and exposure to dangerous chemicals (UNEP)	There are legal grounds requiring the polluter to pay for the costs of waste management, including for the necessary infrastructure and its operation (Article 14). Sets EU targets for recycling and recovery.	Waste management is monitored and reported by waste management operators (who incur the costs of these measures). Monitoring and reporting at national level and costs are incurred by Member State	Producers are required to cover the cost under to the EPR obligation of: awareness raising measures; waste collection; and clean up costs from litter (including transport and treatment of litter collected). EPR does not cover the full environmental impacts of waste

¹⁹⁴ EEA (2023), [EU emissions and removals of the LULUCF sector by main land use category](#).

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
			IEEP (2021) identify the main external costs of waste management as follows (with estimates for EUR/tonne waste managed): - CH4 emissions from landfill sites (EUR 317/tonne) - Air pollution from waste incineration (including combustion of biogas and anaerobic digestion) (including particulates, dioxins, heavy metals, acid gases, NO_x, VOCs, CO₂) (EUR 193/tonne without energy recovery; EUR 112 / tonne including energy recovery)	Implementation plans to facilitate Member States with meeting their waste management targets require the Member State to provide information on funding for waste management, specifying that the funding should be sourced according to the PPP. National approaches to implementation are varied and can have a major influence on the impact on waste management and by extension, the way in which the polluter is responsible. Despite this, given the explicit role of the PPP and EU targets, it is rated green.	authorities. Member State authorities also incur the cost of establishing a monitoring framework that enables them to adequately ensure that producers of products and organisations on their behalf, implement their extended producer responsibility obligations. These measures are often funded through EPR payments by the producers.	generated and it is more common for these payments to cover administrative costs. It is the Member State's responsibility to establish EPR schemes covering the above including penalties for infringement. Waste management activities in scope of the Waste FD are subject to the provisions of the ELD.
Batteries Regulation	Producers, distributors and end-users of waste batteries and accumulators	Hazardous substances contained in waste batteries and accumulators	- GHG emissions from composting and mechanical and biological treatment (EUR 0.08/tonne) - Recycling (EUR 132/tonne) - GHGs, air pollution and noise pollution from waste collection and transportation (EUR 4/ tonne)	Restrictions apply to prohibit the placing on the market of batteries containing mercury and cadmium. Costs of compliance are incurred by the battery manufacturer.	Collection and recycling rates are monitored and reported by waste management operators (who incur the costs of these measures). At national level, collection and recycling rates shall be monitored and reported, and this cost is primarily incurred by Member State authorities (in the form of Extended Producer Responsibility Organisations), funded through EPR payments by the producers.	Distributors are required to take back waste portable batteries or accumulators at no charge when supplying portable batteries or accumulators, unless alternative existing schemes are available. Producers of automotive batteries and accumulators, or third parties, shall not refuse to take back waste industrial batteries and accumulators from end-users, regardless of chemical composition and origin and are required to set up schemes for the collection of

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
					The 2023 revision includes battery passports which are required to maximise the exchange of information and enable tracking of batteries. The economic operator that places the battery on the market is responsible for information contained in the passport.	waste automotive batteries and accumulators from end-users or from an accessible collection point in their vicinity. Costs of compliance are incurred by the battery manufacturer but EPR does not cover the full environmental impacts of waste generated.
ELV Directive	Producers, distributors and end-users of Vehicles	Hazardous substances released by end-of-life vehicles, including their components and materials		Purpose of the Regulation is to prevent and control pollution caused by end of life management for vehicles (see costs of environmental damage/ externalities). Producers are required to ensure that vehicles are designed and manufactured in such a way as to allow the quantified targets for reuse, recycling and recovery to be achieved and they incur the cost of doing so.	Economic operators are required to publish information on the design of vehicles and their components with a view to recoverability, recyclability and the environmentally sound treatment of end-of life vehicles. Costs are incurred by the operator.	Member States are required to ensure the last holder and/or owner can deliver the end-of life vehicle to an authorised treatment facility without any cost as a result of the vehicle having no or a negative, market value. Member States should ensure that producers meet all, or a significant part of, the costs of the implementation of these measures; the normal functioning of market forces should not be hindered.
Landfill Directive	Producers and distributors of waste	Hazardous substances released from waste located in landfill		Landfill operators are required to operate according to permit conditions that include methods for pollution prevention and abatement. All of the costs involved in the setting up and operation	The operator is required to maintain a register of the quantities and characteristics of the waste deposited and representative samples for inspection. Operators are responsible for annual reporting of monitored results and incur the costs of doing so. Costs are	Landfill operators are required to operate according to permit conditions that include a plan for the closure and after-care procedures. Estimated costs of the closure and after-care of the site for a period of at least 30 years shall be covered by the price to be charged by the operator for the disposal of

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
				of a landfill site shall be covered by the operator.	covered by the price charged to the polluter disposing of waste.	any type of waste in that site. Closure and after-care procedures partially address risk of environmental damage and ensure the costs are covered by the price charged to the polluter disposing of waste. Landfill activities are subject to the provisions of the ELD.
Waste Shipments Regulation	Producers, distributors and end-users of waste	Hazardous substances released during the shipment of waste and recycling of waste		All waste shipments for transboundary movements of hazardous wastes and their disposal are subject to procedures of prior written notification and consent. This requires a contract between the notifier responsible for the shipment and the consignee for the recovery or disposal of the notified waste. Notifiers are also required to hold an insurance policy to cover the risks of environmental pollution. Costs are incurred by the notifier responsible.	The notifier responsible for the shipment is required to supply document information to accompany the prior written notification and incurs the cost of doing so.	The notifier responsible for the shipment is required to take-back a shipment if it cannot be completed as intended and cover costs arising from the transaction. However, all externalities from the waste are not addressed. Transboundary shipment of waste is subject to the provisions of the ELD.
Single-use plastics Directive	Producers, distributors and end-users of single-use plastic waste, and fishing gear containing plastic	Hazardous substances released from single-use plastic waste, and sea-based litter stemming from	Plastic pollution is a global problem due to its ability to alter habitats and natural processes, reducing ecosystems' ability to adapt to climate change, directly affecting people's	Operators placing on the market of single-use plastics are required to comply with restrictions and labelling requirements and incur the cost of doing so. Producers of fishing	Operators placing on the market of single-use plastics and of fishing gear containing plastic are required to cover the costs of data gathering and reporting and incur the costs of doing so.	Producers are required to cover the cost under to the EPR obligation of: awareness raising measures; waste collection; and clean up costs from litter (including transport and treatment of litter collected). It is the Member State's responsibility

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
		fishing gear containing plastic	livelihoods, food production capabilities and social well-being. (UNEP)	gear containing plastic are required to finance the costs related to end-of-life and waste fishing gear containing plastic under EPR schemes.		to establish EPR schemes covering the above, including penalties for infringement.
Plastic Bags Directive	Producers, distributors and end-users of single-use plastic bag waste	Hazardous substances released from single-use plastic bag waste		Member States are required to set either or both of the following: annual consumption targets set to limit the number of lightweight plastic bags per person, and fees so that lightweight plastic carrier bags are not provided free of charge at the point of sale of goods or products. The consumer incurs the cost.	Costs of administrative and enforcement measures are not addressed by the legislation.	Producers are required to cover the cost under the EPR obligation of: awareness raising measures; waste collection for lightweight plastic carrier bags that are discarded in public collection systems, including the infrastructure and its operation, and the subsequent transport and treatment of that waste; and the costs of cleaning up litter resulting from those bags and the subsequent transport and treatment. The Directive also requires Member States to put in place a tax on plastic bags (unless a reduction in use takes place through other measures). Implementation is determined by the Member State and therefore varies depending on Member State ambition (resulting in an amber rating).
Directive on packaging and packaging waste	Producers, distributors and end-users of packaging	Hazardous substances released from packaging waste		Sets national recycling targets per material used in packaging. Member States are required to adopt measures to meet the	Operators responsible for placing packaging on the market are required to report material used in packaging and incur costs of doing so.	The costs of environmental damage are not addressed by the legislation. <i>Proposal for revision means that by end of 2024, EU countries should ensure that producer responsibility</i>

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
				targets – this may include deposit-return schemes, targets, economic incentives, or minimum percentages of reusable packaging placed on the market for each type of packaging, etc. The measures adopted determine the extent of prevention or control in placing packaging on the market. Packaging placed on the market is required to meet minimum requirements to limit the weight and volume of packaging, to minimise use of hazardous substances and to design reusable or recoverable packaging. Costs of compliance are incurred by operators responsible for placing packaging on the market.	<i>Proposal for revision means that by end of 2024, EU countries should ensure that producer responsibility schemes are established for all packaging, covering the financing or financing and organisation of the return and/or collection of used packaging and/or packaging waste and its channelling to the most appropriate waste management option, as well as for reuse or recycling of the collected packaging and packaging waste.</i>	<i>schemes are established for all packaging, covering the financing or financing and organisation of the return and/or collection of used packaging and/or packaging waste and its channelling to the most appropriate waste management option, as well as for reuse or recycling of the collected packaging and packaging waste. However, EPR does not cover the full environmental impacts of waste generated and it is more common for these payments to cover administrative costs.</i>
Extractive Waste Directive	Extractive industries	Hazardous substances released from the waste of extractive industries	Mining damages landscapes, habitats, biodiversity, human health and water resources. Water is contaminated by hazardous substances. The hydrologic cycle is	Operators are required to apply for a permit. The application includes a waste management plans with all measures necessary to prevent or reduce adverse effects on the environment and human health incurred by management of	Operators are required to keep up-to-date records of all waste management and make them available for inspection. If requested, the operator is required to demonstrate, through a risk assessment that that concentration limits are appropriate in view of	Requirements also apply after the closure of a waste facility. Operators are required to establish an emergency plan to prevent major accidents and minimise the extent, actual or potential, of the environmental damage. Penalties apply in the case of infringements. Management of waste from

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
			changed and water sources are depleted by pumping water from aquifers ¹⁹⁵	extractive waste and they incur the costs of doing so.	environmental quality standards and site-specific conditions and they incur the costs of doing so.	extractive industries is in scope of the ELD.
Waste Electrical and Electronic Equipment Directive	Producers, distributors and end-users of electrical and electronic equipment	Hazardous substances released from waste electrical and electronic equipment	44.3 million tonnes of EU e-waste ends up either in landfills, burned, illegally traded, or disposed of by informal workers in poor conditions. Informal disposal of e-waste causes soil and water contamination and GHG emissions and exposes workers to highly carcinogenic substances such as mercury, lead, and cadmium ¹⁹⁶	Requires the separate collection and proper treatment of WEEE and sets targets for their collection as well as for their recovery and recycling. For WEEE from private households, distributors that make an EEE available on the market are responsible for establishing systems that allow the WEEE to be returned free of charge and incur the costs of doing so.	Producers supplying EEE are required to register in the Member State that they sell to and incur the cost of doing so. Member States are responsible for ensuring collection systems are in place and for implementing the producer responsibility principle to ensure minimum collection rate is achieved annually.	The costs of environmental damage are not addressed by the legislation. See RoHS Directive for restrictions on the use of substances.
Restriction of Hazardous Substances Directive	Producers, distributors and end-users of electrical and electronic equipment	Hazardous substances released from waste electrical and electronic equipment		Restricts the use of certain hazardous substances (heavy metals, flame retardants or plasticizers) in EEE where alternatives are available. Requirements apply to manufacturers, importers and distributors and they incur the associated compliance costs.	Manufacturers, importers and distributors may be required to demonstrate conformity with the requirements of the Directive and they incur the costs of doing so.	In cases of non-conformity, manufacturers, importers and distributors are required to take corrective measures to bring that EEE into conformity, to withdraw it or recall it, as appropriate, and to inform the competent national authorities.

¹⁹⁵ Garbarino et al. (2018), [Best Available Techniques \(BAT\) Reference Document for the Management of Waste from Extractive Industries](#). European Commission.

¹⁹⁶ Meysner A. and Urios J., (2022). [The right to repair](#). IEPP.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
Ship Recycling Regulation	Producers, distributors and end-users of Ships	Hazardous substances (asbestos, heavy metals, mineral oils, bilge and ballast water, polycyclic aromatic hydrocarbons, polychlorinated biphenyls, oragnotins) released from ships which constitute waste and which are subject to a transboundary movement for recycling ¹⁹⁷ .	Environmental damage costs are occurring in third countries where recycling facilities are not subject to the requirements of the Ship Recycling Regulation. Damage is caused to coastal ecosystems where shipbreaking is done by beaching with impacts on human health and environment as a result of toxic spills, bioaccumulation of hazardous substances, and loss of marine and terrestrial biodiversity and habitat. ¹⁹⁸	Purpose of the Regulation is to prevent and control pollution caused by ship recycling (see costs of environmental damage/ externalities). The registered shipowner must recycle their end of life vessel in EU-approved facilities. The ship recycling facility must demonstrate to competent authorities how each type of waste will be treated in subsequent facilities (downstream). Shipowners before recycling the vessel shall update and maintain the Inventory of Hazardous Material (enlisting all the hazardous materials contained in the vessel). The registered shipowner incurs the compliance costs.	Ship owners are required to register in the European list, ensuring the ship's compliance with the requirements of the administrations of the Member State. Before a ship is recycled, its owner must provide the company carrying out the work with specific information about the vessel and prepare a ship recycling plan. This, for instance, identifies the type and amount of hazardous materials and waste that will be generated from the obsolete vessel. Costs of enforcement are met by the competent authorities.	Ship owners are responsible for the recycling of the ship at ship recycling facilities. However, the policy provisions do not fully address the risk of externalities where ship-owners may register their ship in a non-EU country subject to lighter end-of-life controls. Moreover, where disposed of by approved facilities, there is no requirement for the ship owner to take-back a ship if the inventory of hazardous waste is incorrect and the ship cannot be disposed of as intended or to cover costs arising from the transaction. There is no requirement for ship owners to hold an insurance policy that covers the risks of environmental pollution associated with ship recycling, which would be used to address the costs of pollution prevention and control in the case of accidental pollution.

¹⁹⁷ [Why Ships Are Toxic - NGO Shipbreaking Platform](#)

¹⁹⁸ [The Environmental Costs - NGO Shipbreaking Platform](#)

Table 13: State of play for policies contributing to the 8th EAP priority objective for pursuing a zero-pollution ambition

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
Policy area : Water						
Marine Strategy Framework Directive (MSFD)	Agriculture, Industry, Households	Excess nutrients, plastic litter and chemical pollution (as described for REACH).	Nutrient pollution often causes eutrophication of marine and coastal waters. Approximately 25% of the EEA assessed areas exceed thresholds for nutrient enrichment and eutrophication with nutrient levels exceeding threshold values in 40% of the assessed sites. Chemical pollution in marine or coastal environments is degrading European marine ecosystems, with 80% of assessed areas designated as 'problem areas'. Almost 75% of Europe's marine and coastal areas are designated as problem areas for marine litter, based on EEA assessment criteria. Plastics constitute up to 95% of the waste that accumulates on shorelines, the sea	Member States are required to adopt and implement programmes of measures to achieve or maintain Good Environmental Status of EU marine waters. Member States shall ensure that measures are cost-effective and technically feasible, and shall carry out Impact Assessments, including cost-benefit analyses, prior to the introduction of any new measure. Implementation shall be supported by existing Community financial instruments and co-financed by Member States. It is not clear who will bear the cost of compliance.	Member States are responsible for the assessment and monitoring of sites and incur the associated costs.	The costs of environmental damage are not addressed by the legislation.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
			surface and the sea floor (EEA SOER, 2020).			
Water Framework Directive (Water FD)	Agriculture, Industry, Households	Nutrient and chemical pollution	Key impacts are damage to ecosystems and loss of amenity from eutrophication, as well as human health impacts caused by pollution of drinking water IEEP (2021) estimate the external costs of water pollution at EUR 22 343 million per annum at EU 27 level.	(1) The obligation to recover (part of) the costs of providing water services, explicitly includes the environmental and resource costs as well as the obligation to take account of the polluter pays principle. The latter implies that also polluters, whether they are customers of water services <i>or not</i> , should be asked for an “adequate contribution” to the additional costs their contribution to water pollution has put on providing water services. (2) The Programme of Measures (PoM) defines the measures to achieve the Water FD’s environmental objectives. Many measures concern pollution abatement and prevention; with a view. they need to be implemented preferably close at source of pollution. The PoM can also include measures aimed at “internalisation of pollution costs:” polluters pay a charge based on the unit costs of their water pollution. There is no explicit legal requirement to apply PPP to the costs of	Member State competent authorities are directly responsible for meeting the requirements of the Directive and incur the associated costs. Such pollution is diffuse with obstacles to and no requirement for water users such as agriculture, industry (or indeed households) to monitor pollution (such monitoring costs are incurred via related source control policies).	The costs of environmental damage are not addressed by the legislation. Water management is subject to the provisions of the ELD.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
				the PoM as whole. Thus, the extent to which the PPP is applied depends on national / local plans. Both point 1 and 2 above imply that the costs of compliance (via abatement efforts or internalisation) are partially incurred by water users, also as regards their water uses that are not water services.		
Environmental Quality Standards(EQS) Directive	Chemicals, Industry, Households	Chemical pollution which poses a threat to the aquatic environment, with effects such as acute and chronic toxicity	See Water FD.	Sets EQSs for priority substances and eight other pollutants. Member States are responsible for compliance. EQSs are factored into decisions taken for source controls that regulate emissions to water e.g. IED permitting. Water users are required to take into account their impact on EQS and take mitigation action as needed (incurring associated costs).	Requires Member States to establish inventory of emissions, discharges and losses and the costs of this action are incurred by authorities; Member State competent authorities are responsible for monitoring and ensuring water bodies meet the environmental quality standards; in so doing they can set obligations on industry, households, agriculture	The costs of environmental damage are not addressed by the legislation.
Groundwater Directive (GWD)	Chemicals, Industry, Households	Deterioration from human activity and chemical pollution	Human health impacts include cancers caused by nitrite pollution of drinking water as well as impacts such as osteoporosis from the ingestion of cadmium in food grown using P fertilisers. IEEP (2021)	Requires that measures to prevent or limit inputs of pollutants into groundwater are included in the programme of measures under the Water FD. The extent to which the PPP is applied is dependent on national / local plans which	Provides criteria for Member States to assess groundwater in the context of the Water FD and costs are incurred by authorities.	The costs of environmental damage are not addressed by the legislation.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
			estimate EU 27 external costs of water pollution from phosphorus leaching on soil (cadmium pollution) at EUR 70 million/ year.	identify who is responsible for addressing pollution. When financing the programmes of measures, Member States are required to ensure that adequate contributions are received from the different water users.		
Nitrates Directive (ND)	Agriculture	Nutrients pollution from agriculture	IEEP (2021) estimate EU27 external costs of water pollution from nitrogen leaching (non specific agricultural source) at EUR 6 098 million per year for drinking water, and 7 715 million/year for surface water.	The agriculture sector is responsible for implementing the provisions of the Directive and assume the associated compliance costs to reduce nutrient pollution eg, livestock farmers need to have sufficient storage capacity to store manure during rainy period, this comes with a cost to the farmers.. Measures are adopted at national or regional level which have a direct bearing on the compliance costs borne by the agriculture sector and which seek to avoid/prevent damage.	Farmers assume the costs of implementing nutrient management plans that involve monitoring.	The costs of environmental damage are not addressed by the legislation.
Sewage Sludge Directive (SSD)	Agriculture	Hazardous substances emitted to water and soil due as result of the use of sewage	See Water FD.	Regulates how farmers can use sewage sludge as a fertiliser. Regulates the type of treatment used for sewage sludge and specifies	Sets requirements for the sampling and analysis of sludge and soils and record keeping where sludge is used. Requirements apply to Member	The costs of environmental damage are not addressed by the legislation.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
		sludge in agricultural activity		sludge composition and properties (e.g. limits for heavy metals contained in sewage sludge). Costs incurred to comply with these requirements are borne by the farmer. Operators of sewage sludge treatment facilities are required to meet sludge composition and properties and cover costs incurred.	States. Reporting requirements for treatment facilities are borne by operator.	
Urban Wastewater Treatment Directive (UWWTD)	Households, Industry	Emissions to water (including organic matter and micropollutants). GHG emissions – one of the biggest consumers of energy in the public domain.	Emissions to water are impacting on water quality with adverse effects for human health and the environment. GHG emissions are contributing to global temperature increases. IEEP (2021) estimate EU 27 annual external costs of water pollution from households at EUR 3 934 million, and from industry at EUR 1 059 million.	Operators required to achieve treatment standards for discharges of certain population sizes or sensitive areas/receiving waters. It is not prescribed how infrastructure required are financed but it requires substantial investments made by operators, Member States and water users to improve urban waste water treatment processes to address point source pollution from industrial and domestic sources. <i>The 2022 revision of the UWWTD will require producers to pay for the cost of removing micro-pollutants from waste water via an EPR scheme.</i>	Operators of plants are responsible for monitoring of the performance of treatment plants and receiving waters. Member State competent authorities are directly responsible for meeting the requirements of the Directive.	The costs of environmental damage are not addressed by the legislation.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
Bathing Water Directive	Industry, Households	The presence of microbiological contamination or other organisms or waste affecting bathing water quality and presenting a risk to bather's health	See Water FD.	Risk management measures are defined at national level to prevent health hazards in the context of predictable short-term pollution or abnormal situations. Operators are required to implement the risk management measures and incur the associated compliance costs.	Member State competent authorities are required to monitor bathing water quality and incur the costs of doing so.	The costs of environmental damage are not addressed by the legislation.
Drinking Water Directive	Industry, Households	Hazardous substances being emitted to waters due to human activity	IEEP (2021) estimate EU 27 external costs of water pollution from nitrogen leaching on drinking water at EUR 6 098 million/ year.	Sets water quality standards. Source controls for water quality are required to take into account related environmental standards. Water users are required to take into account their impact on EQS and take mitigation action as needed (incurring associated costs).	Requires Member States to conduct regular monitoring to check compliance with water quality standards.	Requires Member States to define provisions for remedial measures in the case of exceedances. Cost borne by competent authorities.
Safety of Offshore Oil and Gas Operations	Industry	Hazardous substances emitted from ineffective oil spill response systems	Human health impacts for workers onsite including skin disease such as dermatitis, cancer and lung disease such as asthma.	Operator is required to develop and implement reports to ensure safety and avoid accidents. Operators are required to ensure that offshore oil and gas operations are carried out on the basis of systematic risk management so that the residual risks of major accidents to persons, the environment and offshore	Operations are licenced. It is the responsibility of the operator to apply for licence and to organise independent verification. It is the responsibility of Member State to grant. Operators incur the costs of this process.	In the case of a major accident, Member States shall ensure that operators take all suitable measures to limit its consequences for human health and for the environment. Operators are financially liable.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
				installations are acceptable. They incur the compliance costs.		
Ship-source pollution Directive	Transport (Maritime)	Hazardous or noxious substances being emitted from ships (as categorised in MARPOL annexes I – VI discharges to water)	Ship source pollution includes permanent organic substances, heavy metals, oil and oil compounds, radioactivity, sewage, solid wastes, garbage, food, debris, and noise, impacting on increasing seawater temperatures, acidification, and decreasing seawater oxygen rates. (Bayazit and Kaptan, 2023)	Regulates discharges of polluting substances (currently only oil and noxious liquid substances in bulk) in internal waters of a Member State, territorial seas, straits and high seas. Applies to all seas in EU waters, irrespective of its flag. Ships are responsible for compliance and incur associated costs.	Costs of enforcement measures are incurred by Member States. EMSA also carries some costs on maintaining a satellite-based surveillance system (CleanSeaNet) that detects potential illegal discharges as well as other supportive instruments (RPAS, vessels to be deployed).	The costs of environmental damage are not addressed by the legislation. Infringements are regarded as criminal offences under the ECD and persons responsible are liable for damage.
Floods Directive	Developers of infrastructure projects	Climate adaptation needs are not met in infrastructure design	The combined damage costs caused by river flooding is estimated to be over EUR 5 billion per annum (European Commission, 2020).	Member States are responsible for adopting and implementing flood risk management plans. No requirements specified for how costs of implementation are targeted at developers in cases of infrastructure at risk.	Member States are responsible for conducting preliminary flood risk assessments in river basin districts, and prepare flood hazard maps and flood risk maps to monitor and report risks. No requirements specified for how costs of implementation are targeted at developers in cases of infrastructure at risk.	The costs of environmental damage are not addressed by the legislation.
Water Reuse Regulation	Agriculture	Water scarcity	20 % of the European territory and 30 % of Europeans are affected by water stress during an average year (EEA, 2022).	The reclamation facility operator (i.e. not the source of the pollution in the water) is required to meet minimum requirements for water quality to guarantee that reclaimed water is safe	The reclamation facility operator is responsible for monitoring and provisions on risk management, for the safe use of reclaimed water and they incur the costs of doing so.	The costs of environmental damage are not addressed by the legislation.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
			IEEP (2021) reviewed the external cost of water scarcity for five case studies using the externality value of €0.30/m ³ . Owing to limited data, it was not possible to derive EU 27 estimate.	for agricultural irrigation. No reference to how costs incurred may be transferred to supplier of waste water/ polluter of waste water.		
Policy area : Air						
AAQD	Transport , Industry, Agriculture, energy, residential and commercial sector By pollutant, sources include (EEA, 2023) ¹⁹⁹ : PM _{2.5} : and PM ₁₀ , energy consumption in the residential, commercial and institutional	Anthropogenic atmospheric emissions of sulphur dioxide (SO ₂), nitrogen oxides (NO _x), non-methane volatile organic compounds (NMVOC), ammonia (NH ₃) and fine particulate matter (PM _{2.5}).	In 2021 97% of the urban population was still exposed to PM _{2.5} concentrations above the new (2021) WHO air quality guideline level of 5µg/m ³ . About 238 000 premature deaths each year in Europe are attributable to air pollution (EEA, 2023) ²⁰⁰ .	Member States choose the measures to attain air quality standards set in the Directives (complementing source legislation such as the IED or Euro standards). Costs can be incurred by the polluter (not always (fully) possible). Implementation is dependent on design of national / local air quality plans.	Competent authorities are responsible for monitoring ambient air quality to demonstrate compliance with air quality standards which are set for ambient air and they incur the costs of doing so.	The costs of environmental damage are not addressed by the legislation.
NEC Directive	(responsible for 44% and 58% of total emissions) No _x : Road traffic (37% of total emissions), agriculture (19%)	Concentrations of other pollutants also regulated or reporting purposes (e.g. BC, heavy metals, POPs).		Abatement measures are implemented at source to prevent and reduce pollution. Implementation is dependent on design of national air pollution control programmes and driven by compliance with	Competent authorities in Member State are responsible for managing air pollutant emission inventories to demonstrate compliance with emission reduction commitments.	The costs of environmental damage are not addressed by the legislation.

¹⁹⁹ EEA (2022), [Sources and emissions of air pollutants in Europe](#).

²⁰⁰ EEA (2022), [Health impacts of air pollution in Europe, 2022](#).

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
	and the extractive industry (15%). NH ₃ : Intensively managed agricultural areas (94% of total emissions).			EU determined national commitments. Where possible, costs are incurred by the polluter (not always possible e.g. road infrastructures). Implementation is dependent on design of the national air pollution control programmes.		
IED²⁰¹	Industry	Key pollutants to air include NH ₃ , NO _x , HCl, SO _x , VOC, TOC/COD and AOX. Key pollutants to water include As, Cd, Cr, Cu, Hg, Ni, Pb, PAHs, total nitrogen, and total phosphorus.	The effects of industry's contribution to air and water pollution are included in the respective policy areas for air and water quality. The largest contribution to damage costs arise from energy production. The dominant valuation comes from GHG impacts (total ~€190-200 bn/year), followed by the impact of the main air pollutants (~€65-70 bn/year), then heavy metals (~€11 bn/year) and finally	Operators are required to apply for permits setting environmental conditions, including any derogations obtained and to comply with permit conditions. Compliance costs are incurred by the operator.	Operators are responsible for monitoring and reporting to demonstrate compliance with permit conditions. Member State authorities are responsible for demonstrating compliance and enforcement.	Costs of externalities arising from allowable including transboundary pollution not addressed by the Directive. Operators are responsible for site remediation in cessation of industrial activity. Liability regarding the environmental consequences of accidents and incidents is a matter for relevant national law and, where applicable, other relevant Union law. Industrial activities in scope of the IED are subject to the provisions of the ELD.

²⁰¹ The European Pollutant Release and Transfer Register (E-PRTR) Regulation (EC) No 166/2006 was included in the scoping review but not included in the state of play because it was found to not address cost categories relevant to the application of the PPP.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
			from organic pollutants (~€0.1-0.2 bn/year). ²⁰²			
MCPD	Combustion plants between 1 MW and 50 MW	Emissions of SO ₂ , NO _x and dust into air	Risks to human health and the environment caused by pollution to air of SO ₂ , NO _x and dust. Key impacts include premature deaths from chronic PM _{2.5} and short-term ozone exposure; and ecosystems exceeding the acidification and eutrophication critical loads. ²⁰³	Operators are directly responsible for implementing the provisions of the directives. Operators are responsible for meeting ELVs set and are required to take preventive action to comply with the ELVs. Costs are largely incurred by operators.	Operators are responsible for monitoring and reporting to demonstrate compliance for their plants. Member State authorities assume the costs of enforcement.	The costs of environmental damage are not addressed by the legislation.
Euro Standards Regulation	Transport (Road)	Emissions to air from cars, vans, trucks and buses of NO _x , PM and CO and HC	See AAQD and NEC Directive for damage associated with these pollutants.	Vehicle manufacturers are required to comply with limits on the emissions of various pollutants from cars, vans, trucks, and buses, and incur the compliance costs.	Vehicle manufacturers are required to demonstrate compliance with the emissions standards through a type-approval process, and to provide information on the emissions performance of vehicles and incur the costs of doing so.	The costs of environmental damage are not addressed by the legislation.
Eurovignette Directive	Transport (Road)	Anthropogenic atmospheric emissions of sulphur dioxide (SO ₂), nitrogen oxides (NO _x), non-methane volatile organic compounds	See AAQD and NEC Directive for damage associated with these pollutants.	Costs of pollution prevention and control are not addressed by the legislation.	Costs of administrative and enforcement measures are borne by the road operator which may be recovered through the tolls set. Implementation varies by Member State.	Framework for Member States to introduce road charges (tolls or vignettes). Costs are incurred by the road user via the tolls or vignettes levied.

²⁰² [SWD/2022/111 final](#)

²⁰³ [SWD/2013/0531 final](#)

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
		(NMVOC), ammonia (NH ₃) and fine particulate matter (PM _{2.5})				Participation is voluntary meaning the extent costs of environmental damage are borne by the polluter is dependent on Member State applying a toll or a vignette. Three Member States do not apply any road charge.
FQD	Transport (Road)	Air pollutants (SO ₂) and GHGs resulting from fuel	See AAQD and NEC Directive for damage associated with these pollutants.	Sets quality requirements for fuels used in road transport (petrol diesel and biofuels) and in non-road-mobile machinery (gasoil) to enable air pollutant emission reductions (namely SO ₂) (and GHG emission reductions). For air, the PPP is applied via a mandatory reduction of sulphur content in fuels (requiring fuel suppliers to comply with the rules). Additional rules apply for GHG reductions which are relevant to climate change policy area rather than air (to avoid duplication, focus is on air pollutants). Compliance costs are incurred by the fuel supplier.	Fuel suppliers required to demonstrate compliance with rules with monitoring and reporting and incur the costs of doing so.	The costs of environmental damage are not addressed by the legislation.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
Petrol Vapour Recovery (PVR) Directives	Transport	Petrol vapour emitted to the atmosphere during the refuelling of motor vehicles at service stations	See AAQD and NEC Directive for damage associated with these pollutants.	Service stations are required to be equipped with a PVR system to capture petrol vapour and they incur the costs of purchase and installation.	Service stations are required to monitor vapour/petrol ratio and inform consumers of the use of PVR systems which are compliant with the Directives. They incur the costs of doing so.	The costs of environmental damage are not addressed by the legislation.
Sulphur Content of Liquid Fuels Directive	Transport	SO ₂ resulting from the combustion of certain types of liquid fuels and thereby to reduce the harmful effects of such emissions on man and the environment and emissions of sulphur dioxide resulting from the combustion of certain petroleum-derived liquid fuels	See AAQD and NEC Directive for damage associated with these pollutants.	Sets quality requirements for liquid fuels (gas oils and marine fuel) to enable air pollutant emission reductions (SO ₂). The PPP is applied via a mandatory reduction of sulphur content in fuels (requiring fuel suppliers to comply with the rules). Compliance costs are incurred by the fuel suppliers.	Fuel suppliers required to demonstrate compliance with rules with monitoring and reporting and incur the costs of doing so.	The costs of environmental damage are not addressed by the legislation.
Policy area: Noise						
Environmental Noise Directive (END)	Roads, railways, airports and industry.	Daily average noise levels of 55 dB(A) or above and night-time noise levels of 50 dB(A) and above.	More than one in every five EU citizens is exposed to chronic harmful levels of road traffic noise. This percentage is much higher in many urban areas. Long-term exposure is estimated to contribute to 48 000 new cases of heart disease per year and to 12 000 premature deaths (EEA, 2020),	Abatement measures to prevent and reduce noise pollution are implemented at source. The extent to which the PPP is applied is dependent on national / local plans to implement the provisions of the policy (noise action plans). Where possible, costs are incurred by the polluter (not always possible e.g. double glazing to reduce noise pollution from roads).	Competent authorities are responsible for monitoring noise levels and mapping exposure to noise pollution and incur the costs of doing so.	The costs of environmental damage are not addressed by the legislation.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
			with no significant improvement between 2012 and 2017 (EEA, 2023). Costs of pollution include non-market costs (costs of a statistical life, quantified based on willingness to pay method) and market costs (measured by health expenditure).			
Policy area: Chemical Risk Management						
REACH	Manufacturers, importers and downstream users of chemical substances and mixtures. Risks via uncontrolled release of a toxic substance. (EEA, 2023)	The use of harmful substances can cause various types of damage during manufacture and/or consumer use as well as after disposal. A variety of human health conditions are associated with releases of and exposure to harmful substances. These include cancers, endocrine disruption, reproductive disorders, adverse effects to neurodevelopment	Costs of pollution include the direct and indirect costs of healthcare provision, lost earnings and employment. It also includes various mortality and morbidity costs, degradation and/or loss of ecosystem services, typically valued using Willingness To Pay (WTP) methods as well as remediation costs.	Manufacturers, importers and downstream users of chemical substances and mixtures are required to prepare Registration for relevant substances depending on tonnage. They incur the costs of Registration preparation, submission and update. The same incur the costs of preparation of Application for Authorisation. The evidence indicates that, even where authorisation is approved additional risk management measures are typically applied, either voluntarily and/or as conditions/	Registration incurs a fee, which will offset the costs for Competent Authorities, ECHA and the European Commission in administration. The costs for preparation of Application for Authorisation are incurred by the applicants (i.e. the user), alongside a fee payable to ECHA, to offset administration costs. Enforcement is undertaken by Member State CAs, at their cost.	The costs of environmental damage are not addressed by the legislation.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
		and cardiovascular effects. Adverse effects to the environment include terrestrial and marine animal and plant health, soil contamination, including persistent, bioaccumulative, mobile and toxic substances.		recommendations by ECHA. The same must comply with Restrictions under REACH to prevent and control pollution and incur the costs of reformation and or loss of market, where relevant based on their use/sale of the substances affected.		
CLP Regulation	Manufacturers, distributors and end-users of Packaging	Substances and mixtures that are hazardous for human health and the environment	Described above for REACH.	The CLP regulation ascribes responsibility to manufacturers for identifying hazards of substances and mixtures for their classification and labelling and they incur the costs of doing so.	Manufacturers are required to comply with harmonised provisions and criteria for the classification and labelling of substances, mixtures and articles. Manufacturer is responsible for costs of labelling and monitored required to comply with rules.	The costs of environmental damage are not addressed by the legislation. CLP of dangerous substances are subject to the provisions of the ELD.
Biocidal Regulation	Manufacturers, distributors and end-users of Biocidal products	Biocidal products that have negative implications for human health and the environment	Described above for REACH.	Costs incurred by preventative measures (prohibiting substances for use and their placing on the market except in specific situations). Substances are restricted where alternatives are deemed available, unless the alternatives are not sufficiently effective, economically viable or otherwise impractical.	Authorisation costs are incurred by the applicants (i.e. the user). However, authorisations are reviewed by Member States (costs incurred by Member State), products are compared to existing biocidal products, non-chemical means of control and other prevention methods to understand the risks/benefits. The regulation does not specify how the cost is offset by the user.	The costs of environmental damage are not addressed by the legislation. The placing of biocidal products on the market is subject to the provisions of the ELD.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
				Manufacturers cover cost of authorisation requests.		
CMR Directive	Chemicals	Carcinogens, mutagens and reprotoxic substances that have negative implications for human health	Described above for REACH.	Aims to protect workers against risks to their health and safety from exposure to carcinogens or mutagens in the workplace by setting occupational exposure limits (OELs). Companies (workplaces) are responsible for protecting employees and bearing the cost of complying with OELs.	Costs of administrative and enforcement measures are not addressed by the legislation.	The costs of environmental damage are not addressed by the legislation.
Chemical Agents Directive	Chemicals	Chemical agents that have negative implications for human health	Described above for REACH.	Sets out minimum requirements for the protection of workers from risks to their health and safety arising from the effects of chemical agents that are present in the workplace. Companies (workplace) are responsible for bearing the cost of complying with the requirements of the legislation.	Companies are responsible for costs incurred to conduct Evaluation of emissions and process wastes to understand and regulate human and environmental exposure.	The costs of environmental damage are not addressed by the legislation.
Cosmetics Regulation	Manufacturers of Cosmetic products	Cosmetic products that have negative implications for human health	Described above for REACH.	Responsible persons that place a cosmetic product on the market are responsible for ensuring the safety of their products to provide a high level of protection of human health from	Responsible persons are required to verify labelling information is compliant with the Regulation. It is the responsibility of the responsible persons to respond to	Responsible persons that placed a cosmetic product on the market that is not in conformity with the Regulation are required to take immediate corrective

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
				cosmetic products and the regulation sets out lists of restricted substances. Compliance costs are incurred by the person responsible for placing on the market.	information requests by a competent authority.	action (withdraw or recall as appropriate).
Fertiliser Regulation	Chemical (fertiliser)	Fertilising products that are overused or ill-managed	Described above for REACH.	Economic operators that manufacture, import or place a fertiliser product on the market are required to comply with rules on safety, quality and labelling requirements for fertilising products and limits for toxic contaminants. Compliance costs are incurred by the operator.	Manufacturers are required to keep records to demonstrate compliance with the Regulation. Importers and distributors are required to keep documentation to demonstrate compliance and provide it to competent authorities on request and cover the costs of doing so.	The costs of environmental damage are not addressed by the legislation.
Mercury Regulation	Industry	Mercury, mercury compounds and mixtures of mercury when not used or stored, manufactured, or managed effectively	Described above for REACH.	Bans the export, import and manufacturing of mercury except for specified products. Establishes measures and conditions concerning the use, storage of and trade in mercury, mercury compounds and mixtures of mercury, and the manufacture, use of and trade in mercury-added products, and the management of mercury waste. Industry must bear the costs of phase outs and	In cases of large sources, economic operators are required to report Member State authorities data on total mercury stored. Reporting requirements apply for storage also.	The legislation requires competent authorities to identify and assess sites contaminated by mercury and mercury compounds and to address the significant risks such contamination may pose to human health and the environment. There is no provision to identify the historic source of pollution or reclaim cost from polluter.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
				substitutions, and costs may be passed to consumers.		
POPs Regulation	Industry	Persistent Organic Pollutants (POPs)	Described above for REACH.	Implements the Stockholm Convention. It sets out lists of substances subject to restrictions (for their manufacture and use), release reduction provisions and waste management provisions. The relevant manufacturers are responsible for preventing releases to the environment for reformulation if required, or loss of market associated with bans.	Member States are responsible for monitoring and reporting including the drawing up inventories of POPs.	The holder of a stockpile, which consists of or contains any substance listed in Annex I or II, for which no use is permitted, shall manage that stockpile as waste. The holder of a stockpile incurs the associated costs.
Sustainable Use of Pesticides Directive	Agriculture	Hazardous chemicals released from pesticides, causing adverse implications for the environment and human health	Described above for REACH.	Regulates the use of pesticides via national action plans that require Member States to set quantitative objectives and targets to reduce risks and impacts of pesticide use. Action plans shall include at minimum prohibition of aerial spraying, and avoid pesticide use near aquatic environments and promotes integrated pest management approaches. Professional users are responsible for complying with these measures. Member States shall facilitate compliance	Member States are required to monitor use of pesticides. Member States are required to inspect equipment used for pesticide application and establish certificate systems to allow verification of inspections for professional users. Distributors selling pesticides are required to provide information on risks for health and environment. Member States may recover the costs associated with any work pursuant to obligations under this Directive by means of a fee or charge (unclear if this relates	The costs of environmental damage are not addressed by the legislation.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
				for non-professional users. Member States may recover the costs associated with any work pursuant to obligations under this Directive by means of a fee or charge (unclear if this relates to professional and/ or non-professional users). There is ambiguity regarding non-professional users and the degree to which they incur compliance costs.	to professional and/ or non-professional users).	
Plant Protection Products Regulation	Agriculture	Hazardous chemicals released from plant protection products, causing adverse implications for the environment and human health	Described above for REACH.	Stipulates harmonised rules for the approval of active plant protection substances to ensure high levels of protection for humans and the environment. It is underpinned by the precautionary approach. To be authorised, a plant protection product must satisfy a number of requirements, including not having any (direct or indirect) harmful effects on human or animal health and not having any unacceptable impact on the environment, particularly with regards to non-target species and biodiversity.	Producers of the active substances are responsible for preparing and submitting application dossiers and incur the cost of doing so.	The costs of environmental damage are not addressed by the legislation. The placing of plant protection products on the market is subject to the provisions of the ELD.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
				Compliance costs are incurred by the manufacturer of the product.		
Export and import of hazardous chemicals Regulation	Chemicals, importers/exporters and distributors hazardous substances	Environmental damage and human health effects resulting from inefficient and ineffective handling of hazardous chemicals resulting in major accidents	Described above for REACH.	Sets out procedures for the export and import of hazardous substances that are banned or restricted in the EU. Compliance costs are incurred by producers and users of chemicals.	Exporter and importers of chemicals in scope of the Regulation are required to notify the designated authorities and incur the costs of doing so. European Chemicals Agency oversees implementation and is responsible for registration and making available to public. Agency is funded by EU budget and voluntary Member State contributions (obtained via a fee from the polluter to partially offset costs).	The costs of environmental damage are not addressed by the legislation.
Toy Safety Directive	Industry (Toys)	Hazardous substances	Described above for REACH.	Requires safety assessment for physical/mechanical/chemical/electrical properties, flammability, hygiene and radioactivity and establishes conformity assessment procedures. Obligations apply to manufacturers, importers and distributors responsible for placing on market who incur compliance costs.	Manufacturer is responsible for providing technical document to satisfy assessments to Member State authorities on request.	The costs of environmental damage are not addressed by the legislation.
Seveso	Industrial installations with	Major accidents which involve dangerous substances,	A variety of serious effects to human health (including injury and	Operators are directly responsible for implementing the	Operators are responsible for monitoring and reporting under the Directive. Member State	Where such accidents occur, operators are responsible for limiting the consequences for

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters ?	What is the pollution ?	What is the damage ?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
	dangerous substances on site	and limit their impact on human health and the environment	death), as well as to all environmental compartments can occur as a result of serious incidents.	provisions of the directives, namely to prevent major accidents involving dangerous substances and ensure appropriate preparedness and response. Compliance costs are incurred by the operator.	authorities are responsible for demonstrating compliance and enforcement.	human health and the environment

Table 14: State of play for policies contributing to the 8th EAP priority objective for protecting, preserving and restoring biodiversity, and enhancing natural capital

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
Nature Directives	Agriculture, Forestry, urban Development, Infrastructure	The most significant environmental damage include land-use change (and its role in habitat loss, fragmentation, and degradation), natural resource extraction, pollution, climate change.	The first EU ecosystem assessment ²⁰⁴ revealed that Europe's ecosystems suffer from pressure from intensive land and sea use, climate change, pollution, overexploitation and invasive alien species. There are limitations when quantifying the extent of damage due to poor data quality and/or gaps in data	There are legal grounds requiring the polluter to pay for prevention and remedial costs via the appropriate assessment procedure. National approaches to implementation are varied and can have a major influence on the impact the Directives have on nature and by extension, the way in which the polluter is responsible.	Member State competent authorities are directly responsible for meeting the requirements of the Directive. Monitoring may be necessary as part of the appropriate assessment procedure, in which case the developer is responsible for covering costs.	The costs of environmental damage are not addressed by the legislation.
Regulation on Invasive Species	Agriculture, forestry Trade Gardening	The introduction of invasive alien species.		Polluters are responsible for implementing restrictions on keeping, importing, selling, breeding, growing and releasing	Legal requirement for Member State competent authorities to recover all control related costs from the polluter.	The costs of environmental damage are not addressed by the legislation.

²⁰⁴ Maes, J. et al. (2021), [EU Ecosystem Assessment](#), European Commission, Publications Office of the European Union.

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
			completeness ²⁰⁵ . Costs of damage may be derived based on ecosystem service values although the range in values is significant making it difficult to establish an estimate at EU level.	into the environment, invasive species.		
EU Biodiversity Strategy for 2030 Note: the proposal for a Nature Restoration Law (2022) will be a key policy for implementing the actions in the Biodiversity Strategy. However, the state of play only covers current legislation.	Agriculture, Forestry, Development, Infrastructure, industry	The most significant environmental damage include land-use change (and its role in habitat loss, fragmentation, and degradation), natural resource extraction, pollution, climate change.		The strategy seeks to strengthen implementation of the Birds and Habitats Directives by referring to the need for improved enforcement to complete the Natura 2000 network, to ensure the effective management of all sites, and to promote species-protection provisions. There is no compliance cost assumed with the strategy.	Costs of administrative and enforcement measures are not addressed by the legislation.	The strategy notes that the ‘user pays’ and ‘polluter pays’ principles have to be applied to prevent and correct environmental degradation. To this end, the Commission will further promote tax systems and pricing that reflect environmental costs, including biodiversity loss. This should encourage changes in national fiscal systems to shift the tax burden from labour to pollution, under-priced resources, and other environmental externalities. However, there is no compliance cost assumed with the strategy. <i>Under the proposed Restoration Law, there are proposals for setting up restoration measures to achieve certain targets, some of them upon MS choice, to restore ecosystems. It is proposed that measures to attain the targets are included in Member State national restoration plans.</i>
EU Forest Strategy for 2030	Agriculture, Forestry, Development, Infrastructure	European forests are under increasing strain -partly as a result of natural processes but also because of increased human	As a result of extreme weather and climate related events, the estimate damage costs of these events is estimated to is	The Strategy stresses the need to step up implementation and enforcement of the EU acquis of relevance for forests and forest management issues, including Habitats and Birds Directives in	Costs of administrative measures are not addressed by the Strategy as it is non-binding.	The Strategy stresses the need to step up implementation and enforcement of the EU acquis of relevance for forests and forest management issues, including the ELD requiring the prevention and

²⁰⁵ [Nature restoration - Consilium \(europa.eu\)](https://consilium.europa.eu/en/policies/nature-restoration/)

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
		activity and pressures. Climate Change has also brought to light previously hidden vulnerabilities, aggravating other destructive pressures.	EUR 2 billion per annum in forest fires. Global deforestation is occurring at a rate of approximately 10 million hectares per year alongside damage caused by storms, for example (European Commission, 2020). ²⁰⁶	providing for the conservation of a range of forest habitats and of forests-related animal and plant species. The Strategy also mentions that in order "to improve forest resilience and adaptation, it is necessary to increasingly protect and restore forest biodiversity and adopt biodiversity-friendly forest management practices." There is no compliance cost assumed with the strategy, as it is non-binding.		remediation of environmental damage involving forest habitats.
EU soil strategy Note: the proposal for the Soil Monitoring Law will be a key policy for implementing the actions in the Soil Strategy. However, the state of play only covers	Agriculture Development Infrastructure industry	Unsustainable land use and management (erosion, loss of soil fertility, pollution, loss of organic matter, etc).	Land and soil continue to be subject to severe degradation processes such as erosion, compaction, organic matter decline, pollution, loss of biodiversity, salinisation and sealing.	The strategy deals with prevention of pollution with reference to existing policies (Sewage Sludge Directive, REACH, EU fertilising products regulation) and includes 4 steps for pollution prevention. There is no compliance cost assumed with the strategy.	<i>The Soil Monitoring Law contains reporting requirements for the Member State with no requirements directed to the land manager.</i>	Includes steps for restoring degraded soils and remediating contaminated sites and highlights the role of the IED and ELD in managing land damage.

²⁰⁶ See the Support Study

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
<i>legislation in place in 2024.</i>						

Table 15: State of play for policies contributing to the 8th EAP priority objective for reducing environmental and climate pressures related to production and consumption

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
Policy area: Horizontal policies						
Environmental Crime Directive (ECD)	Biodiversity, waste, chemicals, water, and air quality/climate change.	Pollution to air and water, degradation of wildlife and loss of biodiversity and habitats.	Contributes to greater risk of disease and environmental disaster, irreversible climate change, the contamination of the food chain, reduced life expectancy and the death of human beings (EURPOL).	Article 15 states that the Member State shall take appropriate action to reduce overall environmental criminal offences and hold polluters accountable for their offences. Penalties may include costs to prevent or control further pollution going forward on a case by case basis but this is not prescribed by the Directive. The offender is required to pay the financial penalties imposed.	Competent authorities are responsible for enforcement and for reporting on actions to reduce environmental criminal offences. Penalties cover administrative costs incurred on a case by case basis but this is not prescribed by the Directive.	Polluter may be required to restore nature to its previous condition or compensate for clean-up costs. Article 5 states that Member States may take optional necessary measures to subject criminals to additional sanctions that include an ‘obligation to reinstate the environment within a given time period’.
Environmental Liability Directive (ELD)	Industry (including manufacturing and transportation).	Pollution to air and water, degradation of wildlife and loss of biodiversity and habitats.	Damage made to protected species and natural habitats, air, water and soil	Where instances of environmental damage have occurred, the polluter may be required to take preventive action to prevent or control further pollution going forward, as determined by the competent authority. Competent authorities are also able to recover retrospective costs for undertaking preventive action. However, Member State	Where instances of environmental damage have occurred, the polluter is responsible for and incurs the costs of gathering additional information on the incident, as determined by the competent authority. However, Member State flexibility in how environmental damage is defined has led to varied	The operator is required to take preventive or remedial action in instances where environmental damage, or threat of damage may occur. However, Member State flexibility in how environmental damage is defined has led to varied implementation of the PPP to address costs of environmental damage. Where instances of environmental damage have occurred, competent

Policy	Impact pathway from pollution to impact			Cost categories addressed in each policy and who pays		
	Who are the polluters?	What is the pollution?	What is the damage?	Pollution prevention and control	Administrative and enforcement	Costs of environmental damage
				flexibility in how environmental damage is defined has led to varied implementation of the PPP to address costs of environmental damage.	implementation of the PPP to address costs of environmental damage.	authorities will identify the polluter and set out remedial actions for the polluter to take. Competent authorities are also able to recover retrospective costs for undertaking remedial action.
EIA Directive	Construction (of major building and development projects including nuclear power stations, railways, motorways, roads, waste disposal installations for hazardous waste, dams, urban or industrial development projects, tourism developments, canalization and flood relief works).	Where development has unintended consequences on the environment, including GHG emissions, damage to habitats and biodiversity and water pollution.	The built environment can result in damage to a wide range of environmental agents including human health, biodiversity, land, soil, water, air, and climate, via buildings owners, developers, suppliers, contractors and not least occupants.	Project developers are required to identify the potential environmental impacts of their projects and to develop measures to mitigate or avoid those impacts. The cost of these measures is typically borne by the project developer. This can be supplemented via the – additional – payment of a fee when the submission of the EIA is made to the competent authority for their decision on whether to permit development as well as the payment for mitigation measures identified in/via the EIA process. Development consent may be granted where the economic benefits are deemed to outweigh identified environmental damage.	Where required as part of the development consent, cost of reporting e.g monitoring measures is incurred by developer. The cost of determining whether to permit development (and of legal challenge of the decision where relevant) is incurred by the Competent Authority, offset by the payment of a fee when the EIA is submitted (and award of legal costs if any legal challenge is dismissed), paid for by the developer. Note national practice may differ.	The costs of environmental damage are not addressed by the legislation.
SEA Directive				The SEA Directive applies to wider development plans and programs which are the responsibility of competent authorities (rather than the developers).	Cost of reporting is incurred by the competent authorities.	The costs of environmental damage are not addressed by the legislation.

B. EU Funds

The Fitness Check also assessed how the PPP is applied in the case of EU funding and State aid. In contrast to the EU policies in scope of this Fitness Check, EU funds and State aid are considered relevant to the application of the PPP in their role as they contribute to the protection of the environment, rather than playing a role in addressing costs of pollution. To ensure this distinction is clear, EU funds and State aid have been considered separately from the above table as the colour codes would not be applicable.

In terms of funding levels, the environmental expenditure (investment) in the MFF is estimated to have been around EUR 136 billion in 2014-2020, so around EUR 19 billion per annum.

The EU funds reviewed include:

- Funding under the Common Agricultural Policy, European Agricultural Guarantee Fund (EAGF) and the European Agricultural Fund for Rural Development (EAFRD)
- Cohesion policy funds, the European Regional Development Fund (ERDF), the European Social Fund Plus (ESF+), the Cohesion Fund (CF), and the Just Transition Fund (JTF)
- LIFE+
- InvestEU
- Recovery and Resilience Facility (RRF)

EU funds should respect the PPP:

- by not financing polluting activities, and
- by not financing clean-up activities that should have been paid for by the polluters.

Not financing polluting activities

The Do No Significant Harm (DNSH) Principle aims to ensure that economic activities do not significantly harm the EU's environmental objectives²⁰⁷ and has been applied to some EU Funds from 2020. The European Green Deal adopted the green oath to “do no harm” reflected in the Commission Communication on the [European Green Deal in 2019](#) and the Inter-Institutional Agreement accompanying the 2021-2027 MFF. In addition to this general “do no harm” (DNH) principle, Article 17 of the Taxonomy Regulation laid down the foundations for the six environmental objectives. There are certain tools for the DNSH implementation modalities in the EU budget²⁰⁸, among which Selection Phase screening, Sustainability proofing, Climate proofing, Technical DNSH guidance, Environmental Impact assessment, Strategic Environmental Assessment, and Exclusion list are the ones whose rationale is reflected in the Programmes under investigation. Despite the differences between the PPP and the DNSH principle (PPP is shifting the cost of pollution on the polluter, whereas the DNSH is aimed at vetting projects and beneficiaries), applied to EU funds they both aim to avoid the financing of polluting activities. In summary and in line with the JRC comparative analysis on the implementation of the DNSH principle (2023)²⁰⁹:

²⁰⁷ The six environmental objectives set out in the EU's Sustainable Investment Regulation (2020/852) are: climate change mitigation, climate change adaptation, the sustainable use and protection of water and marine resources, the transition to a circular economy, pollution prevention and control, and the protection and restoration of biodiversity and ecosystems.

²⁰⁸ [SWD\(2022\) 225 final](#)

²⁰⁹ Beltran Miralles, M. et al. (2023), [The implementation of the ‘Do No Significant Harm’ principle in selected EU instruments](#). European Commission, Publications Office of the European Union. This covers the funds that currently have the DNSH principle embedded in their legal base, so the RRF, ERDF and Cohesion Fund, JT Fund, InvestEU.

- Horizon Europe:** Applicants shall refer to the DNSH principle for the proposed research methodology and impact to assure that they do not “make a significant harm to any of the six environmental objectives” set by the EU taxonomy regulation ([Horizon Europe Proposal Evaluation, 2023](#)). The adaptation of DNSH approach into the Programme was in June 2021. The principle is aligned with the EGD objectives defining that the six environmental objectives in EU Taxonomy Regulation must be complied with. However, the scoring of a proposal by evaluators shall be based on the adherence to the DNSH only if it is explicitly referred in a Work Programme (there are several Work Programmes under Horizon Europe, such as Marie Skłodowska-Curie actions and European innovation ecosystems). At this stage, mainly the European Innovation Council (EIC) programme refers to such actions²¹⁰. Horizon Europe refers to the DNSH principle both at the programme and project levels. At programming stage, “Horizon Europe work programme has been co-created to support research and innovation activities that respect climate and environmental priorities of the EU and cause no significant harm to them”²¹¹. With regards to the project level incorporation, the principle is reflected in the application form to provide researchers with the opportunity to demonstrate the credibility of their initiatives according to the DNSH principle (Part B, [Standard Application Form of Horizon Europe Programme](#)). Moreover, among many criteria for funding, environmental ethics is also included²¹². DNSH is applicable within the scopes of Pillar II (Global Challenges reflected in (Cluster 4, Cluster 5, Cluster 6, and Missions) as well as Pillar III of Innovative Europe (European Innovation Council (EIC))²¹³.
- CAP 2023_2027:** The PPP is implemented by linking the respect of conditionality obligations to 90% of CAP payments and sanctioning non-compliance by payment reductions. Farmers are only supported above a baseline (enhanced conditionality) that requires the respect of Statutory management requirements (SMR) including relevant environmental legislation and to respect Good agricultural and environmental conditions (GAEC)²¹⁴ going beyond the environmental legislation. The CAP 2023-2027 includes as well as support for eco-schemes (at least 25% of the direct payments), and agri-environment-climate commitments and green investments (at least 35% of the rural development fund) which aim to ensure a high degree of sustainability, incorporating social, environmental and climate elements²¹⁵. Finally, the CAP legal framework also includes specific provisions which seek to avoid negative effects on the environment and climate. For instance, it includes a list of investments which are not eligible for support, such as investments in afforestation which are not consistent with sustainable forest management principle or investments to comply with legal mandatory requirements (except for new requirements within the first 24 months). The CAP Strategic Plans are subject to a thorough screening before their approval and to a biannual performance review. The Strategic Environmental Assessment (SEA) Directive applies to CAP Strategic Plans. Farmers are required to keep records and comply with the EU and national legislation. Member States carry out controls on all farmers (administratively and on a sample basis on the spot checks) in order to verify the farmers’ eligibility.

210 See [Horizon Europe Proposal evaluation](#)

211 [Horizon Europe Programme Guide](#)

212 See [Horizon Europe Work Programme 2023-2024](#)

213 See [INFOSHEET - DNSH principle in Horizon Europe | NCP Flanders](#)

214 European Commission, [Conditionality - European Commission \(europa.eu\)](#), and legal basis: Regulation (EU) 2021/2115 of the European Parliament and of the Council of 2 December 2021 establishing rules on support for strategic plans to be drawn up by Member States under the common agricultural policy (CAP Strategic Plans)

215. Regulation (EU) 2021/2115 of the European Parliament and of the Council of 2 December 2021 establishing rules on support for strategic plans to be drawn up by Member States under the common agricultural policy (CAP Strategic Plans) and financed by the European Agricultural Guarantee Fund (EAGF) and by the European Agricultural Fund for Rural Development (EAFRD) and repealing Regulations (EU) No 1305/2013 and (EU) No 1307/2013, OJ L 435, 6.12.2021, p. 1–186

- **Cohesion Policy:** Types of actions supported under cohesion policy should not lead to harm to the environmental objectives of the Taxonomy Regulation (Art 9). Additional ways in which the pollution is safeguarded from is compliance with climate proofing of investments (also found to be relevant to implementing the PPP) and the use of EIA/SEA, to the extent relevant. While the CPR for the 2021-2027 programming period makes an explicit reference to the DNSH, the 2014-2020 program already integrated safeguards from pollution with managing authorities taking measures to reduce or restrict the negative environmental consequences of initiatives, as well as ensuring that the results are net social, environmental, and climate gains²¹⁶.
- **LIFE:** The LIFE Programme directly serves the six environmental objectives defined by the EU taxonomy rule and thus the DNSH principle applies. This is to ensure the compliance of actions with the EGD, Paris Agreement and UN SDGs. Annex 1 of the 2021-2024 Multiannual Work Programme for LIFE anchors the green oath and DNSH principle at the sub-programme level. Besides, the LIFE programme under 2014-2020 MFF already highlighted the alignment of the biodiversity offsets with the PPP. According to the Technical methodology²¹⁷ defining the project selection procedures, any project compensating Natura 2000 site damage is ineligible for funding.
- **InvestEU:** Operations above project size of €10 million under the sustainable infrastructure window are subject to climate, environmental and social sustainability proofing to minimise negative impacts and maximise benefits for the climate, environment and social dimension (see Article 8 of the Regulation.) This is described in the [Technical guidance on sustainability proofing for the InvestEU Fund](#).

RRF: The Regulation establishing the Recovery and Resilience Facility (RRF) provides that no measure included in a Recovery and Resilience Plan (RRP) should lead to significant harm to environmental objectives, and the assessment of the RRP should ensure that each and every measure within the plan complies with the DNSH principle. Compliance with the DNSH is an eligibility requirement. As stated in article 5(2) of the RRF regulation, “The Facility shall only support measures respecting the principle of ‘do no significant harm’”. The Commission issued a [Technical Guidance](#) to guide Member States on the application of the DNSH principle. The RRF regulation also includes a tracking methodology (Annex VI) to ensure that the requirement established in Article 18 (e) of achieving at least 37% climate contribution, is fulfilled. All RRP fulfil this requirement, with the average climate contribution being 42.5%.

Complementarily, the RRF includes measures that align DNSH with the PPP. For example:

- The Spanish RRP includes a new Law on Waste and Contaminated Soils which includes a state taxation on waste (including on landfilling, incinerating and co-incinerating, and on single-use plastic containers) which is based on the PPP.
- The Italian RRP includes a reform on integrated water services, which is expected to include incentives for a better use of water resources in the agricultural sector through a pricing system in line with the polluter-pays principle.
- The Polish RRP includes a reform to increase the use of environmentally friendly transport which involves the introduction of a registration fee and ownership tax for emission-related vehicles in line with the PPP.

²¹⁶ For more detailed comparison of respective MFFs, see here.

²¹⁷ See here.

- The Romanian RRP includes a reform on waste management governance to accelerate the transition to the circular economy, through different economic instruments among which pay-as-you-throw, landfill tax and extended producer responsibility.

Not financing clean-up activities

The use of EU funds was reviewed to assess whether they are being used to pay for clean-up activities and, if so, to understand why this may be happening. Although the effective application of the PPP implies that clean-up activities are paid for by the polluter and EU funds should not be used to cover these costs, the OECD (2008)²¹⁸ identifies several exceptions where the use of public subsidies may be inconsistent with the application of the PPP. Thus, understanding why EU funding is being used to cover costs for environmental protection is important. To answer this question, the types of environmental activities (and their funding allocations) financed by EU funding programmes has been reviewed to examine the extent to which potential clean-up actions have been allocated EU funding for the 2021-2027 period²¹⁹.

The Special Report 12/2021 by the ECA concluded that there was inconsistent application of the PPP between EU funds with evidence that they have been used for environmental remediation projects, including for the clean-up of orphan pollution and instances where national legislation failed to make the polluters pay. The report details 42 projects across three EU Member States (Poland, Italy, Portugal) in receipt of €180 million of EU funding and it was identified that the projects fit into one of four categories where the PPP was not applied : clean-up of industrial pollution from insolvent operators (4 projects, €33 million), decontamination of non-compliant landfills (8 projects, €27 million), clean-up of orphan industrial pollution (20 projects, €62 million) and investment in water treatment plants (10 projects, €58 million).

Among the projects investigated, ERDF and Cohesion Fund projects funded to improve the quality of drinking water were examined.²²⁰ Whilst this funding led to improvements in drinking water quality, ECA (2021) also identified instances where European funds were used to remediate significant environmental damage from a number of Italian landfill sites. These sites were not sufficiently equipped to protect against soil, water or air pollution and between 2014-2020, €27.2 million was used for their clean-up.

Moreover, 20 of the 42 projects examined relate to orphan pollution. Orphan pollution is pollution that took place in the past and where the PPP cannot be applied because the polluter is either unknown, no longer exists, or cannot be made liable. For other projects, the Commission indicated that under shared management it is the responsibility of the Member States to select operations where the conditions recommended by European Court of Auditors should be applied. The Commission committed to in “its supervisory capacity, make the use of EU funds for cleaning pollution conditional on checks, in collaboration with the Member States, that the relevant authorities took all the necessary steps to charge the polluter for the pollution they are responsible for”.

To build on the findings of the ECA 2021 report, the extent to which EU funding has been used for the clean-up of pollution has been reviewed at the level of EU funding programme based on a broad

218 OECD (1975), [The Polluter Pays Principle: Definition, Analysis, Implementation](#).

219 Supporting evidence reviewed to inform this analysis is in Appendix 2 of the support study.

220 Funds for water supply in Bulgaria, Hungary and Romania between 2007-2020 totalled €3.7 billion. The results showed that the quality of drinking water significantly improved in these Member States, attributed to the receipt of ERDF and Cohesion funds, though it was noted that significant additional funding is required to ensure all citizens in these Member States have access to safe, quality drinking water. These drinking water projects were usually carried out in tandem with wastewater projects and specifically related to infrastructure updates.

categorisation of funded activity based on the Classification of Environmental Protection (CEPA)²²¹. The table below lists the clean-up actions used to frame this analysis.

Table 16: Clean up actions grouped according to environmental media.

Environmental Media	Clean-up Action
Air and climate	Activities to control emissions of greenhouse gases, air pollutants and gases that adversely affect the stratospheric ozone layer. The purchase and installation of catalytic converters and particle filters. Treatment of exhaust gases and ventilation air – activities relating to the installation, maintenance and operation of end-of-pipe equipment for the removal and reduction of emissions of particulate matter or other air-polluting substances.
Wastewater management	Treatment of wastewater to bring water quality up to environmental standards (or other quality norms). This includes cleaning up of water bodies after pollution and the treatment of cooling water before releasing into the environment. The operation, maintenance and repair of sewerage networks.
Waste management	Treatment and disposal of waste. Treatment and disposal of non-hazardous waste. Treatment of low- and high-level radioactive waste.
Soil and water	Clean up of soils and water bodies. Soil decontamination at former industrial sites, landfills and other black spots. Dredging of pollutants from water bodies. Decontamination and cleaning up of surface water following accidental pollution. Cleaning up of oil spills on land, inland surface waters and seas Prevention and remediation of soil and groundwater salinity, including lowering of groundwater tables.
Biodiversity and landscapes	Restoration of small-scale structures (e.g., hedges, orchards) Replenishment of wild flora and fauna stocks. Environmental rehabilitation of abandoned mining and quarrying sites. Maintenance of landscapes that are the result of traditional agricultural practices. Restoration of water bodies as aquatic habitats.

Common Agricultural Policy (CAP) - Funding

For 2023-2027, the CAP is financed by the EAGF (€291.1 billion) and EAFRD (€95.5 billion). EAFRD and EAGF contribute to the 10 specific objectives of the CAP which aim to improve the competitiveness of the agriculture sector, to achieve balanced territorial development of rural economies and communities, and to sustainably manage natural resources, reverse and halt biodiversity loss and decline and address climate action.²²² Around 40% of its total budget is allocated to environmental, climate-related and other management commitments (2023-2027 period).²²³ The

²²² European Commission, [European Agricultural Fund for Rural Development \(EAFRD\) - European Commission \(europa.eu\)](https://ec.europa.eu/eafrd/).

²²³ [COM\(2023\)707 final](#).

specific climate and environmental objectives of the CAP (Article 6 Regulation (EU) 2021/2115) are:

1. To contribute to climate change mitigation and adaptation, including by reducing greenhouse gas emissions and enhancing carbon sequestration, as well as to promote sustainable energy.
2. To foster sustainable development and efficient management of natural resources such as water, soil and air, including by reducing chemical dependency.
3. To contribute to halting and reversing biodiversity loss, enhance ecosystem services and preserve habitats and landscapes.

Annex II of Regulation (EU) 2021/2115 sets out a list of types of interventions that can be financed by EAGF and EAFRD under the CAP²²⁴ which have been reviewed to identify examples of potential clean-up actions funded through the CAP:

Table 17: Potential clean up actions funded by Common Agricultural Policy Funding

8 th EAP Policy Objective		Allocated funding (2021-2027) ²²⁵	Potential clean-up actions funded
PO 1 and PO 2 Climate change		40% of CAP expenditures targeted towards climate action (€44.8 billion).	Climate mitigation and adaptation activities Reduction of greenhouse gases from agricultural activities – increasing carbon sinks, addressing emissions from mineral fertilisers and livestock, incentivising land managers to store carbon in soil and biomass. Carbon sequestration enhancement Sustainable energy use – renewable energy production
PO 3 Waste and Recycling	n/a	No clean-up actions identified.	
PO 4 Zero pollution	Air Quality	(Figure to be provided subject to revision reflecting ongoing methodology discussions)	
	Water	0.3% of the public CAP funding is allocated to Natura 2000 and Water Framework Directive payments.	Funding for water under the CAP is primarily allocated to water resilience activities, including water management and supporting a reduction in the reliance on chemicals. They are not directly related to pollution or clean-up, however, all farmers receiving support must create buffer strips along water courses of at least 3 metres, sometimes with provisions for small fields surrounded by water. This reduces pollution from fertilisers and pesticides.
	Noise	n/a	No clean-up actions identified.
	Chemicals Risk Management	See climate funding for total allocated to climate and environmental funding.	Banning use of chemicals in certain areas Adopting integrated pest management Supporting the use of non-chemical methods, e.g., precision farming

²²⁴ [Regulation \(EU\) 2021/2115](#)

²²⁵ European Commission, [Common Agricultural Policy - Performance - European Commission \(europa.eu\)](#).

8 th EAP Policy Objective	Allocated funding (2021-2027) ²²⁵	Potential clean-up actions funded
		Reduction of pesticide and fertiliser use – increased area of organic production
PO 5 Nature, biodiversity, soil and land	It is estimated that 16.9% of the CAP funding is contributed to biodiversity, which is more than half of biodiversity funding under the 2021-2027 MFF	Restoration of soil fertility Reduced use of fertilisers and pesticides Increase organic farming area Increase in the area of environmentally sensitive permanent grasslands.

Note: Policies grouped under the heading of 8th EAP PO 6 cannot be mapped to clean up actions and are not included here.

Source: Summary of evidence compiled in Appendix 2 of the support study.

Cohesion Policy Funds

The EU Cohesion Policy (and associated funds) aims to address imbalances in countries and regions, as well as strengthening economic, social and territorial cohesion in the EU.²²⁶ It prioritises action across several key areas, such as human capital (protecting jobs, modernising labour), business (favouring stability, competitiveness and innovation), infrastructure and energy (networks) and research and innovation to strengthen human capital and EU infrastructure.²²⁷

EU Cohesion Policy is delivered through four funds: ERDF, ESF+, CF and JTF. Of these, the ECA report on the application of the PPP highlighted that the ERDF and CF were the main EU funds being used for the clean-up of contaminated sites. Amongst other objectives, the fund supports environmental objectives such as the transition to a low-carbon economy through the promotion of clean energy, green and blue investment, the circular economy, and climate change mitigation and adaption.²²⁸

An overview of the type of clean up actions funded is presented below in the table below, grouped by 8th EAP priority objective. The clean-up actions are based on a review of the intervention fields used to track cohesion policy investments²²⁹.

Table 18: Cohesion Policy Funding (2021-2027)

8 th EAP Policy Objective	Allocated funding (2021-2027)	Potential clean-up actions funded
PO 1 and PO 2 Climate change	€12.7 bn ‘climate change adaptation’ €9 bn ‘renewable energy’ €21.8 bn ‘energy efficiency’ €5.4 bn ‘smart energy systems’ €18 bn ‘sustainable urban mobility’	• Research and innovation processes, technology transfer and cooperation between enterprises, research centres and universities, focusing on the low carbon economy, resilience and adaptation to climate change • Energy efficiency and demonstration projects for businesses • Energy efficiency renovation of existing housing stock • Construction of new energy efficient buildings • Support to entities that provide services contributing to the low carbon economy and to resilience to climate change, including awareness-raising measures • Renewable energy • High efficiency co-generation, efficient district heating and cooling with low lifecycle emissions

²²⁶ Article 3 of [the Treaty of the European Union](#).

²²⁷ [Cohesion Policy: investing in the real economy | EUR-Lex \(europa.eu\)](#)

²²⁸ [Regulation \(EU\) 2021/1060](#)

²²⁹ [Regulation \(EU\) 2021/1060](#). Annex I Dimensions and codes for the types of intervention for the ERDF, the ESF+, the Cohesion Fund and the JTF Article 22(5).

8 th EAP Policy Objective		Allocated funding (2021-2027)	Potential clean-up actions funded
			- Replacement of coal-based heating systems by gas-based heating systems for climate mitigation purposes - Distribution and transport of natural gas substituting coal - Adaptation to climate change measures and prevention and management of climate related risks - Other measures to reduce greenhouse gas emissions in the area of preservation and restoration of natural areas with high potential for carbon absorption and storage, e.g., by rewetting of moorlands, the capture of landfill gas
PO 3 Waste and Recycling		No data identified.	Rehabilitation of industrial sites and contaminated land
		€6.3 bn expenditure planned under 'Circular Economy'	- Research and innovation processes, technology transfer and cooperation between enterprises, focusing on circular economy - Household waste management - Commercial, industrial waste management - Promoting the use of recycled materials as raw materials
PO 4	Air Quality	No data identified.	Air quality and reduction of noise measures
	Water	€12.7 bn for 'sustainable water'	- Provision of water for human consumption - Water management and water resource conservation - Wastewater collection and treatment
	Noise	No data identified.	Air quality and reduction of noise measures
	Chemicals Risk Management	n/a	No clean-up actions identified.
PO 5 Nature, biodiversity, soil and land		€7.3 bn spending allocated to 'nature protection and biodiversity'	- Protection, restoration and sustainable use of Natura 2000 sites - Nature and biodiversity protection, natural heritage and resources, green and blue infrastructure

Note: Policies grouped under the heading of 8th EAP PO6 cannot be mapped to clean up actions and are not included here.

LIFE+

The Programme for Environment and Climate Action (LIFE) fund is the only EU fund specifically targeted at delivering on environmental, climate and energy objectives. It supports the EU's transition to a climate-neutral economy by 2050, with other key aims including protecting and restoring the environment (air, water, soil), halting and reversing biodiversity loss, tackling the degradation of ecosystems, sustainability, circularity, energy efficiency and renewable energy.²³⁰ €3.4 billion of funding was allocated to the period 2014-2020, increasing to €5.4 billion for the current 2021-2027 period.^{231,232} LIFE projects aim to identify specific, innovative approaches to tackle broad climate and environmental objectives. To that effect, the fund primarily finances pilot projects used to demonstrate the effectiveness of novel technologies, or novel methods targeted at improving the effectiveness of policy implementation. Additionally, projects are funded that facilitate exchange of

²³⁰ [Programme for the Environment and Climate Action \(LIFE\) - European Commission \(europa.eu\)](https://ec.europa.eu/environment/life/)

²³¹ [Environment - LIFE : Funding : LIFE - List of NGOs 1997 - 2013 \(archive-it.org\)](https://archive-it.org/20130101000000/http://ec.europa.eu/environment/life/)

²³² [LIFE programme - European Commission \(europa.eu\)](https://ec.europa.eu/environment/life/)

best practice and awareness, for example to support the upscaling of pilot projects to commercially viable systems. Early-phase research and development activities are typically out of scope unless they support other LIFE projects; however, there is a clear link between LIFE and support for R&D where pilot projects are used to demonstrate the effectiveness of novel technologies.

The LIFE fund is comprised of four sub-programmes that make up the bigger ‘Environment’ and ‘Climate Change Action’ programmes: ‘nature and biodiversity’, ‘circular economy and quality of life’, ‘climate change mitigation and adaptation’ and ‘clean energy transition’.

- The Environment programme is comprised of the sub-programmes ‘Nature and Biodiversity’ and ‘Circular Economy and Quality of Life’. Between 2021-2027, €3.5 billion was allocated to the programme, under which the Nature and Biodiversity sub-programme received €2.1 billion (aimed at the protection and restoration of natural habitats the preservation of wild and/or protected species across the EU). Projects are also funded to support the Natura 2000 Network, and LIFE projects are further used to support a key EU policy objective of protecting and restoring the marine environment.²³³ Whilst the projects funded under this sub-programme are varied in nature (e.g., training and awareness, enlargement of habitats), a proportion of funding is allocated to projects that focus on the restoration of natural sites to their original condition and conservation actions necessary to protect wild species. Recipients of funding must report on the number of actions taken and the type of species and habitats involved in the improvement and restoration of natural sites to facilitate monitoring of overall improvements at the EU-level.²³⁴ The circular economy and quality of life programme received €1.3 billion of EU funding in the most recent programming period. Projects funded relating to the circular economy should focus on sustainable and resource efficient methods to design, manufacture, consume, repair and recycle commercially viable products and materials (e.g., plastics, construction materials).¹²³ This sub-programme also focuses on projects aiming to improve the quality of life for EU citizens, including specific actions to protect health and those with a particular focus on improving the quality of air, soil, water and soils. Initiatives to improve waste management are also funded, as well as initiatives to reduce noise levels and the use of hazardous chemicals.¹²³
- The Climate Change Action programme targets projects aimed at addressing the ‘Climate Change Mitigation and Adaptation’ and ‘Clean Energy Transition’ sub-programmes. €1.9 billion was allocated to both programmes. The climate mitigation and adaptation sub-programme (€947 million) supports initiatives under three main categories: actions to reduce vulnerability against climate change, initiatives to reduce greenhouse gas emissions by at least 55% by 2030 (compared to 1990 levels) and to facilitate implementation of the EU’s Adaptation Strategy. The clean energy transition sub-programme directs funding towards initiatives that support the transition to sustainable energy, including by tackling regulatory and market barriers that prevent a full transition. €997 million is allocated to this sub-programme. Other projects funded include capacity building for renewable energy uptake and procurement actions to support technical delivery and monitoring of projects.

The types of activities funded by LIFE are:

- **Strategic nature projects:** supporting nature and biodiversity objectives by implementing coordinated action in EU Member States.
- **Strategic integrated projects:** the implementation of environmental or climate strategies/action plans to deliver action on specific legislative requirements.
- **Standard action projects:** testing innovative solutions or facilitating exchange of best practices under the LIFE sub-programmes.

²³³ [Regulation \(EU\) 2021/783](#)

²³⁴ [indicators_tables2007.xls](#) (live.com)

In principle, the LIFE programme does not finance directly clean-up actions, but it may support projects testing innovative techniques and approaches and/or showcasing best practices. LIFE projects typically fund pilot projects with the long-term aim of large-scale deployment. In that regard, the funding of direct or indirect clean-up actions does not automatically equate to a failure in the application of the polluter pays principle across the EU. . Regulation EU 2021/783 on establishing a LIFE Programme describes the need for high-level environmental protection to ensure the long-term health and wellbeing of EU citizens. By investing in innovative advancements in pollution clean-up actions (and additional wider objectives), the Union can seek to protect the environment in the long-term and ensure action is taken at all levels (research, scale-up, large scale deployment) to address the climate and pollution crises we currently face.

Table 19: Potentially eligible (indirect) clean up actions allocated funding under the LIFE programme (2021-2027) relevant to the 8th EAP priority objectives

8 th EAP Policy Objective		Allocated funding (2021-2027)	Potential clean up actions
PO 1 and PO 2	Climate change	€1.994 billion	Climate Change Mitigation and Adaptation - €947 million. Clean Energy Transition - €997 million.
	Waste and Recycling	€1.345 bn under Circular Economy and Quality of Life, which targets waste and recycling	Innovative solutions contributing recycled materials, components or products with additional value Innovations solutions to identify, track, separate, prevent and decontaminate waste containing hazardous substances. Resource recovery from waste.
PO 4	Air Quality	No specific funding earmarked	Reduction in air quality and noise pollution Use of alternative fuels Innovative logistic or passenger mobility platforms
	Water	No specific funding earmarked.	Protecting the marine environment Improving ecological status of water bodies Water management efficiency Conservation and restoration of marine ecosystems (e.g., Natura 2000 marine sites) The promotion of healthy seas
	Noise	No specific funding earmarked.	
	Chemicals Risk Management	€1.345 bn under Circular Economy and Quality of Life, which targets the ‘sustainable production and use of chemicals’	Projects to support the reduction in production and use of dangerous chemicals Increasing transparency of information to consumers Development of safe and sustainable chemicals Chemicals management
	Nature, biodiversity, soil and land	€2.143 bn allocated to the “Nature and Biodiversity” programme (soil is financed under Circular Economy and quality of life).	Space and Nature – area-based activities aimed at conservation and restoration of habitats or species Safeguarding species (other than area-based interventions).

Note: Policies grouped under the heading of 8th EAP PO6 cannot be mapped to clean up actions and are not included here

Source: Support study, adapted

InvestEU funding

The InvestEU programme (2021-2027) is a €26.2 billion guarantee programme for repayable support (debt and equity financing) that seeks to mobilise over €372 billion in investments between 2021-2027 across four key policy windows: sustainable infrastructure (€9.9 billion), research, innovation and digitalisation (€6.6 billion), small-to-medium enterprises (SMEs) (€6.9 billion) and social investment and skills. 30% of the total financial envelope is committed to climate objectives.²³⁵ Investments should be channelled to projects that improve the ‘competitiveness, promote jobs, growth and innovation, improve socio-economic convergence and cohesion’ as well as to meet EU objectives in terms of resilience of the Union economy and environmental and climate objectives.

The table below presents some of the potential clean up actions eligible for support through the InvestEU programme.²³⁶ Many of these relate to environmental infrastructure, including for drinking and wastewater. There are several clean-up actions explicitly noted, including the restoration of ecosystems and the clean-up of contaminated industrial sites. However, the extent to which these funds are used to cover clean-up actions that polluters are liable to pay is unclear. The fund places a huge emphasis on research and the development of innovative solutions to address the EU’s biggest priorities. For example, mobility projects that target emissions reduction may equate to potential clean-up actions depending on the recipient and the nature of the project. Similarly, this could also be a R&D project focussing on generic emissions reductions. As public and private sector entities are eligible to receive funding, further information at the project-level is needed to ascertain the extent to which funding is spent on clean-up actions.

Table 20: Potentially eligible clean-up actions financed through InvestEU Funding.

Specific Objective	Potential Clean-up Actions
The development of the energy sector in accordance with Energy Union priorities	Infrastructure for carbon capture and storage in industrial processes, bioenergy plants and manufacturing facilities towards the energy transition
The development of sustainable and safe transport infrastructures and mobility solutions, equipment and innovative technologies in accordance with Union transport priorities and the commitments taken under the Paris Agreement	Smart and sustainable mobility projects that target, amongst other things, emissions reduction
Environment and resources	Water – drinking water supply and sanitation, network efficiency, leakage reduction, infrastructure for the collection and treatment of wastewater, coastal infrastructure and other water-related green infrastructure Waste management infrastructure linked to circular economy Enhancement and restoration of ecosystems and their services including through the enhancement of nature and biodiversity by means of green and blue infrastructure projects Climate change actions, climate adaptation and mitigation, including natural hazard disaster risk reduction

²³⁶ [Regulation \(EU\) 2021/523](#)

Specific Objective	Potential Clean-up Actions
	The decarbonisation of energy-intensive industries and the substantial reduction of emissions in such industries, including the demonstration of innovative low-emission technologies and their deployment The rehabilitation of industrial sites (including contaminated sites) and the restoration of such sites for sustainable use Sustainable agriculture, forestry, fishery, aquaculture and other elements of the wider sustainable bioeconomy

Recovery and Resilience Facility (RRF)

The RRF is the centrepiece of the historic NextGenerationEU funds, introduced as a response to the economic and social fallout resulting from the COVID-19 pandemic. The RRF supports the economic, social and territorial resilience of the EU by financing reforms and investments in Member States to aid recovery²³⁷. Investments cover projects that commenced at the start of the COVID-19 pandemic (February 2020) and are to be fully implemented by 31st August 2026. The RRF contributes to the implementation of the European Green Deal and facilitates mainstreaming environmental sustainability initiatives and the green transition. It does not target specific pollution types, and the scope of the fund is broad, however specific intervention fields refer to carbon and greenhouse gas emission, water, waste (household, commercial, industrial), or air and noise pollution. A total of €650(in current prices) billion, consisting of loans (€291 billion)²³⁸ and grants (€359 billion), is committed under the Facility, of which at least 37% must be spent on supporting climate objectives.²³⁹

The table below details the potential clean-up actions funded through the Facility, most notably including ‘rehabilitation of industrial sites and contaminated land’ and the ‘protection and restoration of Natura 2000 sites’. As detailed above for the InvestEU programme, the extent to which funds are used for clean-up actions that directly conflict with the application of the PPP will depend on the specific nature of the clean-up operation and the recipient of the funding.

Table 21: Potential clean up actions funded through the Recovery and Resilience Fund

8 th EAP Policy Objective	Funding received	Potential clean up actions funded
PO 1 and PO 2 Climate change	42.5% of the total RRF budget is allocated to climate expenditure.	• Sustainable mobility • Energy efficiency • Renewable energy and networks • R&D for climate change mitigation and circular economy • Climate change adaptation measures
PO 3 Waste and Recycling	EUR 15 billion contributes to the ‘Transition to a circular economy, waste prevention and recycling’ policy area	• Household waste management: prevention, minimisation, sorting, reuse, recycling measures • Commercial, industrial waste management: prevention, minimisation, sorting, reuse, recycling measures. • Use of recycled materials as raw materials compliant with the efficiency criteria. • Rehabilitation of industrial sites and contaminated land compliant with efficiency criteria. • Support to environmentally friendly production processes and resource efficiency in SMEs

237 Article 4 of [Regulation \(EU\) 2021/241](#).

238 Of which only 76% was actually requested by Member States, see ‘FINAL OVERVIEW OF MEMBER STATES’ LOAN REQUESTS UNDER THE RRF’

239 Article 16 of [Regulation \(EU\) 2021/241](#).

8 th EAP Policy Objective		Funding received	Potential clean up actions funded
			Support to environmentally-friendly production processes and resource efficiency in large enterprises
PO 4	Air Quality and noise	EUR 3.7 billion contributes to the ‘Pollution prevention and control’ (such as air, water, noise pollution)’ policy area	- Air quality measures - Noise pollution reduction measures
	Water	EUR 19.4 billion contributes to the ‘Sustainable use and protection of water and marine resources’ policy area	- Provision of water for human consumption (extraction, treatment, storage and distribution infrastructure, efficiency measures, drinking water supply) compliant with efficiency criteria - Water management and water resource conservation (including river basin management, specific climate change adaptation measures, reuse, leakage reduction) - Waste water collection and treatment compliant with energy efficiency criteria.
PO 5 Nature, biodiversity, soil and land		EUR 7.7 billion contributes to the ‘The protection and restoration of biodiversity and ecosystems’ policy area	- Protection, restoration and sustainable use of Natura 2000 sites - Nature and biodiversity protection, natural heritage and resources, green and blue infrastructure

Note: Policies grouped under the heading of 8th EAP PO6 cannot be mapped to clean up actions and are not included here

Source: Summary of evidence compiled in Appendix 2 of this report.

The review of EU funds confirmed the findings of ECA (2021) that there was inconsistent application of the PPP between EU funds with evidence that they have been used for the clean-up of orphan pollution. The most frequent types of clean-up actions identified were remediation of contaminated (industrial) sites and the protection and restoration of protected sites, though additional clean-up actions include waste management (e.g., infrastructure development), climate change mitigation measures (excluding research & development) and restoration of soil condition. Although the full extent to which EU funds are financing clean-up actions remains unclear owing to the current granularity of expenditure reporting which does not distinguish clearly between relevant clean up actions funded.

C. State aid

To avoid market distortion, there is a general prohibition of State Aid in the EU based on Article 107(1) TFEU . Exceptions are provided for under Articles 107(2) and (3) of the TFEU, for example where intervention is needed due to a market failure or addressing equity or cohesion concerns. The granting of aid requires prior approval by the Commission and thus a notification to the Commission by the Member State concerned. This procedure however is not needed for categories of aid block exempted by Member States by the General Block Exemption Regulation (GBER), provided that such aid falls below the notification threshold laid down in GBER.

Where relevant, the State aid rules reviewed under the Fitness check require Member States to comply with the PPP for aid to be declared compatible. Notably, the CEEAG explain that aid cannot be considered compatible where it supports the costs which the polluter must bear in accordance with the PPP (‘Compliance with the ‘polluter pays’ principle through environmental legislation aims at ensuring that a market failure linked to negative externalities will be rectified. Therefore, State aid is not an appropriate instrument and cannot be granted insofar as the beneficiary of the aid could be held liable for the pollution under existing Union or national law’).

Furthermore, the CEEAG requires the application of the PPP where aid is granted for specific categories of projects, namely resource efficiency projects (point 238 CEEAG²⁴⁰), projects concerning the remediation of environmental damage, the rehabilitation of natural habitats and ecosystems, the protection or restoration of biodiversity and the implementation of nature-based solutions for climate change adaptation and mitigation (points 284-286 CEEAG²⁴¹), and to cover exceptional costs (including exceptional environmental costs) resulting from the closure of uncompetitive coal, peat and oil shale activities (see point 443-444 CEEAG).

The corresponding provisions of the General Block Exemption Regulation (EU) No 651/2014 also contain direct references to the PPP. Specifically, for the following categories of aid, compliance with the PPP is a compatibility condition:

- Investment aid for the remediation of environmental damage, the rehabilitation of natural habitats and ecosystems, the protection or restoration of biodiversity and the implementation of nature-based solutions for climate change adaptation and mitigation (Article 45²⁴² and 56e(8)(a)(iii));
- Investment aid for resource efficiency and for supporting the transition towards a circular economy (Article 47 and 56e(7)(a)(ii), which cross-refers among others to Article 47(4)²⁴³).

DNSH: When balancing the identified negative effects on competition and trading conditions of the planned aid measure with its positive effects on the supported economic activities under the CEEAG, the Commission pays particular attention to Article 3 of Regulation 2020/852, including the ‘do no significant harm’ principle, or other comparable methodologies.

240 « In accordance with the ‘polluter pays’ principle, undertakings generating waste should not be relieved from the costs of waste treatment. The aid should therefore not relieve undertakings that generate waste from any costs or obligations relating to the treatment of waste for which they are liable under Union or national law, including under extended producer responsibility schemes. In addition, the aid should not relieve undertakings from costs that should be considered as normal costs for an undertaking ».

241 “The Member State must demonstrate that all necessary measures, including legal action, have been taken to identify the liable entity or undertaking at the origin of the environmental damage and make it bear the relevant costs”.

242 See in particular paragraph 5: Without prejudice to Directive 2004/35/CE of the European Parliament and of the Council or other relevant Union rules on liability for environmental damage, where the entity or undertaking liable for the environmental damage under the law applicable in each Member State is identified, that entity or undertaking shall finance the works necessary to prevent and correct environmental degradation and contamination in accordance with the ‘polluter pays’ principle, and no aid shall be granted for the works that the entity or undertaking would be legally required to conduct. The Member State shall take all necessary measures, including legal action, to identify the liable entity or undertaking at the origin of the environmental damage and make it bear the relevant costs. Where the entity or undertaking liable under the applicable law cannot be identified or made to bear the costs of remediating the environmental damage it has caused, in particular because the liable undertaking has ceased to legally exist and no other undertaking can be regarded as its legal or economic successor, or where there is insufficient financial security to meet the costs of remediation, aid may be granted to support the remediation or rehabilitation works. Aid shall not be granted for the implementation of compensatory measures referred to in Article 6(4) of Council Directive 92/43/EEC. Aid may be granted under this Article to cover the extra costs necessary to increase the scope or ambition of those measures, beyond the legal obligations under Article 6(4) of Directive 92/43/EEC.

243 See in particular paragraph 4: The aid shall not relieve undertakings that generate waste from any costs or obligations relating to the treatment of waste for which they are liable under Union or national law, including under extended producer responsibility schemes, or from costs that should be considered as normal costs for an undertaking.

Annex 8. Discussion of the costs and benefits of PPP application.

This Annex provides more detail on the information largely covered in Section 4.1.6, on whether EU policymaking can be made more efficient by better implementing the PPP. The question asked in Section 4.1.6 is whether the PPP makes environmental policy more efficient (improving the cost-benefit ratio of environmental policy).

There are:

- The costs that the polluter should pay for, which are the costs of prevention and control, administrative costs and the costs of environmental damage.
- The (administrative) ‘overhead’ costs of the application of the PPP, so costs that are incurred only because of the application of the PPP.
- The benefits from the application. These could be economic (lower cost of abatement), environmental (as polluters respond to incentives and reduce their pollution) or social (in terms of fairness). Social benefits are considered in Annex 9 and Section 4.1.4.

A. Methodological challenge

There are two significant methodological challenges, going beyond a standard lack of data. These are:

- It is difficult to distinguish the overhead costs of applying the PPP from the costs of the policies themselves. Conceptually, this difference must exist, but identifying it in practice is harder. The analysis concludes that in practice the overhead costs of applying the PPP are close to zero for policies that apply the PPP to prevention and control costs. For other policies, the analysis remains qualitative, but case studies suggest they are marginal and have been considered as part of the ongoing Better Regulation work associated with specific policies.
- It is difficult to identify the incentive effect of applying the PPP. There is a full consensus amongst stakeholders, academics and the literature that this incentive effect exists delivering a price signal that makes markets work better and leads to low-cost reductions in pollution. However, it is methodologically difficult to measure eg what is the effect of making a polluter pay the costs of prevention?

B. Analysis of costs

The costs of pollution prevention and control, the associated administrative costs and the environmental damage costs result from polluting activities and the policies addressing them. These costs are significant (see Section 3), and the application of the PPP means that such costs are under the responsibility of the polluter, who should pay for them. Section 3 set out costs of prevention and control estimated at EUR 357 billion, administrative costs that are much lower and environmental damage costs of several hundred billion Euros, that are only partly paid for by the polluter.

However, another perspective is to consider what the implementation (or ‘overhead’) cost is of the PPP. This section therefore complements Section 3 and Section 4.1.2 by asking what are the costs specific to – or additional from - the application of the PPP. Within administrative costs, some costs

are incurred regardless of the application of the PPP and relate to the policies and measures undertaken, and that polluters then need to pay for (eg identification of polluters for the purpose of ensuring limit values are respected). Others relate to the overhead costs of application of the polluter pays principle (eg identification of polluters for the purpose of putting a price on those emissions). Distinguishing between such subtly different purposes is not easy.

What do policy specific analyses tell us about the balance?

The policy Evaluations and Impact Assessments undertaken as part of the Better Regulation practices reviewed for this analysis do not distinguish between the costs of the policies themselves and the costs of applying the PPP: the two are usually considered inseparable. It follows that it is very difficult to get an overview from them, and the analysis below remains mainly qualitative. As general comments:

- For prevention and control, the overhead costs cannot be separated, in part as the default is that the polluter should pay any overheads related to prevention and control costs.
- Measures to ensure the PPP is applied for administrative costs and environmental damage costs are considered, and hence their overhead costs eg Impact Assessment of EPR under the Batteries regulation, Impact Assessment of the ETD revision etc.

Measures to apply the PPP have been put in place where they are considered proportionate given the pros and cons (including the costs and the benefits) of doing so. The balance varies across cases, reflecting in part the issues set out in Section 4.1.4 and 4.1.5 (social concerns, competitiveness concerns, overhead costs related to difficulty of doing so etc). There is no comprehensive data for the cumulative overhead costs, but the overhead costs and benefits have been implicitly considered under different analyses. For example, it is considered proportionate for²⁴⁴:

- Waste disposal taxes (either on landfilling or incineration) are relatively easy to administer because the tax is usually paid by the operator of the facility receiving the waste. It is then transferred through the gate fee to the companies delivering the waste to the facility. Waste disposal taxes exist in many Member States.
- A tax on point emissions (like air pollution from industry) is also relatively simple to administer. Industrial facilities that emit air-polluting substances like nitrogen and sulphur oxides and particulate matter are regulated and controlled. These taxes have been deployed in some Member States.
- Extended Producer Responsibility schemes are seen as an administratively straight forward way to shift the costs upstream toward the producer and away from competent authorities or municipalities.

The cases where PPP is not fully applied currently are also instructive about the balance of these pros and cons. For example, in relation to environmental damage where it is often location specific, caused by many diffuse polluters etc. For example, industrial emitters must directly finance wastewater treatment processes, while low volume emitters like households do not directly pay in relation to their precise emissions because the (overhead) costs of monitoring and charging them would be disproportionate²⁴⁵.

Overhead Costs

The main ‘overhead’ costs of applying the PPP in EU policy are incurred via administration costs, with three broad types:

²⁴⁴ See support study and also Study on Toolbox 2021

²⁴⁵ See support study section 4.2.1 and [SWD\(2019\) 700 final](#).

1. Additional costs of identifying the polluter
2. Additional costs of monitoring the pollution costs
3. Additional costs of enforcement of the PPP

As part of the compliance assurance process for (any) legislation, there are usually costs associated with these different elements. Separating these costs from those that would be incurred in the absence of the PPP, or under full implementation (a point of comparison) is for most pieces of legislation not possible.

→ **Additional costs of identifying the polluter** are minimal when the pollution is addressed at source. In such cases, the provisions are targeted at the polluter which is directly identifiable (e.g. companies targeted by command-and-control measures under the IED). Regardless of who pays, the legislation usually requires such costs (for example, in a permitting regime).

The main challenge of identifying the polluter occurs in the case of:

- Legacy pollution, where contaminants are left in the environment by sources that are no longer discharging them and/or it is not clear who the polluter is.
- Diffuse pollution, where multiple sources are contributing to pollution, and it is not possible to distinguish who the polluter is with sufficient certainty.

The costs of **legacy pollution** are not widely addressed by EU policy. Two examples where they are partially addressed are the Mercury Regulation and the POPs Regulation. The Mercury Regulation requires competent authorities to identify and assess sites contaminated by mercury and mercury compounds and to address the significant risks such contamination may pose to human health and the environment without any provision to identify the historic source of pollution or reclaim cost from polluters (and we conclude that the PPP has not been fully applied). The POPs Regulation requires stockpiles of substances classified as POPs to be identified and managed by the polluter. In such cases, the provisions stipulate that the cost of identifying the stockpile is recovered by the authorities. In both cases, the costs of identifying the polluter were not reviewed in accompanying policy Evaluation and no costs data is available.

The costs of **diffuse pollution** are addressed in a greater number of EU policies compared to legacy pollution (for example, this is relevant for the Waste FD, MSFD, Water FD, UWWTD, BWD, EQS Directive, GWD, Floods Directive, AAQD, NEC Directive, END, and the Nature Directives). The costs of identifying not just diffuse polluters but also the level of their actual pollution tends to act as a barrier to applying pricing policies where price is related to environmental damage.

→ **The costs of monitoring** relate to tracking and reporting of costs incurred to address pollution. Policy provisions that address monitoring and reporting requirements encompass pollution rather than the costs of pollution (see also related section on administrative costs below). As can be seen from the use case below on maritime ETS where monitoring systems are already in place for obligatory or voluntary reporting, the additional costs for both reporting entities and administration of applying the PPP to these areas are relatively low.

Box 5: Maritime ETS

An example for costs caused by the application of the PPP to an area where it has not been previously applied to is the 2023 adoption of the maritime ETS system in the course of the amendment of Directive 2003/87/EC which comes into force in 2024. Since 2019, companies submit every year to the Commission and to the relevant Flag State authority an emissions report,

verified by an independent accredited verifier, under the MRV Regulation²⁴⁶. This served the preparation of a potential introduction of the ETS, which means that the monitoring costs under the MRV Regulation are considered here as costs of the application of the PPP. The additional costs for companies through the introduction of the ETS are expected to be minor. Meanwhile the overhead costs for administration are only a fraction of the expected state income from attributed allowances.

The overhead costs for regulated entities as well as the administration were estimated in the 2021 ETSD Impact Assessment²⁴⁷. For regulated entities, a monitoring, reporting and verification system for CO₂ emissions is already in place. The costs of MRV compliance so far were estimated at about EUR 6.700 per ship per year²⁴⁸. The only additional MRV costs induced by the ETS extension relate to the preparation of emissions reports at company level but this task could be supported by the IT system behind the EU maritime MRV system (THETIS-MRV) which could automatically aggregate all relevant data at company level. There would also be a one-off cost to open a registry account or become familiarised with the requirements of the system. Annual costs would include costs linked to the purchase and surrender of allowances, keeping records or supporting requests from competent authorities. Experience from the ETS shows that these activities generate much less administrative burden than the monitoring, reporting and verification of emissions. Non-MRV costs are estimated to represent around 10% of the MRV costs.

For all reviewed policy options public authorities will have to ensure that regulated entities are capable of monitoring and reporting emissions, and review the amount of emissions reported by regulated entities, based on information verified by independent accredited verifiers. This is estimated to entail relatively limited additional costs. The European Maritime Safety Agency (EMSA) could potentially assist Member State competent authorities in this task with their expertise on MRV data and related IT tools (e.g. by facilitating the exchange of information, developing guidelines and criteria). This would increase costs to EMSA, but reduce costs and improve efficiency for Member States. The main additional administrative costs will stem from the administration of the registry, compliance and enforcement. Such processes can build on the ones existing under the ETS and thus the incurred administrative costs will be very limited.

In terms of enforcement, the surrendering of required allowances will be registered electronically in the registry and the system will allow for a rapid identification of non-compliant companies. In case of non-compliance, public authorities will have to recover non-surrendered allowances and ensure that non-compliant regulated entities are held liable for the payment of a emissions penalty.

An estimation of the cumulative ETS costs for national authorities provided in the table below based on previous ETS experience.

²⁴⁶ Note that data collected under the MRV are also used for the monitoring of the Regulation (EU) 2023/1805 of the European Parliament and of the Council of 13 September 2023 on the use of renewable and low-carbon fuels in maritime transport, and amending Directive 2009/16/EC.

²⁴⁷ [SWD\(2021\) 601 final](#).

²⁴⁸ These regulations and thus the costs only relate to large vessels. Only ships above 5000 gross tonnage are included. Moreover, warships, naval auxiliaries, fish-catching or fish-processing ships, wooden ships of a primitive build, ships not propelled by mechanical means, or government ships used for non-commercial purpose are out of scope.

ETS administrative costs for all competent authorities	
One-off costs (costs per period) (million euros)	0.5 – 1.5
Annual costs (million euros)	0.5 – 6.4

Source: Ricardo, 2021

There is an opportunity to use of electronic certificates that could remove the need for a physical check in its entirety, a possibility already being discussed for the revision of the Port State Control and Flag State Directives. The various EMSA tools in support of enforcement activities (THETIS, THETIS-EU, RuleCheck and the EMSA Academy) and EMSA's expertise in this field, could support the correct implementation and enforcement at national and EU level.

For the European Commission, the main additional administrative costs from the ETS extension would come from the update of the IT system behind the EU maritime transport MRV Regulation.

This compliance costs of the administration (not the companies themselves) are minor compared to the revenue created by the amendment (from the regulated entities). The table below presents the additional revenues that could be generated at EU level in 2030 (as estimated in the PRIMES Maritime module). It considers different policy options and geographical scope as well as the fact that purchasing ETS allowances from other sectors does not generate additional revenues.

Table 17: Additional revenues generated by policy options (billion Euro 2015)

	ETS or levy additional revenues in 2030 (billion EUR 2015)	Assumptions in terms of ETS or levy price in 2030 (EUR/tCO₂)¹²⁵
MAR1 –MINTRA	1.2 b EUR	45,5
MAR1 _MEXTRA50	2.4 b EUR	45,5
MAR1 –MEXTRA100	3.6 b EUR	45,5
MAR2 and MAR3 _MINTRA	7 b EUR	268
MAR4 –MINTRA	1.2 b EUR	45,5

Source: PRIMES Maritime module

The administrative 'overhead' costs therefore seem very small compared to the costs that the polluters will now face. Reflecting this, the extension of ETS to this sector is seen as preferable to other forms of more command-and-control legislation.

→ **Costs of enforcement** apply for all policies, and there are limited examples of enforcement measures dedicated solely to the PPP identified via the review of policy provisions in Annex 7.

Administrative costs

The three cost categories identified above are of administrative nature. Within the administrative costs of the policies in scope, some of the costs relate to the policies and measures undertaken, and that polluters need to pay for (e.g. identification of polluters for the purpose of ensuring limit values are respected). Others relate to the overhead costs of application of the polluter pays principle (e.g.

identification of polluters for the purpose of putting a price on those emissions). Distinguishing these two types of costs is not possible.

C. Simplification and administrative burden reduction

This is to a large extent best considered in the Evaluations of specific policies (for example, the Evaluation of the Environmental Liability Directive considers this). Looking at the PPP in a horizontal manner, there are actions that could potentially have made it simpler and less burdensome to implement. This includes sharing of best practice amongst Member States, reflecting the considerable flexibility that they have under the subsidiarity principle and so the rich patchwork of experiences that exist. This already happens to some extent, but arguably more clarity about existing practices and what works could help further.

Evaluations of individual policies also consider the associated individual reporting obligations. Economy-wide reporting related to PPP is made to Eurostat on environmental taxes and national environmental protection expenditure including investments. The recent revision of this Regulation will improve reporting, extending it to environmental subsidies and with a feasibility study of monetary valuation of ecosystem services. At the same time, the Governance Regulation requires reporting of fossil fuel subsidies, and this is being complemented with reporting of other (non-energy) environmentally harmful subsidies. With respect to liability regimes, the current patchwork of national and EU liability regimes creates an unclear legal situation and so additional costs.

However, the evidence base for this study is affected by a limited analysis and reporting of costs. This tends to be best for prevention and control, and administrative costs and weakest for environmental damage. Issues exist both at the level of governments, and also at the corporate level. Better information on a business's impact on the environment, for example through natural capital accounting, and how it is reflected would allow for improved environmental management and voluntary consideration of the PPP. Some of the ongoing changes in policy, such as the CSRD should improve the quality of information.

No potential simplifications of reporting obligations were identified in the analysis as the administrative costs of the policies themselves are beyond the scope of the Fitness Check. However, there is scope for more efficient reporting that is being pursued for specific reporting obligations. For example, digitalisation is being used to pursue more efficient identification of polluters and their impacts, e.g. blockchain technology and smart contracts in EPR.

Box 6: Digital Extended Producer Responsibility (EPR) monitoring of online sales

EPR as a policy mechanism to implement the PPP, e.g. to WEEE waste, faces challenges, among them the diversity of schemes within the EU, difficulties in international enforcement operations²⁴⁹ as well as the costs to detect and prosecute non-compliant operators. This is pertinent in the context of so-called “free-riders”, non-compliant online sellers which are often established in foreign countries.

In response, several stakeholders noted in an OECD study²⁵⁰ that it is important to use intelligence-led risk-based investigation and enforcement rather than a ‘scattergun’ approach.

In Ireland for example, the Environment Protection Agency (EPA) reacts mainly to websites that have been brought to their attention by legitimate and registered peers (i.e. sellers in Ireland) or by the authorities in other EU countries. Assuming that the company in question is not registered, directly, via a PRO or through an authorised representative (in the EU), then these investigations would be prioritised according to:

²⁴⁹ OECD (2018), [Consumer protection enforcement in a global digital marketplace](#) for a discussion of multi-lateral enforcement cooperation in the context of e-commerce and consumer protection

²⁵⁰ OECD, [Extended Producer Responsibility \(EPR\) and the Impact of Online Sales](#).

- *Where the legal entity is based (e.g. a non-compliant firm based in Europe may, all else equal, be prioritised over one based in Asia)*
- *The popularity of the website (i.e. its estimated sales volume)*

Ideally the national or state authorities should work together.

Enforcement could be guided by national and state authorities, but coordinated across jurisdictions so as to reduce the overall amount of work required to investigate online web-sellers. Requiring a single electronic register of producers for each jurisdiction and publishing it on the competent authority's website along with a form to report unregistered producers is recommended as a best practice. Beyond regulatory agencies, there is also be a role for the online platforms in regard to policing the activities of the sellers that they host.

New digital tracking and tracer based technology could make it possible to implement genuine Individual Producer Responsibility to provide a simple and accurate means to charge Extended Producer Responsibility fees back to Original Equipment Manufacturers/brands, hence avoiding the complexity of identifying and engaging distance sellers where this is currently not possible (due to economies of scale and inability of tracing products back to producers at end of life, collective producer responsibility systems are currently most frequently being used).

- *The use of blockchain technology is rapidly expanding in modern supply chains and could be adopted to facilitate EPR compliance management based on general and public distributed ledgers. This technology is rapidly expanding in modern supply chains and could be adopted to facilitate EPR compliance management. EEE could be "linked" with their digital counterpart through unique identifier codes registering any EPR payment. Cross boundary movements between nations could be reflected in the system and payments either transferred from one country to another or refunded to the exporting entity.*
- *Furthermore, the implementation of smart contracts with partially or fully self-executing clauses is another promising technology which could be looked into to determine its applicability to addressing EPR free-riders²⁵¹. Respective contractual rights and obligations could be automatically activated by an independent system when a triggering event occurs. In the context of EPR and online sales, the triggering event could be determined as the "order" combined with the "delivery address" which in combination could respectively determine the time when the payment is due and the entity the payment has to be remitted to.*

D. Analysis of Benefits

The benefits of the PPP appear in the form of efficiency improvements, i.e. by remedying market failures and achieving pollution reduction in the most cost-effective way. The intervention logic shows one of the objectives of the PPP as to provide price signals to reduce pollution efficiently.

Price signals steer the behaviour of producers and consumers by increasing the cost of activities that harm the environment. A company that needs to pay for its own prevention and control costs will do so at least cost, whereas if subsidised it will not have that incentive.

The European Green Deal reflects this, looking to use taxation policy to strengthen price incentives and "create the context for broad-based tax reforms, removing subsidies for fossil fuels, shifting the tax burden from labour to pollution, and taking into account social considerations".

PPP has a significant incentive effect that reduces environmental damage costs. Providing a quantification of this effect necessitates estimation of the price elasticity of abatement – a measure of

²⁵¹ OECD (2018), [Consumer product safety in the Internet of Things](#). It highlights the role that blockchain technology and the use of so-called smart contracts could play in enabling traceability and enforcement.

the responsiveness of pollution to increases in the pollution price. Literature on the topic points towards the difficulty of arriving at comparable estimates for different types of pollution and pricing instruments. Most empirical studies investigate carbon pricing, but even for this particular emission type the evidence is fragmentary as estimates of elasticities vary significantly between sectors, countries, time spans (short-run vs long-run elasticities) and analysed time periods. For instance, in the road sector the reported estimates are in the range of -0.1 to -0.4 (10% increase in carbon price results in 1% to 4% decrease in emissions).²⁵² Benefits of the PPP application are therefore best considered in a quantitative way on a policy-by-policy basis. However, as explained in subsection F below, evaluations of policies in scope of this fitness check rarely include an explicit discussion of the costs and benefits of the application of PPP. Given such circumstances the best available approach is to focus on these policies which implement PPP and have been analysed extensively including in Impact Assessments and Evaluations and discuss these as case studies of benefits brought about by the PPP application.

One example of an efficiency gain brought about by application of the PPP is the EU ETS. Under the EU ETS, the PPP provides an incentive to polluters to take action and reduce pollution at the lowest cost possible and develop new technologies and ways of working that are cleaner e.g. where carbon pricing has contributed further to innovation and investment in low-carbon technologies, such as carbon capture and utilisation or electrolytic hydrogen. As such, the PPP reduces the cost of meeting a given environmental target. These efficiency gains are discussed in use case box below.

Box 7: EU ETS efficiency gains

EU ETS effectiveness and efficiency in achieving emission reduction targets is well established. 2021 ETSD Impact Assessment provides evidence on the efficiency gains related to the extension of the ETS coverage.²⁵³ For instance, in the case of the maritime ETS, described above in relation to costs of the PPP application, the efficiency gains could be achieved via energy efficiency improvements. The table below illustrates such improvements expected in the model from the different policy options. All scenarios show that energy efficiency improvements are expected to take place compared to the baseline and could amount up to 9%.

Table 15: Average energy efficiency (energy consumption per tonne-km) improvements of freight vessels

	Average energy efficiency improvements (energy consumption per tonne-km) of freight vessels – index 100= 2020 levels – MINTRA scope	
	2020	2030
Baseline	100	97
MAR1	100	93
MAR2	100	91
MAR3	100	up to 91
MAR4	100	92

Source: PRIMES Maritime module

Another Impact Assessment demonstrating efficiency gains related to the expansion of the EU ETS is accompanying the 2030 Carbon Target.²⁵⁴ It shows that policy options including the extension of EU ETS can assist in incentivising the cheapest reductions across Member States, improving cost-efficiency in the sectors covered and delivering increased environmental certainty at the emission reductions to be achieved. An extension of the EU ETS to new sectors would not only represent a significant expansion in the availability of abatement options across the EU, but also across sectors

²⁵² D'Arcangelo, F., et al. (2022), [Estimating the CO2 emission and revenue effects of carbon pricing: New evidence from a large cross-country dataset](#), OECD Economics Department Working Papers, No. 1732, OECD Publishing, Paris.

²⁵³ [SWD\(2021\) 601 final](#).

²⁵⁴ [SWD/2020/176 final](#).

compared to the current situation. It would create a more integrated carbon market with a single carbon price, which could hence drive emission reductions where they are overall most cost-efficient. It would ensure the maximum cost-efficiency and not distort the single market.

Regarding the EU ETS2 scheme, a study from the Kiel Institute for World Economy finds, using a dynamic general equilibrium model, that its introduction would bring 25% of the efficiency improvements delivered in the ideal, hypothetical scenario in which EU targets are efficiently met under a comprehensive Emissions Trading System.²⁵⁵

When efficiency gains related to the EU ETS are defined as the decrease in abatement costs, they are estimated to amount to EUR 1.6 billion²⁵⁶. Regulated firms are found to have increased low-carbon innovation by 10%, while not decreasing patenting for other technologies²⁵⁷. Other studies have also demonstrated the positive relationship between carbon prices and short and long term innovation in green technologies²⁵⁸. Empirical studies for France and Germany point to the rise in the economic efficiency of firms covered by the trading scheme, increase in the energy efficiency and decrease in the carbon intensity of production, as channels through which emission reductions were achieved.²⁵⁹ The change in the carbon intensity of production was found to be in the range of 18 to 30% reduction (so environmental benefit).²⁶⁰

Although majority of the empirical studies suggest that EU ETS have brought about efficiency gains, studies investigating Lithuanian and Norwegian firms, found that improvements in carbon intensity were either small or non-existent. This suggests that the efficiency-related effects of the EU ETS might be to, some degree, dependent on the local context.²⁶¹

It has to be noted that these studies investigate the efficiency gains of the EU ETS in its totality and do not isolate the sole impact of the application of the PPP. Nevertheless, since the EU ETS is an example of a direct application of the PPP (findings of this Fitness Check have shown it to apply the PPP to a high degree), it provides evidence for the existence of efficiency gains related to the PPP application.

The impact of price signals on innovation and development of clean technologies has also been shown for policies other than ETS. Higher fuel taxes were found to lead to increase in clean technology

²⁵⁵ Rickels, W., Rischer, C., Schenuit, F., & Peterson, S. (n.d.). Potential efficiency gains from the introduction of an emissions trading system for the buildings and road transport sectors in the European Union. *Kiel Working Paper*, 2249. *Institute for the World Economy Working Paper*.

²⁵⁶ Cludius, J., Dusha, V., Friedrichsen, N., & Schumacher, K. (2019). [Cost-efficiency of the EU Emissions Trading System: An Evaluation of the Second Trading Period](#). *Economics of Energy & Environmental Policy*, 8(1), 145–162.

²⁵⁷ Caelen and Dechezleprêtre, (2016), [Environmental Policy and Directed Technological Change: Evidence from the European Carbon Market](#), *The Review of Economics and Statistics*, 98 (1), 173–191.

²⁵⁸ Lim and Prakash, (2023), [Does carbon pricing spur climate innovation? A panel study, 1986-2019](#). *Journal of Cleaner Production*, 395.; Borghesi et al., (2015): [Linking emission trading to environmental innovation: evidence from the Italian manufacturing industry](#). *Research Policy*, 44(3), 669–683.

²⁵⁹ Petrick, S. and U. J. Wagner (2014). The Impact of Carbon Trading on Industry: Evidence from German Manufacturing Firms. *Kiel Working Paper*, No. 1912, Kiel Institute for the World Economy

Löschel, A., Lutz, B. J., & Managi, S. (2019). [The impacts of the EU ETS on efficiency and economic performance – an empirical analyses for German manufacturing firms](#). *Resource and Energy Economics*, 56, 71–95.

²⁶⁰ Wagner, U., M. Muuls, R. Martin, and J. Colmer (2014). [The Causal Effects of the European Union Emissions Trading System: Evidence from French Manufacturing Plants](#).

²⁶¹ Jaraitė, J., & Maria, C. D. (2016). [Did the EU ETS make a difference? an empirical assessment using Lithuanian firm-level data](#). *The Energy Journal*, 37(2), 68–92. Klemetsen, M., Rosendahl, K. E., & Jakobsen, A. L. (2020). [The Impacts of the EU ETS on Norwegian Plants' Environmental and Economic Performance](#). *Climate Change Economics*, 11(01), 2050006.

innovations in the automobile industry and to positive knowledge spillovers between companies operating in the same market²⁶².

Other examples of efficiency gains brought about by policies which applied PPP to varying extent are:

- The Environmental Pollution tax in Lithuania has had a positive impact in increasing private capital investments in recycling technology and as a result has increased capacity for Lithuanian waste treatment as well as reducing pollution.²⁶³
- Dutch water levies have been found to increase the removal rate of nitrogen from untreated sewage at the same time as promoting investment in BAT or product innovation. The charges levied were found to help spread the cost of treating pollution efficiently across polluters (OECD, 2008).
- The Czech air pollution fee introduced economic incentives to business to reduce emissions or air pollutants, based on best available techniques and to achieve the standards set by the AAQD²⁶⁴. The fee was introduced to address industry scepticism and lack of incentive where air quality standards alone were failing.
- The Plastic Bags Directive requires the use of pricing unless Member States can deliver the reduction target by other measures, and has led to reduction in consumption, and nudged consumers to other environmentally more friendly measures. In Ireland, this led to significant reductions in use, with the cost of running the scheme around 1-2% of the revenue generated much of which is used for environmental projects. Discarded plastic bags amounted to 0.13% of litter pollution in 2015 compared to an estimated 5% in 2001. The levy, which increased to EUR 0.22 in 2007, also generated a total of EUR 200 million over 12 years (2002-2013). Some Member States have indicated they may discontinue the pricing, as consumption has dropped as behaviours have changed significantly, as have the types of bags on offer.
- The Commission proposal for a revised Energy Taxation Directive would modernise energy taxation in a way that encourages both businesses and consumers to behave in a more environmentally friendly way, responding to the changes in prices. This includes revising minimum rates for fuels and re-thinking tax exemptions that imply de facto subsidies for certain fossil fuels.
- The introduction of a water meter and volumetric pricing can reduce water consumption by around 15% depending on the tariff design.

An analysis of environmental expenditures over time, shows that protection and control costs decline over time, in the absence of new environmental policies. This seems to be driven by technological progress driven in turn by the incentive to develop new ways of working by the PPP.²⁶⁵ There is also support for this hypothesis in the overall costs (NEEP), and national expenditure on environmental protection, which has remained stable over the Evaluation period even as environmental legislation has become stricter.

A finding of the support study and supported by the analysis above is that applying the PPP creates incentives to reduce pollution efficiently compared to situations where the PPP is not applied. Applying the PPP leads to low-cost reductions of emissions and to the development of new technologies and ways of working that are cleaner. As a result, the PPP reduces the overall cost of environmental policy by reducing the cost of meeting a given environmental objective, improving the cost-benefit ratio of policy.

²⁶² Aghion, P. et al. (2016), [Carbon Taxes, Path Dependency, and Directed Technical Change: Evidence from the Auto Industry](#), Journal of Political Economy, Vol. 124, 1, pp. 1-51.

²⁶³ See support study

²⁶⁴ Rakovský, P. (2016). [The Air pollution fee in the Czech Republic](#). Institute for European Environmental Policy

²⁶⁵ [Environmental Expenditures in EU industries \(archive-it.org\)](#)

E. Evidence from evaluations

Considerable effort was made to find or generate estimates of the benefits of applying the PPP. This included a comprehensive scrutiny of 45 or so evaluations about what they say about the costs and benefits. These evaluations provide some evidence on a) the cost benefit analysis of the specific environment policy, but much less evidence on b) the costs and benefits of the application of PPP to environmental policy.

For example, under a), in the case of command-and-control measures, the impact assessment assesses the costs of measures (e.g. new abatement technologies to reduce air pollution) and the benefits of these measures (e.g. reduced environmental damage and health benefits). In the case of the present Fitness Check, the key question is whether the PPP is applied (e.g. the polluter pays for the new abatement technologies) or is not applied (e.g. the cost of the abatement technologies is not paid by the polluter but partly reimbursed via subsidies and thus the taxpayer foots the bill). This means that the measures in question are taken, however the costs of the policy are incurred without PPP application. A cost-benefit analysis of the PPP application then only looks into the overhead costs of applying the PPP (i.e. additional costs of identifying the polluter, additional costs of monitoring, and additional costs of enforcement) and the additional benefits (pricing impact) stemming from the PPP application to this policy.

The evaluations include an assessment of effectiveness, that examines through the causal pathway logic whether policies have delivered their objectives. However, it is rarely the case that they provide a quantified assessment of the environmental improvement associated with the policy itself. They do not include in almost any cases the next step needed of an assessment of what the PPP (and the incentive effect of pricing) has meant in terms of the reduction of pollution. For a few evaluations, there is a discussion of the incentive effect (usually in the case of environmental damage costs), but again rarely quantified.

In the absence of the application of the PPP, there would still have been a requirement to meet environmental objectives but e.g. the costs of prevention and control would not have been met by the polluters (but instead through subsidies for example). Disentangling these effects is not a concern of the evaluations undertaken and is methodologically challenging. This also relates back to the issue that the default setting for prevention and control costs is that the polluter should pay, and hence the additional costs of applying the PPP are marginal as it is the least cost option.

F. Comparing costs and benefits

There are overhead costs to applying the PPP. They are difficult to separate from other costs of the policies. The application is challenging because of higher costs of identification for example where pollution is diffuse, or where the environmental impact is location dependent. This could help to explain the partial implementation of the PPP in these areas.

There are benefits from the application of the PPP. It provides price signals and incentives to reduce pollution efficiently (as discussed in Section 4.1.2). In each individual case of application of the PPP, this is best justified by the specific Evaluations and analyses. This Fitness Check, taking a horizontal view does not question those individual decisions.

Taken together, there is evidence that implementation of the PPP has increased the efficiency of environmental policy (so reduced the overall costs and / or increased the overall benefits). There appears to be potential for further implementation, and further efficiency gains which would increase the efficiency of environmental policy. This would require addressing barriers (section 4.1.3 and 4.1.4) and improving consistency and learning from success stories (Section 4.1.5).

G. Views of stakeholders

At the stakeholder workshop held in December 2023, a number of participants stressed the importance and effectiveness of ‘environmental taxes’. Some participants recommended an increase in environmental taxes and their harmonisation across the EU. An example given was that in the Flemish region in Belgium, after the introduction of a sufficiently high landfill tax, a strong migration away from landfilling towards recycling has been observed. In addition, there was a suggestion to establish an EU-wide database illustrating which environmental taxation, pricing mechanisms and other instruments are implemented or foreseen for the future in each Member State.

61% of the respondents (161) to the public consultation believed that the implementation of the PPP has not led to disproportionate costs of products and services for EU consumers. Similarly, 56% of the respondents (149) completely or mostly disagreed that the PPP implementation caused disproportionate costs in the production of products and provision of services by EU companies. This disagreement was high among environmental and other NGOs (28 disagree vs 3 agree) and almost even for businesses and their associations (31 disagree vs 32 agree).

In their comments, some stakeholders (in particular in the water sector) noted that the application of the PPP and hence incentivising the polluter to address the pollution at the source would be more efficient than addressing the pollution at a later stadium.

H. Environmental taxation

This subsection provides more details on the cross-country differences in the application of environmental taxation.²⁶⁶

Rates applied for charges on emissions to air and water can vary considerably across Member States as can exemptions granted to some sources. For example, the tax rate on sulphur emissions in Sweden, Norway and Denmark is between EUR 1,300/tonne and EUR 1,600/tonne; while rates in Italy, France and Spain are lower than EUR 50/tonne. In several Member States, the charges are only for emissions that exceed compliance standards, while in others all emissions are charged. It is also important to distinguish between taxes on stationary sources and those on mobile ones. In the former case you have a tax on measured emissions whereas in the latter the tax is based on the content in the fuel of the particular pollutant.

In the waste sector, Member States also apply different tax rates and apply them to different tax bases. For example, the Netherlands taxes waste at EUR 35.70/tonne for waste going to landfills or mixed waste incineration plants in and outside The Netherlands, while Finland taxes landfill waste at EUR 80/tonne of waste delivered to landfills, and Sweden taxes waste entering incineration plants at EUR 11.76/tonne. France taxes waste disposal at between EUR 6 to 61 per tonne, while Italy taxes different types of waste differently, with inert waste taxed at EUR 1 – 10/tonne, and both hazardous and non-hazardous waste treated in plants taxed at EUR 5.17 – 25.28/tonne. While the tax rates among these countries differs, they all tax waste based on weight. Slovenia, however, taxes its landfill waste differently, either at EUR 0.0022/ unit of soil load, or EUR 0.0125/ unit of air pollution.

The water sector also shows inter- and intra- country differences regarding the tax rates applied, which of course makes sense as the external costs will vary across states. In most cases these taxes provide exceptions for water used in irrigation and, in cases where it is taxed, it is generally at a lower rate (Berbel, et al., 2019). For example, Portugal applies an average EUR 0.00306/m³ of water abstracted for use in irrigation, however irrigation users with less than 3.7kW pumping capacity are exempted. The country taxes urban water higher, at EUR 0.0181/m³ abstracted (Berbel, et al., 2019). This is a similar figure to the one found in Denmark, which taxes urban water at EUR 0.01/ m³ abstracted with this price being included in the price of urban water. France applies different tax rates based on origin

²⁶⁶ Goonesekera, S., Greño, F., Markandya, A. (2024). [Candidates for taxing environmental bads at national level](#), European Commission, Publications Office of the European Union. See Appendix 8 for more details on the cross-country differences in environmental taxation.

(surface or groundwater), uses (irrigation, refrigeration, etc.) and zones (with extra charges in areas with scarce resources due to over exploitation). Currently, the tax ceiling for irrigation stands at EUR 0.072/m³. But the final tax rate applied in each river basin is set by the Water Agency (Berbel, et al., 2019). In the Netherlands, tap-water is taxed at a rate of EUR 0.359/m³, up to 300 m³ per year (from 1 January 2015 water tax is only levied on the first 300 m³ per year, i.e., those who use more do not pay tax on the water used above 300 cubic meters per year). However, water for agriculture or industrial uses is taxed at a lower rate of EUR 0.08/m³, with this rate only applying to irrigation users abstracting over 40,000m³ per year (Berbel, et al., 2019).

The use of plastics in packaging and bags is also taxed by various EU Member States; however, how these products are taxed differs between countries. For example, in Ireland plastic bags are taxed at a rate of EUR 0.22 for each bag, while in Portugal this tax is EUR 0.08 and EUR 0.28 in Sweden²⁶⁷. By contrast, countries such as Latvia or Denmark, tax plastic bags per kilogram not per unit. In Latvia the tax rate is EUR 4.8 or EUR 1.50 per kg of plastic bags (depending on thickness), while in Denmark the rate is EUR 9.36 per kg of plastic bags. Moreover, countries, such as Latvia and Sweden, tax thinner plastic bags at lower rates.

²⁶⁷ Swedish plastic bag tax will be abolished in November 2024 - see [Budget Statement \(government.se\)](#) and [Sweden plans to abolish plastic bag tax in 2024 | Sustainable Plastics](#). The Swedes argue that the abolition of the tax is because it has successfully changed technology and behaviours.

Annex 9: Discussion of fairness and just transition

This Annex provides more detail on the information largely covered in Section 4.1.4, on whether the application of the PPP is fair and consistent with the just transition, particularly focusing on different use cases in the absence of comprehensive data.

The just transition principle establishes a particular dimension to fairness in the context of the green transition. The ILO has defined the just transition as “*greening the economy in a way that is as fair and inclusive as possible to everyone concerned, leaving no one behind*”²⁶⁸. This was reflected in the EGD which aims to achieve its climate and environmental targets while leaving “*no person and no place behind*”, thus protecting citizens from economic and social inequalities²⁶⁹. It sets out that:

“The transition can only succeed if it is conducted in a fair and inclusive way. The most vulnerable are the most exposed to the harmful effects of climate change and environmental degradation. At the same time, managing the transition will lead to significant structural changes in business models, skill requirements and relative prices. Citizens, depending on their social and geographic circumstances, will be affected in different ways. Not all Member States, regions and cities start the transition from the same point or have the same capacity to respond. These challenges require a strong policy response at all levels. [...] The need for a socially just transition must also be reflected in policies at EU and national level. This includes investment to provide affordable solutions to those affected by carbon pricing policies, for example through public transport, as well as measures to address energy poverty and promote re-skilling. Coherence of climate and environment policies and a holistic approach are often a precondition for ensuring they are perceived as fair, as illustrated by the debate on taxation of various modes of transport.”

It is also an interpretation of fairness that is agreed on by the majority of EU citizens²⁷⁰.

In 2022, 95.3 million people in the EU were at risk of poverty or social exclusion²⁷¹, 21.6 % of the EU population. The EU aims at increasing the inclusion of vulnerable and marginalised groups by developing targeted approaches in environmental and climate policies to respond to the specific needs of each group²⁷².

Europe’s most vulnerable or “lagging” regions, characterised by persistent low growth and poverty, risk being left further behind in the EU’s complex pathway towards a green transition. Their challenges include a long-term absence of reform to address pre-existing high levels of deprivation and low-income distribution. Particular difficulties can be addressed with so-called place-based policymaking, responding to the structural opportunities, potentials and constraints of each place.²⁷³

The application of the PPP in environmental and climate policies is inherently fair.²⁷⁴ The social pollution costs, thus the costs to society due to the pollution, are paid by whoever is causing the pollution and not by the state ie the taxpayer or people affected by it but who have not caused it. It

268 [UNDP, How Just Transition Can Help Deliver the Paris Agreement](#)

269 European Commission, [The European Green Deal - European Commission \(europa.eu\)](#)

270 European Commission (2022), [Fairness perceptions of the green transition](#).

271 The EU defines people who are at risk of poverty or social exclusion as persons who are in at one of these three situations: persons with low disposable income, persons who suffer from severe material and social deprivation, and persons living in a household with low work intensity; [Eurostat, Living conditions in Europe- poverty and social exclusion](#)

272 European Commission, [Inclusion of Vulnerable Groups](#).

273 Rodriguez-Pose, A. (2018), [The revenge of the places that don’t matter \(and what to do about it\)](#). Cambridge Journal of Regions Economy and Society. 189-209.

274 Note that there is no single definition of fairness, and it varies depending on cultures and contexts. See: European Commission (2022), [Fairness perceptions of the green transition](#).

therefore represents the ethical base for global environmental and climate legislation²⁷⁵. From a societal point of view and if well designed, environmental taxes reduce distortions by internalising negative externalities while at the same time providing some additional public revenue²⁷⁶.

The unfairness of the status quo with insufficient implementation of the PPP is exacerbated by the fact that the health damages caused by pollution are usually concentrated among the poorest (the so-called environmental justice gap), who work and live near the most polluted areas and have less access to green areas and more expensive eco-products²⁷⁷. Meanwhile higher income households tend to consume more goods and services that negatively affect the environment than lower income households. As a result, a fair application of the PPP through carefully designed mechanisms to ensure an acceptable distribution of costs and benefits not only does not cause concerns with regards to the just transition, but it directly contributes to the fairness of the transition.

In addition, the benefits, especially health and non-market benefits of environmental policies can also accrue disproportionately to those who were most affected by local pollution in the status quo and to those, usually the poor, that were more exposed to extreme weather events induced by climate change²⁷⁸.

The application of the PPP can though result in a situation which is considered inconsistent with the just transition concept if its distributional effects negatively affect vulnerable groups and regions as polluters in a way that is not justified by its benefits for these groups and regions. In the context of distribution of pollution costs, this may mean that the economic and social downsides of charging people with the costs of their pollution might outweigh the benefits of the PPP for these people, particularly its dissuasive aspect.

In this context, one must also consider cost pass-through, i.e. the ability of the polluting producer to pass costs to consumers. Applying the PPP to producers that did not fully pay the price of their pollution will inevitably increase the costs of these producers. As for any production cost, the additional cost of PPP for the producers in point will, to a certain degree, trickle down along the value chain to the price of the final product. The degree to which this happens depends on the market structure and on the prevailing market elasticities:

- In a monopolistic market it is easier to pass on the cost to the customers than in a competitive market.
- The less elastic is demand, and the more elastic is supply, the bigger the extent of pass-through, all else being equal.

It follows that the pass-through of higher costs from PPP to the final consumer varies between countries, economic sectors and policy design.

Whether the policy has such economic downsides in particular for low-income households depends on whether they have progressive and regressive distributional effects. A distributional effect is said to be regressive (progressive) when the net benefits increase (decrease) more than proportionally with income²⁷⁹. This means that a regressive effect affects the poor more negatively than the rich. Thus, a regressive environmental or climate policy can be inconsistent with the concept of a just transition as

275 OECD, [Managing the Distributional Effects of Environmental and Climate Policies: The Narrow Path for a Triple Dividend](#),

276 European Commission (2023), [Annual report on taxation 2023](#).

277 OECD, [Managing the Distributional Effects of Environmental and Climate Policies: The Narrow Path for a Triple Dividend](#), ; EEA, [Unequal exposure and unequal impacts](#)

278 OECD, [Managing the Distributional Effects of Environmental and Climate Policies: The Narrow Path for a Triple Dividend](#),

279 OECD, [Managing the Distributional Effects of Environmental and Climate Policies: The Narrow Path for a Triple Dividend](#),

it reinforces inequality. Regressive effects may be traced back to the particular product to which the costs are attached²⁸⁰.

The distributional effects of implementing the PPP can only be considered on a case-by-case basis as there is no comprehensive data. See case studies that follow.

Box 8: Distributional effects of taxes

Taxes on electricity are found to be regressive most probably because lower-income households might find it difficult to reduce electricity consumption.²⁸¹

Meanwhile, taxes on transport fuels are considered not to be regressive when they are examined on an expenditure basis. This is because lower-income households tend to use transport fuels less.²⁸² An ex ante assessment that looked at the impact of a smart kilometre charge based on type of vehicle, weight and fuel use further confirmed no distributional effect²⁸³. However, there are nuances as regards the social justice aspects of such charges which vary by region and indicate that low emission zones and charges to implement them are widening the inequalities between social groups particularly for small and medium enterprises, low-income citizens and self-employed carriers. However, quantitative evidence to support this is weak²⁸⁴.

Taxes on heating fuels are regressive where lower income households spend a higher share of their income on energy taxes than higher income households²⁸⁵. Similarly, a modelled analysis comparing the real income of the lowest income quintile to the highest income quintile found that tax on domestic use of coal and biomass would have a regressive effect if introduced in Bulgaria, Hungary, Poland and Slovakia - where modelled data showed that real income for the lowest income group was adversely affected²⁸⁶. Recycling the revenue from taxes to households can address the undesirable distributional effect²⁸⁷.

The same modelled analysis assessed different PAYT schemes for waste management in Latvia, Cyprus, Greece, Estonia, Malta and Slovakia, concluding that the schemes were likely to have a small distributional effect where real income for the lowest income group was adversely affected²⁸⁸. The analysis further found that recycling revenue addressed the imbalance.

Forest felling charges are applied in Austria, Croatia, Hungary, Italy, Latvia, Lithuania and Sweden and are found to be regressive- where modelled data showed that real income for the lowest income group was adversely affected²⁸⁹.

²⁸⁰ European Commission, [Annual Report on Taxation 2023](#)

²⁸¹ European Commission, [Annual Report on Taxation 2023](#)

²⁸² European Commission, [Annual Report on Taxation 2023](#)

²⁸³ Ex'Tax Project (2022), [The taxshift. A EU fiscal strategy to support the inclusive circular economy](#).

²⁸⁴ Logika (2023), [Quantifying the impact of low- and zero- emission zones in six European cities. A report for the Clean Cities Campaign](#).

²⁸⁵ See e.g. Zhang & Baranzini (2004); Williams III, Gordon, Burtraw, Carbone, & Morgenstern (2015)

²⁸⁶ IEEP, 2021

²⁸⁷ WWF (2022), [Social Climate Fund and ETS 2 impact studies](#). Evidence review.

²⁸⁸ IEEP, 2021

²⁸⁹ IEEP, 2021

Charges on wastewater pollution meanwhile are found to have an inflationary effect for the whole economy, eroding income for all groups, albeit to a small degree²⁹⁰. The analysis further found that recycling revenue generated by charges to industries that discharge effluents addressed the imbalance.

Landfill taxes have been found to have a low distributional, trade and competitive effect²⁹¹. The same conclusions have been drawn for both pesticide and fertiliser taxes, as well as the plastic bag tax²⁹².

The findings further show that among the MBI reviewed, a NO_x tax impacts higher income households more than lower income ones²⁹³.

A tax on intensive agriculture and a water consumption tax was found to impact lower income households more than higher income ones²⁹⁴.

It is also useful to distinguish between direct and indirect effects of the policy. The former has to do with the primary mechanism at work. For instance, environmental policy increases the price of polluting goods relative to non-polluting ones. The latter has to do with second-order price and quantity effects, that usually spread in several markets.²⁹⁵

To complicate matters and policy design, distributional effects can differ for households with similar income deciles because the demand of polluting inputs depends on other factors, e.g., the urban-rural gap in the availability of public transport or concerning heating expenditure, or large households consuming more water and energy.²⁹⁶ The distributional effects also have to be considered relative to household income, thus in combination with a higher income share of consumption or higher rates of taxation²⁹⁷. Furthermore, a cost increase for the polluter can be passed on and reflected in prices to consumers, depending on the state of competition in the specific market. There is also some evidence that command and control instruments are more regressive and more detrimental to a just transition than MBIs²⁹⁸.

From these examples, it can be followed that adverse distributional effects depend on the way costs are recovered. It has also been found in concrete examples that significant regressive effects - which would endanger a “just transition” - can be effectively avoided by designing the policy as to become progressive, thus lowering inequality. From this, it can be concluded that the implementation of the PPP is compliant with the “just transition” concept: either because there are progressive or only insignificant regressive effects or because they can be avoided with careful policy design or mitigated by compensation mechanisms.

Box 9: Different forms of environmental tax remediation schemes

²⁹⁰ IEEP, 2021

²⁹¹ European Commission (2021), [Ensuring the polluters pay – toolkit](#).

²⁹² based on modelled analysis by IEEP, 2021

²⁹³ IEEP, 2021

²⁹⁴ IEEP, 2021

²⁹⁵ OECD, [Managing the Distributional Effects of Environmental and Climate Policies: The Narrow Path for a Triple Dividend](#)

²⁹⁶ OECD, [Managing the Distributional Effects of Environmental and Climate Policies: The Narrow Path for a Triple Dividend](#); European Commission, [Annual Report on Taxation 2023](#).

²⁹⁷ European Commission, [Annual Report on Taxation 2023](#).

²⁹⁸ OECD, [Managing the Distributional Effects of Environmental and Climate Policies: The Narrow Path for a Triple Dividend](#)

IEEP (2021) found that environmental taxes used to apply the PPP had small unintended effects on GDP or household income²⁹⁹. This finding was based on the fact that while the application of the PPP can ‘negatively affect real incomes for all households if the income is used to reduce debt’, policy mechanisms are used by Member States to redistribute costs, which reduces the impact on households.

It is generally agreed that the application of the PPP is only progressive if the revenues generated are recycled back to households, rather than put towards public budgets³⁰⁰. Examples include the Croatian Forest Public Benefit Fee which charges companies for the economic use of forests, and the social impacts of the system are positive³⁰¹.

Additionally, there has been a positive social impact noted by Poland under an extension of the EU ETS 2 and a revision of the ET Regulation³⁰². This means that where Member States take a varied approach to implementing the PPP, on average there is a risk of small scale impacts for households which may not be apparent at Member State level.

A further study that examined the distributional effects of carbon taxation noted that without revenue recycling (where governments re-invest the revenue generated by the tax in low-income households through schemes such as renovation and/or renewable energy subsidies), such taxes tended to be regressive in developed economies³⁰³. Applying this theory, modelled analysis for microsimulations for four Member States reusing energy tax revenue for households minimised inequality and poverty³⁰⁴.

In general terms, evaluating the distributional impacts of EU policy is key to conducting policy Evaluation and Impact Assessment according to the European Commission’s Better Regulation Guidelines and thus where available, the policy Evaluations examine the distributional effects of policies finding that undesirable distributional effects are mitigated.

Box 10: Distributional effects of the Energy Taxation Directive (ETD) proposal

The Impact Assessment accompanying the proposal in 2021³⁰⁵ compared models of reform. The distributive impact depends on the policy option and differs across countries and households. Firstly, there is a regressive “price effect” for transport-related services as well as in fuels and powers³⁰⁶. Although other prices drop, overall, a negative impact on household adjusted disposable income is observed. This generally affects more heavily households at the bottom of the income distribution, since their income share of consumption is larger.

²⁹⁹ Mottershead et al., (2021) [Green taxation and other economic instruments – Internalising environmental costs to make the polluter pay](#), IEEP.

³⁰⁰ Best, Martini and Görlach (2022) [Can Polluter Pays Policies in the Buildings and Transport Sectors be Progressive? Country briefing paper: Germany](#) ; Galović, (2016), [Forest Public Benefit Function Fee in Croatia](#).

³⁰¹ Ibid; Galović, (2016), [Forest Public Benefit Function Fee in Croatia](#)

³⁰² WiseEuropa, (2022)

³⁰³ Wang, Q., Hubacek, K., Feng, K., Wei, Y., & Liang, Q. (2016). [Distributional effects of carbon taxation](#). Applied Energy, 184, 1123-1131.

³⁰⁴ European Commission. (2020). [Tax wedge on labour: Shifting tax burden from labour to other forms of taxation](#).

³⁰⁵ [SWD/2021/641 final](#)

³⁰⁶ The degree of this “price” (or substitution) effect also depends on the availability of alternative goods (ie more energy efficient/non emitting). In the case of GHG emissions, many substitute options (EVs, building insulation, heat pumps) have higher up front investment costs than the high emitting ones. Lower income households have a lower ability to make these investments to reduce their exposure to the taxed energy, thus reinforcing the regressive aspect of PPP measures that address households as the polluters.

A progressive “income effect”: The options reduced household adjusted disposable income, but the effect is higher for wealthy households. As a result, the income effect compensates and, in some cases, completely reverses the regressivity of the price increase. The final effect of the options is generally either a regressive or a flat impact across the income distribution.

A positive and progressive effect of the compensatory measure: When extra tax revenues are transferred back to households in a lump-sum fashion, the reform becomes progressive. Therefore, the regressive or flat impact of energy taxes can be mitigated or even eliminated by accompanying measures. The impact of the considered ETD options, including compensatory measures, on households adjusted disposable income is also generally of small magnitude.

The distributional effects were reflected in the proposal. The minimum tax rates applicable to households for heating fuels and electricity would start from zero and gradually increase over a period of ten years. Moreover, Member States could exempt the supply to vulnerable households of heating fuels and electricity for ten years.

This demonstrates how a progressive distributional effect can be achieved where lawmakers ensure a careful design of policies implementing the PPP, e.g with progressive pricing or exemptions for vulnerable households or areas, or by introducing a compensation mechanism within or outside the policy, e.g. a shift away from labour taxation, means-target measures (monetary or in-kind measures) using the revenues from such taxes (tax recycling) or on a EU funding level – such as the EU Social Climate Fund (funded from the ETS 2) or the Just Transition Fund³⁰⁷.

Box 11: Drinking water

An example of successful measures is the tariff structure for drinking water affecting the right of vulnerable groups to affordable drinking water³⁰⁸. The pollution in this case is the consumption of drinking water due to the energy use for sourcing and treatment. Measures taken by Member States to support access to water are largely implemented at regional or local level, with fewer instances of national schemes.

The (median) share of water and sanitation expenditure in households’ incomes in the EU is low overall –ranging from 1% or less to 3% or more (in Austria, Croatia and Hungary) – but it is higher (2.9%) among households that are at risk of poverty. Member States’ measures supporting access avoid negative effects through reduced tariffs or compensation mechanisms, and to a lesser extent in-kind benefits or basic/uninterrupted supply of water, targeted at people on low incomes. As a result, PPP does not cause concerns with regards to the just transition.

Recycling revenue generated through implementation of the PPP has been identified as having potential to improve the fairness of the implementation of the PPP. There are comparatively few examples of recycling revenue at EU level, suggesting potential for its greater use to improve the fairness of the implementation of the PPP. Member States take a varied approach to the use of recycling revenue generated which is consistent with modelled analysis where the use of recycled revenue is found to be most effective when tailored to the specific tax or pollution charge. Based on current approaches to implementation, recycling revenue generated through implementation of the

³⁰⁷ OECD, [Managing the Distributional Effects of Environmental and Climate Policies: The Narrow Path for a Triple Dividend](#); European Commission, [Annual Report on Taxation 2023](#)

³⁰⁸ European Commission (2023) [Report on access to essential services](#); Rothausen, S. and Conway, D. (2011), [Greenhouse-gas emissions from energy use in the water sector](#). Nature Climate Change, 1,210-219.

PPP has improved the fairness of implementation particularly where the use of revenue generated can be tailored to the specific socio-economic challenges incurred as a result of introducing the tax or pollution charge.

Box 12: Revenue recycling

In modelling the wider impacts of recycled revenue generated through environmental taxes, IEEP concluded that they had a clear impact on macroeconomic outcomes, noting that their tailored use to address issues of fairness specific to the use of the MBI had a more favourable impact on GDP compared to their use to pay-down government debt.

To support this, a study found that the level of revenue recycled back to households has a direct impact on whether the implementation of the PPP is progressive or not in the case of taxes and pollution charges applied in Germany to buildings and transport sectors³⁰⁹.

Accordingly, at national level, it can be observed that examples of recycled revenue are widely used and recognised among the benefits of using MBI to address pollution and resource use³¹⁰. One such example among the 40 case studies published by IEEP (2017) is the environmental pollution tax in Lithuania which provides direct funding to support recycling operators with infrastructure investments and research and development³¹¹.

Another example is the NO_x tax in Sweden which is found to have stimulated innovation through the refund system available to regulated operators³¹².

The revenue generated by the EU ETS goes primarily to Member States' budgets, but also to the Innovation and Modernisation Funds as well as to the Resilience and Recovery Facility (RRF) in the context of the REPowerEU Plan (Member States will use these additional RRF resources to implement further reforms and investments to advance the clean energy transformation and boost energy security). Member States are obligated to use the entirety of their ETS revenue (or a financial equivalent value) on climate action and energy transformation. The Innovation Fund is one of the world's largest funding programmes for deploying low- and zero-carbon innovative solutions and technologies in energy, industry and net-zero mobility, funded entirely by the EU ETS. The Modernisation Fund is a solidarity programme financed by the EU ETS that supports 13 lower-income Member States in meeting the climate and energy targets by helping deploy projects that modernise energy systems and improve energy efficiency. The recycling of revenue generated by the EU ETS shows the potential for the PPP to advance sectoral decarbonisation, to address infrastructure investment gaps and to support R&D (bridging the gap between R&D and commercial readiness of new technologies) as well as to ensure adequate social support for decarbonisation.

The revenue generated by the new ETS 2 will supply the Social Climate Fund to support vulnerable households and micro-enterprises. Member States may use the Fund to support structural measures and investments in energy efficiency and renovation of buildings, clean heating and cooling and integration of renewable energy, as well as in zero- and low-

³⁰⁹ Best, A., Martini, L. and Görlach, B. (2022), [Can Polluter Pays policies in the buildings and transport sectors be progressive? Country report: Germany](#), Ecologic Institute: Berlin.

³¹⁰ IEEP (2017), [New suite of 40 case studies on environmental fiscal reform - IEEP AISBL](#)

³¹¹ Šleiniotaitė-Budrienė et al, (2017), [Environmental Pollution Tax \(for taxable products\) in Lithuania](#), IEEP.

³¹² OECD (2013), [The Swedish Tax on Nitrogen Oxide Emissions. Lessons in Environmental Policy Reform](#). OECD Environment Policy Paper, December 2013 no. 2. OECD; Pedersen, AB (2017), [NO_x and SO₂ taxes in Sweden](#). IEEP.

emission mobility solutions. They will also have the option of spending part of the resources on temporary direct income support.

The role of the Commission regarding the generation of revenues for environmental protection is evolving and a notable change in this regard is the move away from the GNI income to increase the EU own resources via specific revenue streams³¹³.

From 2026, a Carbon Border Adjustment Mechanism (CBAM) will be gradually phased in³¹⁴. The CBAM is a tool to put a price on emissions generated in the production of certain goods imported into the EU³¹⁵. It is intended to secure an equivalent carbon price for imports as for domestic production. Revenue generated under the CBAM will be largely recycled to the EU budget (it is proposed to recycle 75% of revenue generated).

Another example at EU level is the plastics own resource (adopted in January 2021) that generates revenue from national contribution based on the amount of non-recycled plastic packaging waste applying a uniform rate of €0.80 per kilogram to the weight of plastic packaging not recycled³¹⁶. Since it was introduced, this resource has generated EUR 6 billion per annum in 2021 and 2022³¹⁷. This revenue is being used to support the NextGenerationEU recovery plan, which while broadly intended to support environmentally-friendly and energy efficient technologies, transport, and buildings is not tailored to recycling of plastics.

³¹³ European Commission, [The next generation of EU own resources - European Commission \(europa.eu\)](https://ec.europa.eu/economy_finance/next-generation-eu_en)

³¹⁴ [COM\(2023\) 330 final](#); European Commission, [Carbon Border Adjustment Mechanism - European Commission](#) (europa.eu).

³¹⁵ On 1 October 2023, the CBAM entered into application in its transitional phase. Once the permanent system enters into force on 1 January 2026, importers will need to declare each year the quantity of goods imported into the EU in the preceding year and their embedded GHG. They will then surrender the corresponding number of CBAM certificates. CBAM is being phased in in the period 2026-2034 and initially applies to carbon intensive sectors including cement, iron and steel, aluminium, fertilisers, electricity and hydrogen.

³¹⁶ European Commission, [Plastics own resource - European Commission \(europa.eu\)](https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=1&code=sdg_12_8_1).

317 GenRev.pdf (europa.eu)

Annex 10: Application of the PPP through ex-post liability

EU ex-post liability and/or responsibility regimes³¹⁸ for pollution, contamination, and other environmental damage can help implement the PPP. The extent to which this happens varies depending on the different regimes of administrative (remediation of environmental damage) and criminal sanctioning as well as civil liability and between land, water and biodiversity damage.

Administrative regimes

Administrative regimes include the Environmental Liability Directive (ELD) as well as provisions of sectoral legislation, for example, in the Waste Framework Directive, the Extractive Waste Directive, the Industrial Emissions Directive, the Offshore Safety Directive, the Seveso III Directive, the Landfill Directive as well as the Basic Safety Directive.

Due to its **horizontal** application, the **ELD** applies to specific parts of the above-mentioned sectoral legislation except for the Basic Safety Directive. Its application of the PPP appears to be weakened because of provisions which limit its effectiveness³¹⁹. These include:

- The significance threshold for all kinds of damages as well as the lack of criteria to determine significance for land and water damage.
- The exclusion of variability among living organisms from the scope of biodiversity damage.
- The requirement to remediate land damage only if there is a significant risk of human health being affected.
- The limited remediation standard for land damage.
- The ambiguity of the recovery provision of ‘an appropriate fraction’ of fixed costs not directly related to a particular site but that are incurred by a competent authority in respect of its implementation of national ELD legislation.
- The absence of liability for remediating damage to waters and land and the fault-based liability for biodiversity for certain operators (Annex III activities).
- The exceptions in the ELD also limit the internalisation of externalities as the Conventions referenced therein do not impose liability for environmental damage commensurate with liability imposed by the ELD.
- The optional defences weaken the ELD’s strict liability regime.
- The heterogeneous implementation of a financial security system for ELD liabilities amongst Member States breaches the PPP because it raises the potential that the State will be required to pay such costs if the operator becomes insolvent or otherwise cannot pay the costs.

Sectoral legislation also contains provisions on liability or responsibility contributing to the implementation of the PPP. Some examples include:

- The application of the PPP in the **Waste Framework Directive** is strong as the definition of waste includes most if not all pollutants which are improperly managed or disposed making for a broad scope, e.g. including waste hydrocarbons in soil and mixed with water and sediments in the marine and coastal environment, the inclusion of more potentially liable persons, e.g. previous holders of the waste, the absence of any requirements for fault, any defence or exceptions and the unlimited liability for the remediation costs. There is an

³¹⁸ The inclusion of responsibility as well as liability is because a substantial proportion of the EU legislation imposes responsibilities but not liabilities.

³¹⁹ Note that the evaluation of the ELD is ongoing (support study is finished) and will conclude around the same time as this fitness check allowing for messages to be fully aligned.

exclusion of land including unexcavated contaminated soil and buildings permanently connected with land even if contamination/waste remains in the land as residual contamination after the land has been remediated.

- The PPP application in the **Extractive Waste Directive** is weakened by the imprecise condition of ‘any adverse effects on the environment (...) and any resultant risks to human health’ for “corrective measures” which need to be taken in respect of the damage caused by extractive waste .
- Whilst the **IED** applies to the remediation of pollution at or from an installation, this is not its main focus. The current or approved future use of the site as standard of remediation for the site of an installation at the definitive cessation of activities is a limited application of the PPP because it does not require the removal of non-hazardous substances or residual contamination. It also does not include the remediation of damage to fauna or flora at the site. The Commission also concluded in an IED evaluation that there was a need to cover additional industrial processes such as non-ore mining and additional intensive farming.
- The **Offshore Safety Directive** applies a strong version of the PPP in that liability/responsibility is strict, joint and several, and is not subject to any defences or exceptions. The requirement for a licensee to be financially liable for preventing an imminent threat of, and remediating environmental damage is also a strong application of the PPP.
- There is a strong degree of application of the PPP to the **Landfill Directive** in that the estimated costs of the closure and after-care of the site for a period of at least 30 years shall be covered by the price to be charged by the operator for the waste disposal and that an applicant for a landfill permit must provide for financial security accordingly.
- The **Basic Safety Directive** applies the PPP in that a person that has an authorisation for a radioactive source must comply with that authorisation to prevent a release of ionising radiation into the environment and by way of mandatory financial security for persons that have authorisations for practices.

Conditions of an environmental permit

There is also an application of the PPP in the responsibility for remediating environmental damage pursuant to the conditions of an environmental permit. For example, the Landfill Directive and the Extractive Waste Directive requires the operator of a landfill or an extractive waste site to have financial security for the costs of closure and post-closure measures.

Criminal Sanctioning

The examples of criminal sanctions, thus penalties under the crosscutting Environmental Crime Directive as well as the Industrial Emissions Directive and the Ship-Source Directive as sectoral legislation, which are considered as MBIs according to the BR guidelines, partially apply the PPP. Instead they are so far only used to enforce the requirements of the legislation with no specific mention of how costs of environmental damage shall be addressed by the polluter as a result of the breach.

Until the current reform proposal, the extent to which the ECD included the application of the PPP was limited as Member States were not obligated to consider the damage caused when determining the sanction as the ECD only stipulated that they shall take the necessary measures to ensure that the offences are punishable by effective, proportionate and dissuasive criminal penalties. The same applies to the IED and SSD.

According to the 2020/2021 evaluation of the ECD this led to the implementation of the PPP fully depending on the Member State transposition, which was mostly lacking. France was a positive example where the criminal judge would typically order the remedy or compensation of the

environmental damage as an accessory sanction, so-called “préjudice écologique” which was considered as more dissuasive than the main fine.

Civil liability

A natural or legal person that causes harm to a natural person may be liable to compensate them for the harm suffered by them. Civil liability law applies the PPP on an individual basis. That is, the PPP applies to compensation for damage caused to individuals rather than applying it to internalise the costs of damage to the environment and the public at large.

The introduction of civil liability in recent EU environmental legislation is a paradigm shift by the EU. Member States have imposed civil liability for compensation for bodily injury, property damage, and economic loss, but such law has tended to impose fault-based liability rather than strict liability unless an activity or substance covered by the law is considered to be especially/abnormally dangerous or hazardous.

The application of strict liability to compensation for damage to people is a stronger application of the PPP than the application of fault-based liability due to it being more difficult for a person who suffers harm to prove that the person causing the harm was negligent. . It is particularly hard to prove liability for harm caused by historic/legacy contamination because the person that caused the harm may not have been negligent in causing the harm.

The following pieces of new and revised EU legislation impose civil liability for pollution damage.

- Proposed Directive on corporate sustainability due diligence
- Revised Ambient Air Quality Directive
- Revised Directive on industrial emissions (integrated pollution prevention and control)
- Revised Urban Wastewater Treatment Directive
- Proposed Directive on preventing plastic pellet losses

The above legislation imposes civil liability in different ways.³²⁰ Some legislation imposes liability on competent authorities that breach national legislation that implements EU legislation. The Urban Wastewater Treatment Directive also imposes liability on private persons that cause bodily injury pursuant to actions under the directive.

A common thread in all the legislation however is the removal of some of the difficulties encountered by victims of environmental damage to succeed in claims for compensation for harm caused to them by the damage.

Recent developments

A potential improvement of the internalisation of externalities over the evaluation period can be seen based on the newly proposed provisions of EU law.

The **Industrial Emissions Directive (IED) as an administrative regime**, as adopted in 2010, did not include compensation for harm to human health. In contrast, the revised IED³²¹, includes such

³²⁰ Popirtaru, M. (2024) [A “compensation right” for the victims of pollution: empowerment or threat?](#), ClientEarth.

³²¹ Directive (EU) 2024/1785 of the European Parliament and of the Council of 24 April 2024 amending Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control) and Council Directive 1999/31/EC on the landfill of waste

compensation since 2024 thus widening the scope of application of the PPP. The revised Directive also increases the categories of industrial activities by adding, for example, non-energy ore mines (e.g., iron, copper, gold, nickel, platinum) and battery factories and the inclusion of more pig and poultry farms by adjusting the thresholds of animals at them, but not cattle farms. While the ELD does not unequivocally include the administrative enforcement costs, the proposed Soil Monitoring Law also includes measures to improve application.

The application of the PPP is also improved by the current **ECD reform as criminal regime**, which will be adopted in 2024, particularly the optional accessory remediation or compensation sanction for environmental damage recommended therein. It improves the material legal application of the PPP by including not only minimum max sanctions and the consideration of the voluntary remediation of the damage as a mitigating factor and increasing the scope of environmental infringements which can be sanctioned.

Most importantly, Article 5 (6) stipulates that Member States shall take the necessary measures to ensure that natural persons may be subject to additional criminal or non-criminal sanctions or measures which may include the obligation to reinstate the environment within a given period of time, provided that the damage is reversible, or, where the damage is irreversible, the obligation to compensate costs linked to the damage to the environment. This will improve the application of the PPP and contribute to more effective and dissuasive and proportionate sanctions, as they provide the criminal judge with a toolbox from which he or she could choose the most appropriate and dissuasive ones adapted to the individual case.

However, this strengthening of the application of the PPP is potentially weakened by the fact that the damage caused is still only optionally considered if the Member State decides to transpose this part into national law and the new minimum max sanctions do not necessarily equal the often very high amount of damage.

Moreover, the implementation of this provision into national law enhances the PPP – which only says that the costs of pollution must be borne by the polluter-, but needs to be considered together with **the application of the ELD's principle of reduction of net loss of biodiversity**. The conditions under which the obligation to restore nature are different under the two instruments, the latter requiring a criminal conviction. In addition, the environmental scope of application of the two instruments overlap but are not identical. Within this overlap, the application of both instruments lead to the same results when the criminal court orders the reinstatement of the environment, which means that the application of the PPP is ensured, either within the criminal or administrative procedure. However, the effect of the instruments might be divergent as the interpretation of irreversibility of the damage, leading to a condemnation to pay compensation instead of remediation, is not defined in alignment with the ELD. Moreover, in the case that both acts would find the remediation impossible, the ECD leads to compensation instead of in-kind remediation in the form of complementary or compensatory measures under the ELD.

There is no further procedural clarification in the reformed ECD nor in the ELD concerning the interplay of the ECD criminal procedure and the ELD administrative procedure. The reformed ECD only states in its Recital 14b that 'Accessory sanctions or measures could, without prejudice to the requirements of [the ELD] include a requirement to reinstate the environment where the damage is reversible, and a requirement to provide compensation where the damage is irreversible, or the perpetrator lacks the capacity to carry out a reinstatement'.

The current ELD evaluation shows that interaction of national ELD legislation with national criminal legislation has affected the effective implementation of the ELD in some Member States due to procedures in national criminal legislation.

Civil judicial proceedings pursuant to ELD legislation concerning damage from a wastewater treatment plant in the Brussels-Capital Region were stayed in 2016 due to pending criminal

proceedings. The Brussels civil court concluded that there could be contradictory decisions, if it ruled that the operator and/or other defendants did not commit an extra-contractual fault and the criminal court ruled that they committed a criminal offence – which implied a civil offence. The civil proceedings have not been reactivated.

Further, a halt of enforcement of national ELD legislation until the police had finalised investigating an environmental damage incident and the police not sharing information about the case until a prosecution has been finalised was reported in some Member States.

A use case concerning a French sugar refinery demonstrates another issue on interaction between criminal and ELD proceedings. Therein, the intervening Belgian authorities presented a remediation plan and budget, but the judge only agreed to grant half the amount in the proceedings. The criminal judge has more arbitrary power than the administrative authority to define the compensation amount, not necessarily allowing to repair the damage. The ELD contains a definition of the concept ‘restoration of the environment’ and how to achieve it, but this is not referenced in the new ECD text.

Another issue which can also be exemplified by the glass eels case mentioned above is the difficulty of the criminal judge to distinguish between compensation for health, economic and moral damage to associations and the compensation for ecological damage to society as a whole targeted to be used for environmental rehabilitation purposes. This is intertwined with the procedural fact that the way the ELD mainly interacts with procedures under national criminal legislation is the application by a person that has a civil claim for monetary compensation for prevention and remediation measures to be a party to criminal proceedings against the operator that caused environmental damage.

This means that while the new ECD reform is a step forward to enforce the application of the PPP, the in-kind remediation measures and thus prevention of net loss of biodiversity foreseen in the ELD could potentially be hindered on a practical implementation level. However, common guidelines could give helpful guidance to Member States.