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Review of Environmental Taxation and Environmental Expenditure in Ukraine

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Isabella Neuweg (1), Nelly Petkova (1), Krzysztof Michalak (1), Yuliia Oharenko (2)

(1) Finance, Investment and Global (Relations) Division, Environment Directorate, OECD
(2) Independent policy consultant

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Isabella Neuweg; Isabella.Neuweg@oecd.org

Nelly Petkova; Nelly.Petkova@oecd.org

Krzysztof Michalak; Krzysztof.Michalak@oecd.org

Yuliia Oharenko; y.ogarenko@gmail.com.

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Abstract

The paper analyses the current system of environmental taxation and environmental expenditure in Ukraine, identifies issues in the way environmental tax policy is currently designed and implemented and highlights main areas where environmental taxation and expenditure could be improved. It uses data on environmental tax revenue and expenditure from the State Treasury Service of Ukraine over the period 2010 - 2020. Where available, preliminary data for 2021 were also included.

The paper aims to support the government of Ukraine in reforming environmental taxation and public funding for environmental protection. Ukraine's Post-War Recovery and Reconstruction Plan outlines ambitious plans for reform, including in the environmental domain. It envisions restructuring the current environmental tax system, expanding it to energy and transport and harmonising it with that of the European Union. It also foresees an analytical study systematising current taxes and payments in line with Eurostat classification standards. This paper can support these efforts.

Corrigendum

An early version of this report from December 2023 was revised:

Page 3, first paragraph: delete "budgets from"

Page 10: add EUR to abbreviations

Page 12: add the third paragraph

Page 12, first bullet: add "and interactions between different state bodies"

Page 13, first paragraph, last line: change "consolidated budget" to "state and local budgets".

Page 13, last bullet: add "in addition"

Page 15, fifth paragraph, third line: change "environmental taxes" to "environmental tax"

Page 16, first line: add "then"

Page 17, third paragraph: change to "distinguishes between", add environmentally "related" and add "environmental tax".

Page 20, first line: change "that" to "than"

Page 21, sub-heading: Change taxes to "tax"

Page 21, sub-heading: change "Air pollution and carbon emission taxes" to "Tax rates for air pollution and carbon dioxide emissions"

Page 22, first line: add footnote "Hazard classes are set depending on the harmful effects of the pollutant which in turn are defined by regulation"

Page 22, sub-heading: change "Water pollution tax" to "Tax rates for water pollution"

Page 22, sub-heading: change "Waste disposal tax" to "Tax rates for waste disposal"

Page 22, sub-heading: change "Radioactive waste tax" to "Tax rates for radioactive waste"

Page 23, second sub-heading: change "Allocation of revenues" to "Allocation of tax revenue"

Page 24, first paragraph: delete "However, a special funding mechanism is yet to be developed"

Page 26, first paragraph: change "Table A D.5 of Annex D" to "Table A D.1 of Annex D"

Page 26, caption figure 2.5: change "taxes" to "tax"

Page 26, last paragraph: change “tax revenues” to “tax revenue”

Page 27, third paragraph: change “23” to “24”

Page 30: move Fig. 2.6 from page 30 to page 29

Page 32, Figure 2.7, caption: change caption from “revenues in the” to “revenue in”

Page 33, Figure 2.8: change caption from “Environmentally related tax revenues as a share of GDP in the EU countries and Ukraine in 2020” to “Environmentally related tax revenue as a share of GDP in EU countries and Ukraine in 2020” and change square shapes to diamond shapes in lighter colour

Page 36, third paragraph: change “was” to “is” and “did” to “does” throughout paragraph

Page 39, fourth paragraph: add “In May 2023, a law was passed to establish the State Fund for Decarbonisation and Energy-Efficient Transformation which will use revenues from the carbon tax from 2024 onwards” with reference “Ministry for Communities, Territories and Infrastructure Development of Ukraine, 2023 [77]” and delete “However, specific mechanisms for providing CO2 tax refunds are not yet available. Further, this new CO2 tax revenue allocation arrangement is not yet reflected in the Budget Code.”

Page 45, fourth paragraph: change “Table A D.5” to “Table A D.1”

Page 46, third line: delete “to environmental programmes”

Page 46, last line: change “conducting radiation and dosimetric control” to “radiation and dosimetry control”

Page 47, figure 3.2: added categories “protection and rational use of water use”, “rational use and storage of industrial and household waste” and “other” in the legend

Page 56, third line: delete “is rather limited”

Page 56, third paragraph: change last sentence from “As a result, the Ministry receives thousands of application forms to assess, which are not processed due to lack of staff in the responsible departments” to “As a result, the Ministry receives over a thousand application forms that they have to assess which is a lot of work for responsible departments.”

Page 56, fourth paragraph, first line: add “local level as at the”

Keywords: environmental taxation, environmental expenditure, taxes, tax reform, carbon taxation

JEL Codes: H23, H61, H71, Q54, Q58

Résumé

Ce document analyse le régime de taxes et dépenses environnementales aujourd'hui en place en Ukraine, met en exergue les questions que soulèvent la conception et la mise en œuvre des politiques publiques en matière de fiscalité environnementale, et attire l'attention sur les principaux domaines dans lesquels les taxes et dépenses environnementales pourraient être améliorées. Il s'appuie sur les données relatives aux budgets et aux recettes des taxes environnementales qui sont tirées des rapports sur les dépenses établis par le Trésor ukrainien durant la période 2010-20. Les données préliminaires pour 2021 ont également été prises en compte lorsqu'elles étaient disponibles.

Ce document vise à soutenir le gouvernement de l'Ukraine dans la réforme de la fiscalité environnementale et du financement public de la protection de l'environnement. Le Plan de redressement et de reconstruction de l'Ukraine pour l'après-guerre contient d'ambitieux projets de réforme, notamment dans le domaine de l'environnement. Il prévoit la restructuration de la fiscalité environnementale actuelle, son élargissement à l'énergie et aux transports, et son harmonisation avec celle de l'Union européenne. Il envisage également une étude analytique alignant systématiquement les taxes et paiements actuels sur les normes de classification d'Eurostat. Le présent document peut concourir à ces activités.

Mots clés: fiscalité environnementale, dépenses d'environnement, taxes, réforme fiscale, taxes carbone

Classification JEL: H23, H61, H71, Q54, Q58

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Abbreviations and acronyms

CBAM	Carbon Border Adjustment Mechanism
CEPA	Classification of Environmental Protection Activities and Expenditure
CFC	Chlorofluorocarbon
CReMA	Classification of Resource Management Activities
EBA	European Business Association
EEEA	European environmental economic accounts
EPL	International Charity Organisation “Environment-People-Law”
ESA	European System of Accounts
EU	European Union
EUR	Euros
EUROSAI	European Organization of Supreme Audit Institutions
GDP	Gross domestic product
GHG	Greenhouse gases
GMO	Genetically modified organisms
IEA	International Energy Agency
INTOSAI	International Organization of Supreme Audit Institutions
ISSAI	International Standards of Supreme Audit Institutions
LPG	Liquefied petroleum gas
MRV	Monitoring reporting and verification
NPP	Nuclear power plant

OECD	Organisation for Economic Co-operation and Development
PEEM	Public Environmental Expenditure Management
R&D	Research and development
UAH	Ukrainian Hryvnia
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value-added tax

Executive summary

This paper assesses Ukraine's environmental taxation and expenditure management for environmental protection. It describes shortcomings in the way environmental tax policy and environmental expenditure management are currently set up and suggests recommendations to help align the current systems with principles of sound environmental tax and expenditure policies. The recommendations build on extensive data collection and analysis, a literature review and interviews with key stakeholders in Ukraine.

Ukraine's Post-War Recovery and Reconstruction Plan envisions the harmonisation of the national system of environmental taxation with that of the EU. The paper aims to support the government of Ukraine in developing plans for potential reforms to its environmentally relevant tax framework and expenditure management, with a view to improving environmental outcomes and aligning the current systems with EU and OECD best practices.

Ukraine's environmental tax system has been modified multiple times since the 1990s. Environmental taxes are currently levied on four distinct areas of environmental pollution: air pollution, water pollution, waste and radioactive waste. A CO₂ tax of UAH 30 (Ukrainian Hryvnia) (around EUR 0.7 (euros)) per tonne of CO₂ is imposed on emitters above 500 tonnes. In addition, several taxes and duties exist related to energy and transport (excise taxes on electricity and fuel, an excise tax on vehicles as well as import duties on petroleum products and vehicles).

The paper finds that environmental tax revenue in Ukraine totalled UAH 5.4 billion (EUR 175 million) in 2020, with a significant proportion coming from a more than twenty-fold increase in the CO₂ tax in 2019. When using the European environmental economic accounting method (instead of the definition in Ukraine's Tax Code), environmentally related tax revenue is much higher amounting to UAH 80 billion (EUR 2.6 billion) in 2020 with energy taxes representing 70%-80% of this revenue.

Total revenue from environmentally related taxes are equivalent to around 2% of Ukraine's GDP. The share of environmentally related tax revenue in total tax and social security revenue is 5%, which is comparable with the share in EU countries. Revenue from pollution taxes (waste, water and air pollution) alone accounts for only 0.1% of GDP, which is similar in EU countries.

The paper suggests five strategic policy recommendations to improve the current environmental taxation system:

- **Improve administration of the environmental taxation system and interactions between different state bodies** to ensure that relevant information flows between the State Environmental Inspectorate and tax administrators so that polluter's environmental tax liabilities are properly assessed, and their obligations fulfilled.
- **Narrow the current environmental tax base** for pollutants into the air, water and waste to reflect changes in modern technologies and potential monitoring options.
- **Consider differentiating excise taxes on fossil fuels** depending on the sulphur content and **introducing taxes on environmentally harmful products** (e.g. tires, batteries, luminescent bulbs, fertilisers, pesticides) as well as plastic packaging in line with EU requirements

- **Consider increasing environmental tax rates gradually and predictably** to send a clear signal to the market and, at the same time, allow sufficient time for the businesses to adapt.
- **Consider earmarking of all revenue from environmental taxes** to ensure stable funding of environmental programmes. Part of the environmental tax revenue can be allocated to finance environmental modernisation projects of businesses under clear and transparent funding mechanism.

The paper identifies key trends in environmental expenditure in Ukraine. Between 2013 and 2020, expenditure on environmental protection from both state and local budgets increased by more than 60%, amounting to around UAH 9 billion (EUR 300 million). Despite this increase, it accounts for less than 1% of total annual expenditure of state and local budgets.

A review of environmental protection expenditure in Ukraine presented in this report builds on the **OECD/Eurostat framework for the collection of environmental protection expenditure** following the **Classification of Environmental Protection Activities (CEPA)**. Several budget programmes considered as environmental protection activities in Ukraine could not be classified as such under CEPA or have unclear or missing environmental objectives. They amounted to UAH 2.6 billion (EUR 84 million) in 2020.

The paper highlights strategic policy recommendations to improve the current system of environmental expenditure in Ukraine and to address shortcomings in the way funds are currently allocated, limited administrative capacity of responsible government bodies and weak monitoring of environmental outcomes.

In the short-term, Ukraine policymakers can

- **Define priorities for budget funding**, particularly, focusing on strategic targets, which could not be achieved by administrative or other means (e.g., development of the environmental monitoring system).
- **Introduce explicit definitions of environmental protection and resource-saving measures**, which should be harmonised with the (CEPA) and the Classification of Resource Management Activities (CReMA) and included into key environmental legislative acts.
- **Review criteria for the appraisal and selection of projects** that get budget funding following the principles of environmental effectiveness of the OECD Good Practices for Public Environmental Expenditure Management.
- **Review procedures for allocation of budget funds on environmental programmes** to avoid the disbursement of funds at the end of the year.
- **Introduce regular monitoring of environmental expenditure programmes** to assess the extent to which a budget programme or a single measure help improve environmental quality.
- **In addition, increase institutional capacity for management of environmental expenditure** to strengthen the function of an internal audit and control over the effectiveness of budget spending.
- **Increase transparency of budget funding of environmental programmes** and ensure online publication of all results (methodologies, technical and resources papers) whose development has been funded from the budget.
- **Initiate the review of budget classifications** of environmental expenditure (particularly functional classification) in cooperation with the Ministry of Finance to enable the collection and publication of accurate data on environmental expenditure.

In the medium and long-term, Ukraine policymakers can

Consider allocating part of the environmental taxes revenue to **capitalize an independent National Environmental Fund**, as currently planned in a number of strategic documents. When setting up the Fund, it is important to:

- Identify a strategic niche for the Fund to prevent resource dispersion.

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- Ensure clear rules and procedures for project selection and financing.
- Implement a multi-stakeholder supervisory board for transparent decision-making.
- Consider setting up territorial branches to fund projects on the ground.
- Vest the Fund with proper financial resources and dedicated full-time staff.

1 Introduction

Since the Revolution of Dignity and the signing of the European Union-Ukraine Association Agreement in 2014, Ukraine has accelerated efforts to tackle environmental challenges. The country has taken steps to restore and preserve its natural capital, integrate environmental concerns into economic decision-making and accelerate the transition towards a green and low-carbon economy. Important steps have been taken to reform Ukraine's environmental governance system and changes to environmental legislation have followed closely the European Union (EU) environmental acquis in line with the provisions of the Association Agreement.

This economic and environmental progress has been under attack since Russia's large-scale invasion of Ukraine in February 2022, setting back hopes for an independent, green and sustainable Ukraine. The war has inflicted tremendous damage on the environment, the natural resource base and on infrastructure. Post-war reconstruction will be a monumental task. It will require comprehensive, well-co-ordinated and well-funded efforts. Ukraine has already set up the National Council for Recovery from the War, which is preparing a Post-War Recovery and Development Plan for Ukraine. The development of the Plan builds on remarkable co-operation and institutional capacity by Ukrainian authorities at all levels, businesses as well as civil society.

This paper aims to support the government of Ukraine in reforming environmental taxation and public funding of environmental programmes. Ukraine's Post-War Recovery and Reconstruction Plan outlines ambitious plans for reform, including in the environmental domain. It envisions the harmonisation of the national system of environmental taxation with that of the European Union. It also aims to restructure the current environmental tax system and expand it to energy and transport. Further, it envisages the preparation of an analytical study systematising current taxes and payments in line with the Eurostat classification standards by December 2023. This paper can serve as a starting point for such analysis.

The study analyses the current system of environmental taxation and environmental protection expenditure in Ukraine, identifies issues in the way environmental tax policy is currently designed and implemented and highlights main areas where environmental taxation and expenditure could be improved. It builds on the analysis of environmental tax revenue data and budget funding based on the budget expenditure reports of the State Treasury Service of Ukraine over the period 2010 - 2020. Where available, preliminary data for 2021 were also included.

In reviewing the environmental taxation system, both the legal definition of "environmental tax" from the Tax Code of Ukraine and the definition of the European environmental economic accounts (EEEA) have been used. The term "environmental tax" refers to the national legal definition with a narrow scope and "environmentally related taxes" follow a much broader EEEA definition. This paper also builds on the Organisation for Economic Cooperation and Development (OECD)/Eurostat framework for the collection of environmental protection expenditure. The paper covers the analysis of environmental protection expenditure in the state and consolidated budget following the Classification of Environmental Protection Activities (CEPA), the European standard statistical classification.

The analysis reflects the situation before Russia launched its war of aggression in Ukraine in February 2022 and takes only limited account of changes in environmental taxation and public environmental

expenditure practices in Ukraine since then. The war will most likely have dramatic impacts on revenue generation and public spending, including in the environmental sector, and war-related changes in public finance should be taken into account in any post-war analysis of these issues. Since most of the data in the paper cover the period to 2020, and in few cases to 2021, the analysis also only partially addresses the implications of the COVID-19 pandemic. Where numbers have been converted into EUR, the average official National Bank of Ukraine exchange rate for the respective year has been used.

The paper consists of two parts accompanied by annexes containing extensive data tables, a list of stakeholders interviewed and a review of the most relevant studies. Chapter 2 presents the analysis of environmental taxation, Chapter 3 - the analysis of environmental expenditure. Chapter 4 concludes with policy recommendations for both systems to improve environmental outcomes and align them with principles of sound public finance management.

2 Review of the environmental taxation system

This chapter describes the legal and institutional basis for levying environmental taxes and collecting tax revenue. It builds on extensive data collection and analysis, a literature review and interviews with key stakeholders in Ukraine. It describes shortcomings of the way tax policy is currently set up and suggests five policy recommendations to help align the current system with principles of sound environmental tax policy and improve environmental outcomes.

This analysis is based on data and information available prior to Russia's full-scale invasion in February 2022. The end date for most of the data is 2020 so the impact of COVID-19 pandemic may not be fully reflected and post February-2022 changes in the environmental taxation system following the war cannot be considered at all. During the martial law period, the Parliament of Ukraine introduced a simplified tax regime for certain groups of taxpayers and certain taxes were temporarily reduced or abolished, including some environmentally and energy related taxes. In May 2023, the Parliament supported further changes to the Tax Code of Ukraine with the aim of restoring the taxation system to its pre-war state.

Definitions and scope

The following review of the environmental taxation system distinguishes between the definition of “environmentally related tax” following a wider European environmental economic accounts (EEEA) definition applied in the EU legislation and the definition of “environmental tax” used in the Tax Code of Ukraine.¹

According to EU Regulation N° 691/2011 on European environmental economic accounts, ‘*environmentally related tax*’ means a tax whose tax base is a physical unit (or a proxy of a physical unit) of something that has a proven, specific negative impact on the environment, and which is identified in European System of Accounts (ESA) as a tax (European Parliament, 2011_[1]).

The European environmental economic accounts definition is focused on the tax base as this was proven to be the only objective basis for identifying environmental taxes for international comparisons. To streamline the identification of environmental taxes, a list of tax bases was agreed upon by Eurostat, the European Commission's Directorate General Environment and Directorate General Taxation and Customs Union, the Organisation for Economic Co-operation and Development (OECD) and the International Energy Agency (IEA) back in 1997 and it was later updated in 2011 and 2012 (Box 2.1). All taxes levied on these tax bases could be considered as environmental ones. In some cases, the tax base is presented as measured or estimated emissions to air or effluents to water while in many cases proxies for emissions are used, e.g., consumption of fuels (Eurostat, 2013_[2]).

¹ Analysis of the deficiencies in the current environmental taxation system of Ukraine is narrowed down to the legal definition of “environmental tax” from the Tax Code since it has been used by all consulted stakeholders.

As noted in the (2013^[2]) Guidelines on Environmental Taxes, since taxes can often serve several purposes, motivation for the introduction of the tax or earmarking of the revenue is not suitable for formulating a uniform definition. Considering that the environmental impact of the tax is largely determined by its influence on relative prices, it is not that important whether the tax was introduced with environmental or fiscal motivation in mind. For example, a tax on fuel introduced for fiscal reasons will have the same effect as the one introduced to achieve emission reduction provided that the rate is the same. As motivation is not part of the national accounts definition, the term “environmentally related taxes” is considered to be a more appropriate one rather than “environmental taxes”. The former is used in Regulation (EU) No 691/2011, the United Nations System of Environmental-Economic Accounting and is preferred by the OECD (Eurostat, 2013^[2]). However, the latter is more convenient and commonly used in Ukraine. Hence, both terms are used in the current study with understanding that “environmental tax” refer to the legal national definition with a narrow scope and “environmentally related taxes” follows a much broader EEEA definition.

For analytical purposes, environmentally related taxes are grouped into four main categories: energy taxes (including CO₂ taxes), transport taxes, pollution and resource taxes. The last category was introduced only in 2014. Eurostat publishes data on environmental taxes on pollution and resources as one category (code 'P/RS') as in some cases these two categories could not be differentiated due to lack of data (Eurostat, 2020^[3]).

According to the ESA, taxes are ‘*compulsory, unrequited payments, in cash or in kind, which are levied by general government, or by the institutions of the European Union...*’ (Eurostat, 2013^[4]). Therefore, only those payments to the government which are defined as taxes can be considered as environmental taxes whereas non-tax payments are not. The term ‘*unrequited*’ implies that government does not provide anything directly in return to the entity paying tax though the government can use tax revenue for goods or services to other economic entities or the country as a whole. This is especially important with regard to resource rents, which are *de facto* royalties that accrue to the owners of deposits who grant leases to other entities for exploring and extracting resources. As governments are often the owners of natural resources and, at the same time, legislators, it is common that the resource rent is collected in a form of taxes specifically designed to capture the resource rent. Even if such payments are legally described as taxes and treated as taxes, they should be classified as “property income” (ESA category D.45) in the national accounts rather than taxes (Eurostat, 2013^[2]).²

² Most environmentally related taxes are attributed to ESA category D.2 (taxes on production and imports), a few may reside in category D.59 (other current taxes) and very few may represent category D.91 (capital taxes) (Eurostat, 2013^[2]). It should also be noted that the legal definition of environmental taxes may differ from the EEEA definition and across countries. For national purposes only, the government may decide to present data on environmental taxes following both the legal and the definitions of the national accounts. However, for the reporting under Regulation (EU) No 691/2011 and for international comparability, the EEEA definition must be used (Eurostat, 2013^[2]).

Box 2.1. European environmental economic accounts' list of environmental tax bases

Energy (including fuel for transport):

- Energy products for transport purposes: unleaded petrol, leaded petrol, diesel, and other energy products for transport purposes (e.g. LPG, natural gas, kerosene or fuel oil)
- Energy products for stationary purposes: light fuel oil, heavy fuel oil, natural gas, coke, coal, biofuels, electricity consumption and production, district heat consumption and production, and other energy products for stationary use
- Greenhouse gases: carbon content of fuels, emissions of GHG (including proceeds from emission permits recorded as taxes in the national accounts)

Transport (excluding fuel for transport):

- Motor vehicles import or sale (one-off taxes)
- Registration or use of motor vehicles, recurrent (e.g. yearly taxes)
- Road use (e.g. motorway taxes)
- Congestion charges and city tolls (if taxes in national accounts)
- Other means of transport (ships, aeroplanes, railways, etc.)
- Flights and flight tickets
- Vehicle insurance (excludes general insurance taxes)

Pollution:

- Measured or estimated emissions to air: measured or estimated NO_x emissions, measured or estimated SO_x emissions, other measured or estimated emissions to air (excluding CO₂)
- Ozone-depleting substances (e.g. CFCs or halons);
- Measured or estimated effluents to water: measured or estimated effluents of oxidisable matter, other measured or estimated effluents to water, effluent collection and treatment, fixed annual taxes
- Non-point sources of water pollution: pesticides (based on e.g. chemical content, price or volume), artificial fertilisers (based on e.g. phosphorus or nitrogen content or price), manure
- Waste management: collection, treatment or disposal; individual products (e.g. packaging, beverage containers, batteries, tyres, lubricants)
- Noise (e. g. aircraft take-off and landings)

Resources^a:

- Water abstraction
- Harvesting of biological resources (e.g. timber, hunted and fished species)
- Extraction of raw materials (e.g. minerals, oil and gas)
- Landscape changes and cutting of trees

Source: (Eurostat, 2013_[2])

Note: a. Taxes designed to capture the resource rent from the extraction of natural resources are excluded.

In the national legislation of Ukraine, environmental tax is defined in a narrower way than in the EU legislation, resembling “pollution” and partly “energy” Eurostat categories of environmental taxes. In particular, the Tax Code of Ukraine defines environmental tax as «*a nationwide mandatory payment that is charged on the actual amount of emissions into the atmosphere, discharges of pollutants into water, waste disposal, the actual amount of radioactive waste temporarily stored by its producers, the actual amount of generated radioactive waste and the actual amount of radioactive waste accumulated before 1 April 2009*» (Parliament, 2010^[5]).

However, several taxes and duties in Ukraine are comparable with other Eurostat categories of environmentally related taxes as illustrated in Table 2.1. Although rent³ is considered a tax in the Tax Code of Ukraine, it is designed to capture royalties for exploiting natural resources of Ukraine owned by the state. Thus, it could not be treated as an environmental tax and is excluded from the overall analysis. Data on the resource rent revenue in the state budget is provided in Annex B for information purposes only. Further, Annex A also provides data on environmentally related non-tax revenue such as fines for the violation of environmental legislation.

Table 2.1. Comparability of the environmentally related taxes in Ukraine with the Eurostat categories of environmental taxes

		Comparable taxes in Ukraine	
Eurostat categories of environmental taxes	Energy	<ul style="list-style-type: none"> Excise tax on electricity Excise tax on fuel produced in Ukraine and imported Environmental tax levied on CO₂ emissions into the air by stationary sources of pollution 	Energy and transport aggregated: <ul style="list-style-type: none"> Duty on petroleum products, vehicles and tires for them, imported by business entities and citizens
	Transport	<ul style="list-style-type: none"> Excise tax on vehicles produced in Ukraine and imported 	
	Pollution	<ul style="list-style-type: none"> Environmental tax levied on emissions of pollutants into the air by stationary sources of pollution (excluding CO₂ emissions) Environmental tax levied on discharges of pollutants directly into water bodies Environmental tax levied on the disposal of waste in specially designated areas or facilities, except for the disposal of certain types of waste as secondary raw materials Environmental tax levied on the generation of radioactive waste (including already accumulated) and/or temporary storage of radioactive waste by its producers over the period specified in the license 	
	Resources	Rent for the extraction of subsoil minerals and use of forest resources applicable in Ukraine should be treated as ‘property income’ for the purposes of national accounts rather than the ‘tax’ according to Eurostat (2013 ^[2]) Statistical Guide on Environmental Taxes. Thus, rent is not compatible with ‘resources’ category of environmental taxes.	

Source: Prepared based on the reports of the (State Treasury Service of Ukraine, 2021^[6]) and (Eurostat, 2013^[2]).

Note: Figure covers only taxes valid as of 2020.

³ According to the Tax Code of Ukraine, rent is a state-wide tax, which is paid for the use of subsoil assets for the extraction of minerals; for using the subsoil assets for the purposes not related to the extraction of minerals; for using the radio frequency resource of Ukraine; for the special use of water; for the special use of forest resources; for the transportation of oil and oil products by main oil pipelines and oil product pipelines, transit transportation of ammonia by pipelines on the territory of Ukraine (Parliament, 2010^[5]).

The legal and institutional set-up of environmental tax

The environmental taxation regime of Ukraine has undergone several phases of revision since the 1990s. From October 1991 till February 1994, the environmental tax regime still followed Soviet legislation. All enterprises, associations, organisations and citizens, that caused damage to the natural environment and deteriorated natural resources were required to pay an environmental tax calculated on the basis of environmental pollution limits. Proceeds from this environmental tax fed into extrabudgetary environmental protection funds of local authorities.

On 2 February 1994, the environmental tax was replaced by a fee on pollution of the natural environment. The fee was set based on limits for emissions and discharges of polluting substances into the natural environment and disposal of industrial, agricultural, construction and other production waste. Fees for emissions and discharges within allowed limits were attributed to production costs. In case the polluter exceeded the set limits the pollution fee was charged from profits. On 20 March 1997, the fee for environmental pollution was renamed “charge” (Kanonishena-Kovalenko K, 2017^[7]).

On 7 May 1998, the Cabinet of Ministers of Ukraine approved Resolution No. 634 On the Regulation on the State Environmental Protection Fund, which was established within the state budget of Ukraine to concentrate resources and ensure targeted funding of environmental and resource-saving measures (Cabinet of Ministers, 1998^[8]).

In subsequent years, further legislative changes took place amending the administration of and distribution of the revenue generated from environmental charges. In 2009, the scope of the environmental charge was extended to radioactive waste (including already accumulated) and temporary storage of radioactive waste by their producers and the State Fund for Radioactive Waste Management was established. This Fund does not have an independent management structure and forms part of the special fund of the state budget accumulating all proceeds previously generated from the charge and later from the environmental tax on the generation of radioactive waste (Kanonishena-Kovalenko K, 2017^[7]).

Approval of the Tax Code at the end of 2010 brought more stability to the taxation system of Ukraine including in the environmental domain. The Tax Code reintroduced environmental tax and set up a clearer legislative framework for its functioning. According to the Tax Code, economic entities undertaking activities, which result in (i) emissions into air from stationary sources, (ii) discharges of pollutants directly into water bodies, (iii) waste disposal, (iv) generation of radioactive waste (including already accumulated) and (v) temporary storage of radioactive waste by their producers beyond the licensed period are required to pay environmental tax (Parliament, 2010^[5]). Tax rates are specified in the Tax Code and increased periodically taking into account inflation.

Tax calculation procedures and formulas are specified in Articles 249 and 250 of the Tax Code. Polluters are required to calculate their environmental tax obligations and submit environmental tax declarations every quarter. Environmental taxpayers make one payment to the treasury account, which is later distributed between levels of the budget system according to shares defined in the Budget Code and/or budget laws for a given year.

The Tax Code of Ukraine sets tax rates for air pollution, water pollution, waste disposal and radioactive waste respectively.

Tax rates for air pollution and carbon dioxide emissions

Article 243 of the 2010 Tax Code defined tax rates on **emissions of pollutants into the air** from stationary sources. It sets rates for 25 specific polluting substances with the lowest rate of UAH 96.99 per tonne of hydrogen chloride, carbon monoxide and solids (particles) and the highest for emissions of benz(o)pyrene (more than UAH 3 million per tonne). For emissions of other polluting substances into the air the tax rate

is set depending on the hazard class ⁴ and it ranges from UAH 145.50 for the IV hazard class to UAH 18 413.24 per tonne for the I class.⁵ For most harmful pollutants with safe concentration levels of less than 0.0001 mg per m³ – the highest tax rate is applied – UAH 77 5097.25 per tonne. For polluting substances with neither hazard class, nor the safe level of exposure defined, tax rates are set for emissions of pollutants of hazard class I.

Emissions of carbon dioxide are treated separately and are excluded from the lists of polluting substances mentioned above. As of mid-2022, the tax rate for CO₂ emissions is set at UAH 30 per tonne. Economic entities whose emissions are lower than 500 tonnes are exempt from paying CO₂ tax. For other emitters, the tax base is deducted by 500 tonnes.

Tax rates for water pollution

Tax rates for discharges of pollutants into water objects are specified in article 245 of the Tax Code. Specific tax rates are set for 9 water pollutants with the lowest rate of UAH 369.52 per tonne of suspended substances, sulphates and chlorides and the highest rate of UAH 75 792.4 per tonne for petroleum products. For other pollutants, their rates are set depending on the maximum permissible concentration or indicative safe exposure level. The least harmful pollutants are taxed at a rate of UAH 3 437.76 per tonne and more harmful ones at UAH 1 349 948 per tonne. If neither maximum permissible concentration nor indicative safe exposure level is set for a polluting compound, it is treated as the most harmful one. Further, an increasing coefficient of 1.5 is applied for discharges of pollutants into ponds and lakes.

Tax rates for waste disposal

Similar to emissions and discharges, **tax rates for the disposal of waste** in specially designated places or facilities are differentiated depending on the expected environmental impact (Article 246 of the Tax Code). Tax rates for the disposal of certain types of extremely hazardous waste are set in UAH per unit, particularly, UAH 952.02 for the disposal of equipment and devices containing mercury, elements with ionising radiation and UAH 16.57 for fluorescent lamps. For other types of waste, tax rates are classified depending on the hazard class and level of hazardousness of waste (5 categories). The tax rate for the low-hazard non-toxic waste from the mining industry is UAH 0.54 per tonne and for extremely hazardous waste (I class) the rate is UAH 1 546.22 per tonne. If the hazard class is not assigned to a certain type of waste it is treated as extremely hazardous. If the waste is disposed of in landfills that cannot fully guarantee the prevention of air or water pollution, tax rates are multiplied by 3. Further, additional coefficients to tax rates are applied depending on the location of the waste disposal site: within the settlement or at a distance of less than 3 km from it – coefficient 3, at 3 km or more from the settlement – coefficient 1.

Tax rates for radioactive waste

The tax rate for the generation of radioactive waste (including already accumulated) by nuclear power plants is set at UAH 0.0133 per kWh of electricity produced (Article 247 of the Tax Code). Additional correction coefficients are applied depending on the radioactivity level of waste – 50 for high-level waste and 2 for intermediate-level and low-level waste. Article 248 of the Tax Code sets tax rates for the temporary storage of radioactive waste by their producers above the period specified in the licence, and

⁴ Hazard class is set taking into an account harmful effects of the pollutant, estimated in line with regulations.

⁵ If the hazard class is not defined, tax rates are applied depending on the established indicative safe exposure levels (five groups) to such compounds in the air of settlements. For example, if a polluting substance is considered safe at a concentration of over 0.1 mg per m³, the lowest tax rate of UAH 96.99 per tonne is applied.

these rates are differentiated depending on the level of waste radioactivity and whether the waste is the source of the ionising radiation or not.

Revenue from environmentally related taxes and non-tax payments

Allocation of tax revenue

The allocation of the environmental tax revenue has been changed many times as illustrated in Figure 2.1. Before 2011, the largest share of the environmental charge revenue (50%) was accumulated in the special funds of regional (oblast) budgets while local budgets received 20% and the remaining 30% was left in the state budget.

With the introduction of the environmental tax in 2011, the allocation of the tax revenue was revised in favour of the local budgets, which were granted 50% of the revenue. In 2013, the allocation of the tax revenue was further amended and more than half of it was allocated to a special fund of the state budget. In 2015, the largest share of the environmental tax revenue was transferred to general funds in local budgets and the remaining 20% to the general fund of the state budget, which largely eliminated earmarking of the environmental tax revenue at the state level.

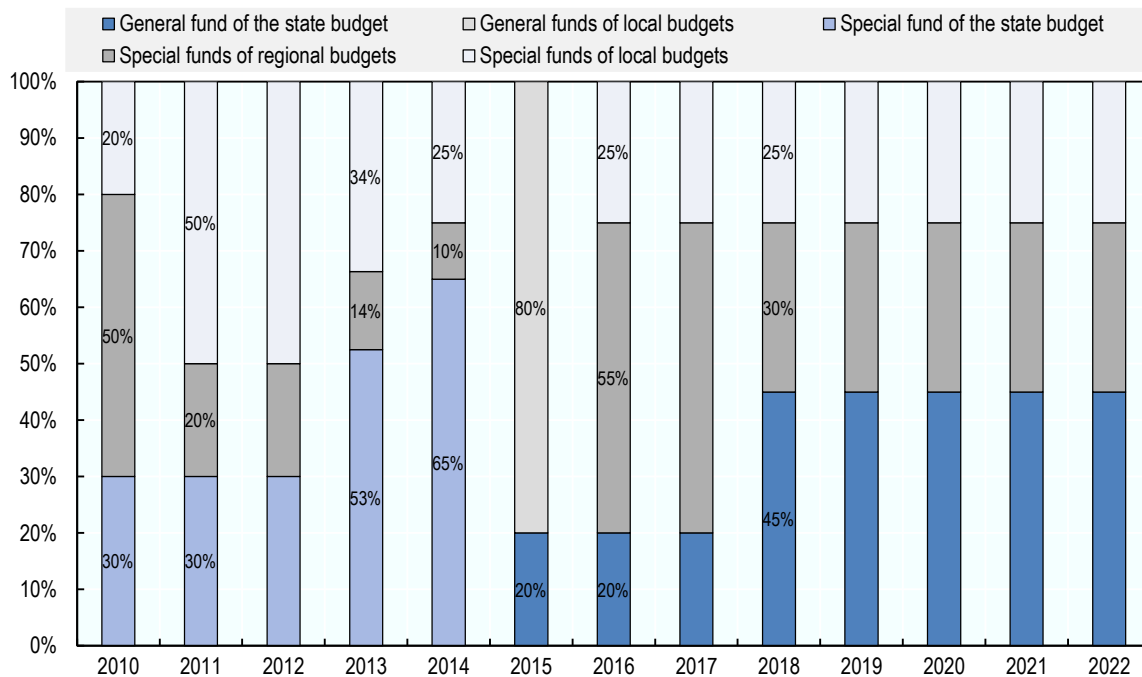
Since 2016, special funds at the regional and local levels have been receiving the largest share of proceeds from environmental taxes while no transfers are made to the special fund at the state level.⁶

Further, budget laws often introduced different shares of the distribution of environmental tax revenue than those envisioned in the Budget Code. For example, in the 2014 budget, part of the proceeds from the environmental tax on radioactive waste were not transferred to the general fund of the state budget and 53.5% of other environmental tax revenue was allocated to the general fund of the state budget while only 11.5% were left in the special fund, all this contrary to the provisions of the Budget Code illustrated with Table 2.1 (Parliament, 2014^[9]). According to the Budget Code, all proceeds for the environmental tax on radioactive waste are earmarked for the Fund for Radioactive Waste Management (Parliament, 2010^[10]). However, in the 2018 budget, 50% of the proceeds from the environmental tax on radioactive waste were transferred to the general fund (Parliament, 2017^[11]).

Some changes have also been introduced due to the Russian illegal occupation of the Luhansk and Donetsk regions. For example, in the 2020 budget, the distribution of the environmental tax revenue was temporarily changed for the Luhansk and Donetsk regions as an exemption to the provisions of the Budget Code. For the period from 1 May to 31 December 2020, environmental tax revenue paid by enterprises in these two regions was allocated in the following way: 20% to the general fund of the state budget and 80% to the special funds of local budgets including 55% to regional budgets and 25% to budgets of local administrations (Parliament, 2019^[12]). Similar exceptional provisions for these two regions were approved for the 2022 budget (Parliament, 2021^[13]). However, as the Russian Federation started a fully-fledged war against Ukraine on 24 February 2022, it is very unlikely that any industries would be able to continue production and payment of environmental taxes in the Luhansk and Donetsk regions where fierce hostilities have taken place and major industrial sites have been destroyed.

⁶ Though part of the fines for violations of environmental legislation still accumulate in the special fund of the state budget.

Figure 2.1. Distribution of environmental tax revenue across budgets and funds over the period 2010 - 2022



Notes

1. For 2010 the Figure illustrates the distribution of the revenue from the charge for environmental pollution.
 2. Revenue from the environmental tax levied on CO₂ emissions and the generation of radioactive waste is not reflected in the Figure.
- Source: Prepared based on the provisions of the Budget Code (Parliament, 2010_[10]).

Figure 2.2 illustrates that 45% of the revenue collected from most environmental taxes is currently transferred to the general fund of the state budget according to the Budget Code. As an exemption, all revenue from the environmental tax levied on CO₂ emissions into the air by stationary sources of pollution is currently accumulated in the general fund of the state budget. However, amendments to the Tax Code approved in November 2021 aimed to change the distribution of the CO₂ tax revenue. At least 70% of the CO₂ tax payments of the processing industry and sector on the supply of electricity, gas, steam and air conditioning are planned to be recycled back to these sectors to support decarbonisation measures (Parliament, 2010_[5]).

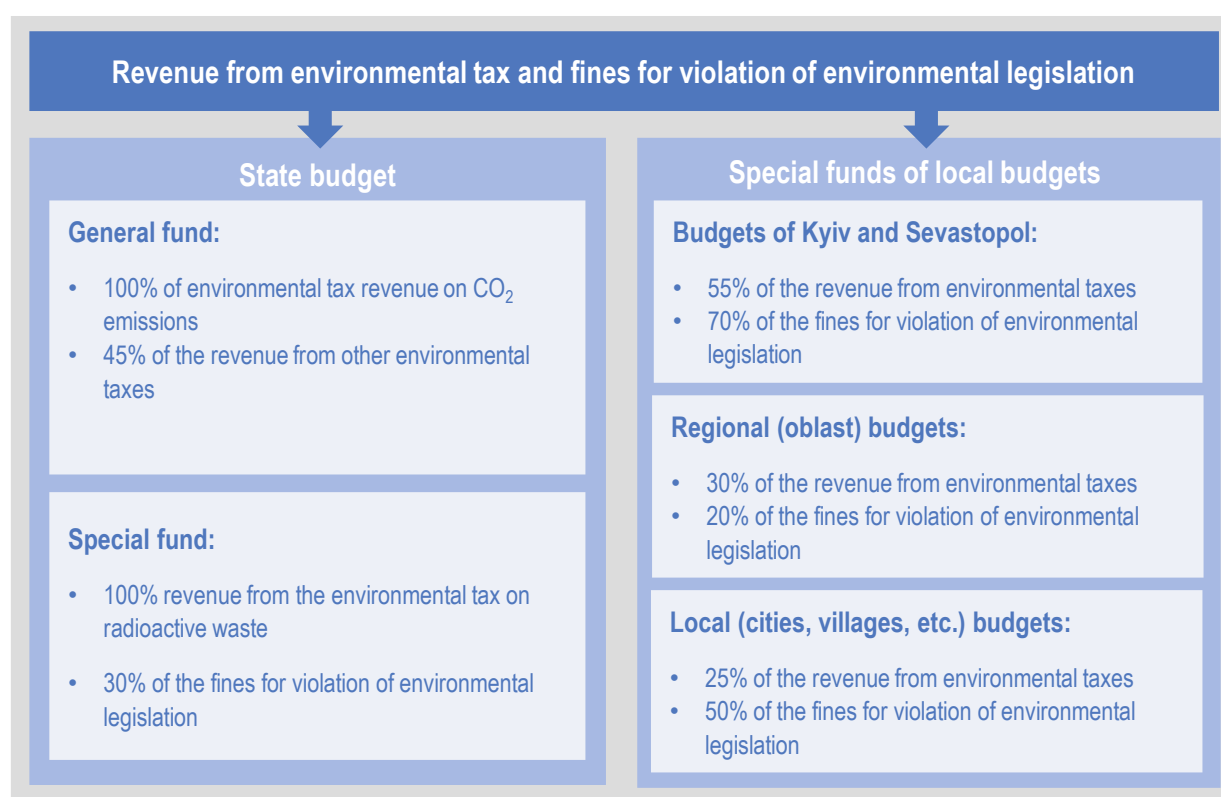
In turn, the special fund of the state budget accumulates all revenue from the environmental tax levied on the generation of radioactive waste (including already accumulated) and/or temporary storage of radioactive waste by its producers beyond the period established by the special conditions of licences as well as 30% of the fines for the damage caused by violations of environmental legislation as a result of economic and other activities.

Special funds of local budgets receive 55% of the environmental tax revenue including 30% for regional budgets and 25% for the budgets of local administrations. Cities with special constitutional status – Kyiv and temporarily occupied Sevastopol receive 55% of the environmental tax revenue. Additionally, special funds at the local level get 70% of the value of fines for violating environmental legislation including 20% for the regional budgets and 50% for local budgets while Kyiv and Sevastopol get 70% (Parliament, 2010_[10]).

In terms of institutional setup, the Parliament approves legislative acts, which regulate the environmental taxation system while the Ministry of Environmental Protection and Natural Resources is responsible for

the development and implementation of environmental policy, including preparation of regulatory acts, setting standards and licensing conditions as well as other functions important for the administration of environmental taxes. The State Environmental Inspection conducts state supervision (control) over the compliance with the legislative requirements on air protection, rational use and protection of water resources, waste management and has the right to inspect enterprises, measure emissions and discharges and can limit or halt operation (through court decision) of the enterprise in case of violation of environmental legislation (Kanonishena-Kovalenko K, 2017^[7]). The State Tax Service is responsible *inter alia* for the development of the tax declaration forms, administration of taxes and other budget payments, control of the timeliness, accuracy and completeness of tax obligation estimates and audit of taxpayers (Cabinet of Ministers, 2019^[14]).

Figure 2.2. Distribution of the revenue from environmental tax and fines across budgets and funds in 2022



Source: Prepared based on the provisions of the Budget Code (Parliament, 2010^[10]).

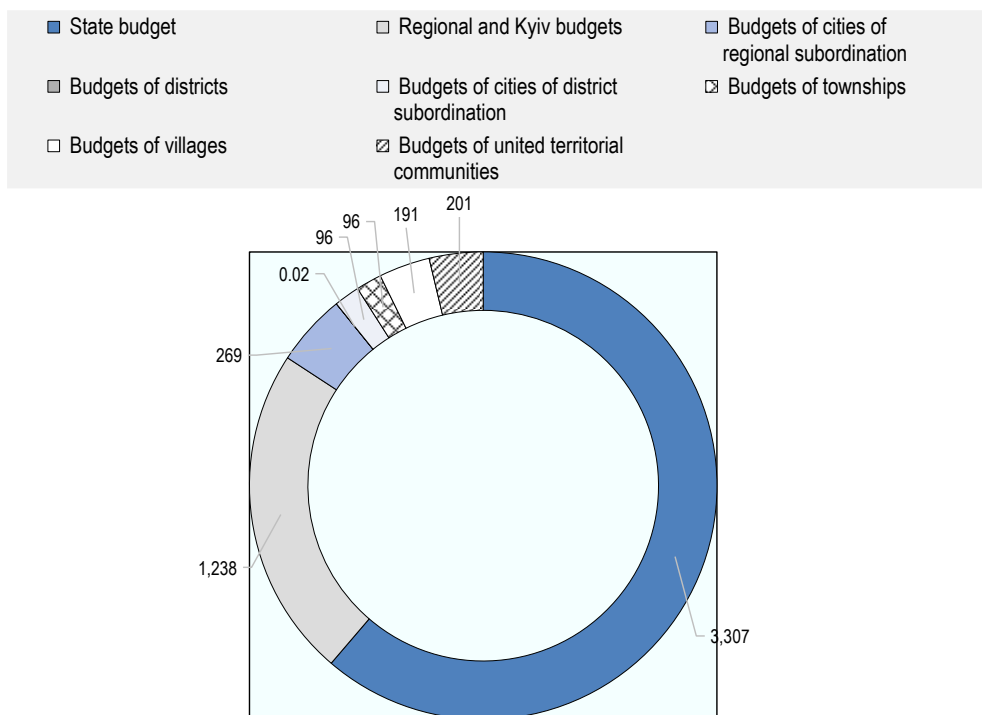
Revenue from environmental tax (Ukraine's Tax Code definition)

In 2020, the consolidated budget, comprised of state and local budgets, received UAH 5.4 billion of environmental tax revenue following the national legal definition. This amounted to 60% of the consolidated budget environmental protection expenditure by functional classification (UAH 9.1 billion).⁷

⁷ At the same time, at least four budget programmes covered under the functional classification have either weak or no environmental function (see the section on Budget funding of environmental protection measures) and do not comply with the scope of the Classification of Environmental Protection Activities (CEPA). If such measures (UAH 2.6 billion in total) are excluded, environmental tax revenue would account for 80% of the environmental protection expenditure of the consolidated budget. Further, no detailed information is available on what measures are considered

Figure 2.3 shows the distribution of environmental tax revenue across budgets of different administrative levels in 2020. The state budget receives more than 60% of the revenue, budgets of regions and Kyiv city - 23%, while budgets of smaller administrative units get 5% or less. Programme classification of the budget spending available for the state budget allowed the analysis of budget expenditure following CEPA (see the section on Budget funding of environmental protection measures). In this case, environmental tax receipts to the state budget of UAH 3.3 billion are comparable with environmental protection expenditure of UAH 3.9 billion. If research funding and administrative costs for the functioning of the Ministry and subordinated bodies (see Table A D.1 of Annex D) are deducted, it can be seen that UAH 3.2 billion were allocated from the state budget to address environmental issues within 1-7 CEPA categories (see Box 3.1 which is even less than the environmental tax revenue accumulated in the state budget.

Figure 2.3. Environmental tax revenue by type of budget in 2020, UAH mln



Source: Prepared based on data from the (Ministry of Finance, 2021^[15]).

Figure 2.4 illustrates the revenue received by the state budget from environmental taxes following the national legal definition of ‘environmental tax’. Environmental tax receipts to the state budget are determined by the tax distribution provisions (see Figure 2.1) as well as the general economic situation in the country. In 2013 and 2014, environmental taxpayers contributed to the state budget with payments of UAH 2.4 billion and UAH 3.6 billion, respectively, resulting in the highest shares of environmental taxes in the total state budget revenues over the examined period. A dramatic decline in revenue is observed for 2015 and 2016 due to a sharp contraction of industrial output as a result of Russia’s occupation of part of the Donbas region and the annexation of Crimea as well as the revision of the tax distribution system across budgets. In 2019, a more than 20-fold increase of the CO₂ tax led to a 40% rise in environmental tax revenue, as explained further below. At the same time, in 2019, the share of environmental taxes

as environmental ones in the local budget. It is quite possible that more careful classification of environmental measures following CEPA would result in environmental spending in the consolidated budget, which equals or is lower than the environmental tax revenue.

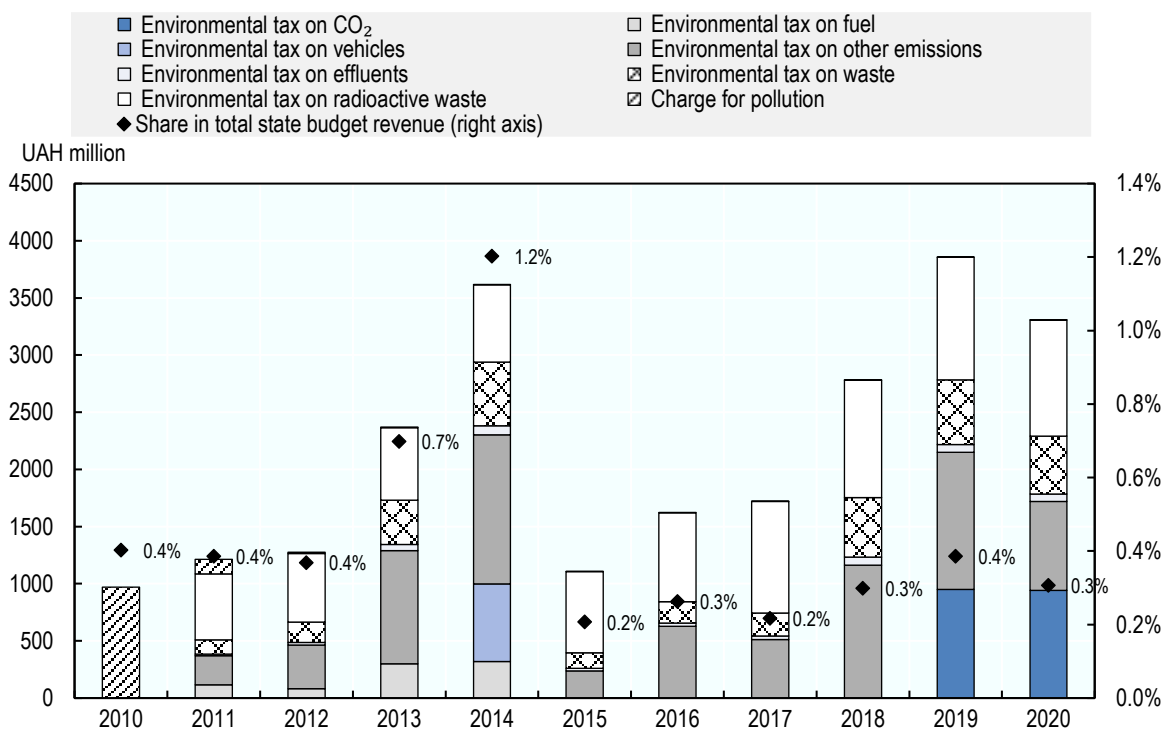
revenue accounted for only 0.4% of the total state budget revenue, which is comparable to 2012 levels. In 2020, state budget receipts from environmental tax declined by 14% compared to the previous year due to the COVID-19 pandemic and its socio-economic impacts.

Tax revenue, including revenue from environmental taxes, may be expected to have dropped significantly after Russia's full-scale invasion in February 2022. During the martial law period, introduced in March 2022, the Parliament of Ukraine adopted changes to the Tax Code and other legislative acts aimed at supporting citizens and businesses during this period. The Parliament introduced changes in the administration and payment of taxes. It established a simplified tax regime for certain groups of tax payers and certain taxes were temporarily reduced or abolished, including some environmentally and energy related taxes (e.g. a decrease of fuel excise duty, abolishment of environmental tax for 2022 on facilities located in areas where hostilities take place or temporarily occupied territories) (Mazars, n.d.^[16]). In May 2023, however, the Parliament supported further changes to the Tax Code of Ukraine with the aim of restoring the taxation system to its pre-war state (UBN, 2023^[17]).

Prior to 2019, receipts from CO₂ tax were included under the environmental tax revenue levied on CO₂ emissions into the air by stationary sources of pollution. Although the CO₂ tax was introduced back in 2011, the State Treasury Service attributed a distinct budget code to the CO₂ tax revenue only in 2019 as its tax rate was increased by more than 24 times from UAH 0.41 per tonne to UAH 10 per tonne. This increased receipts to the state budget to more than UAH 950 million in 2019, which accounted to almost a quarter of environmental tax revenue (see Table A.A.1 of Annex A). At the same time, an exemption was introduced for polluters with annual CO₂ emissions lower than 500 tonnes. In 2022, the tax rate on CO₂ emissions was further increased by three times to UAH 30 per tonne (Parliament, 2010^[5]).

In 2020, revenue from the environmental tax levied on the generation of radioactive waste (including already accumulated) and/or temporary storage of radioactive waste by its producers beyond the period established by special conditions of licences accounted for over 30% of the environmental tax revenue (approximately UAH 1 billion). While the CO₂ tax brought UAH 940 million to the state budget, environmental tax revenue on all other emissions into the air resulted in just UAH 780 million in 2020. In 2020, polluters paid to the state budget UAH 508 million for the disposal of non-radioactive waste and UAH 64 million for discharges of harmful substances directly into water bodies, which accounted for 15% and 2% of the total environmental tax revenue, respectively.

Figure 2.4. Environmental taxes revenue in the state budget, 2010-2020, UAH million



Source: Prepared based on the reports of the (State Treasury Service of Ukraine, 2021^[6]).

For the period from 2011 to 2014, the environmental tax was also levied on fuel produced domestically and imported⁸ bringing from UAH 81 million to UAH 319 million to the state budget over this period (see Table A.A.1). This was an attempt to capture CO₂ from transport. Since 2015 environmental tax on fuel has been effectively merged with the excise tax on fuel. Further, an environmental tax on vehicles was introduced in 2014 as a kind of recycling fee with the purpose to stimulate at least partial recycling of old vehicles by a domestic car manufacturer but this experiment did not work well and the tax was discontinued in 2015. Finally, the charge for environmental pollution was effectively replaced by the environmental tax in 2011 but Treasury reports continue showing some receipts from it (e.g., UAH 214.5 thousand in 2020) as polluters pay off debts per this charge.

Revenue from environmentally related taxes (European environmental economic accounts definition)

If a broader national accounts definition of environmentally related taxes is applied to the data collection, the overall composition of the state budget revenue changes as illustrated in Figure 2.5 and significantly increases the share of these group of taxes. First of all, the rapid growth of the revenue is observed both in absolute and relative terms, which is affected neither by the economic crisis nor by changes in the distribution of the revenue from pollution taxes across budgets.

Energy taxes accounted for around 70%-80% of the environmentally related tax revenue over the examined period. This group is represented mainly by the excise taxes on electricity and fuel produced domestically and imported as well as the CO₂ tax (see Table A.A.1). In 2020, the excise tax on imported

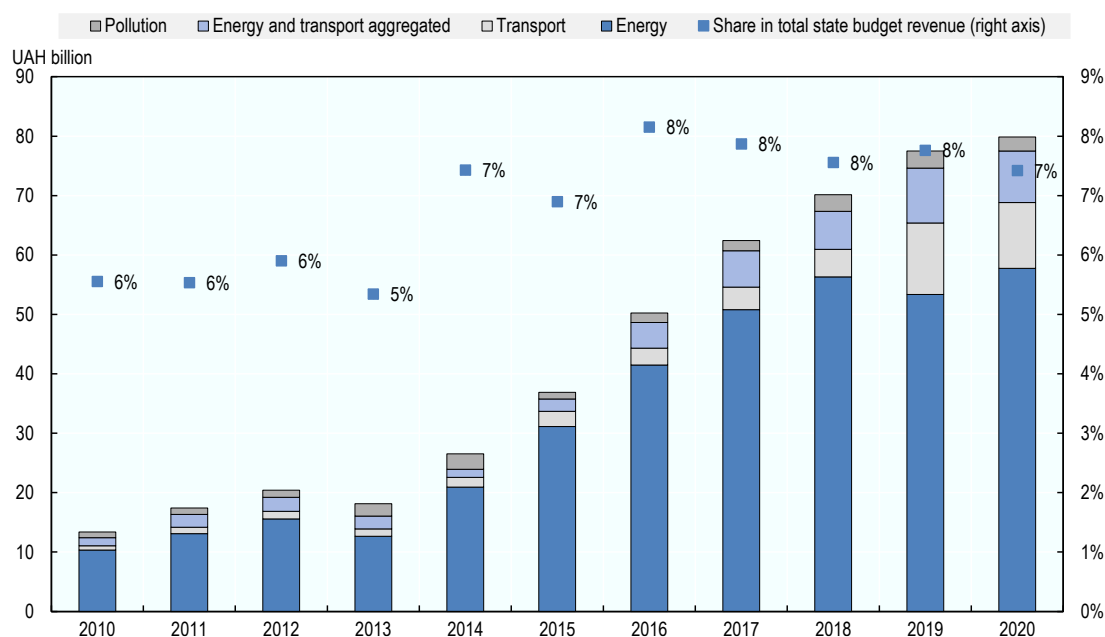
⁸ Article 244 of the Tax Code provided environmental tax rates (in UAH per tonne of fuel) for emissions into air from mobile sources of pollution, which was removed in 2015 (Parliament, 2010^[31]).

fuel brought UAH 42 billion to the state budget, which is 73% of the energy taxes revenue. Previously, energy taxes also included a special surcharge to the tariff for electricity and heat and a special surcharge to the tariff for natural gas. The first one was substituted with the excise tax on electricity in 2015. The second one was discontinued in 2016.⁹

The contribution of transport taxes to government revenue from environmentally related taxes increased from 5.4% in 2010 to 15.5% in 2019. This group of taxes generated for the state budget UAH 12 billion and UAH 11 billion in 2019 and 2020, respectively. Almost 99% of the receipts come from the excise taxes on imported vehicles (see Table A.A.1 of Annex A). Duty on the import of petroleum products and vehicles also brings considerable revenue to the state budget – about UAH 9 billion in 2019 and 2020. Considering that data on the duty levied on the import of petroleum products and the import of vehicles is reported as one category it is classified as “energy and transport aggregated”.

Eurostat category of pollution taxes mainly represents environmental taxes (except for CO₂ tax) per national legal definition since 2015 (Table 2.1). Although in absolute terms revenue from pollution taxes increased from around UAH 1 billion in 2010 to around UAH 3 billion in 2019, its share in the environmentally related taxes revenue diminished from 7% to 4% for the same period.

Figure 2.5. Environmentally related taxes revenue in the state budget, 2010-2020, UAH billion



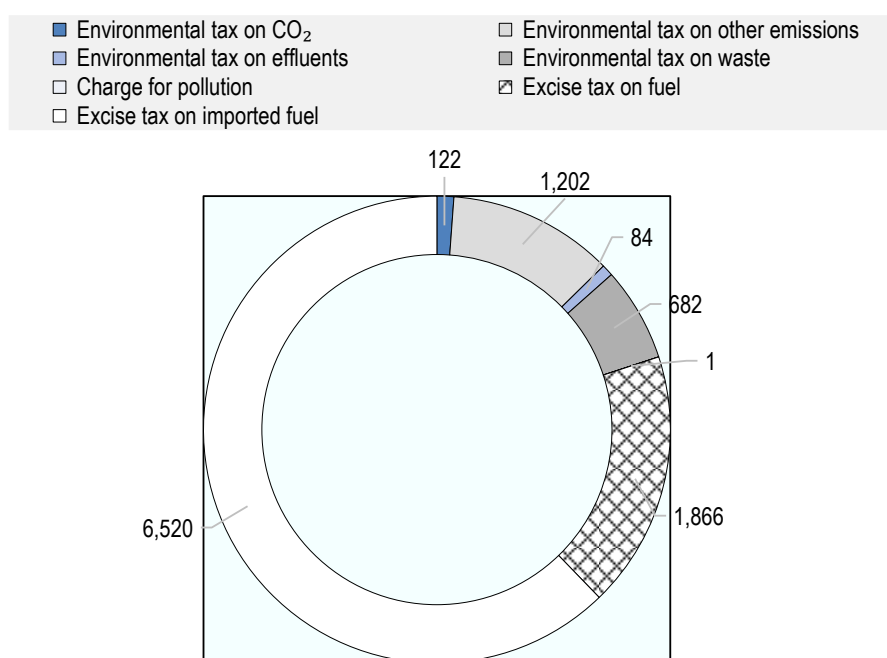
Source: Prepared based on the reports of the (State Treasury Service of Ukraine, 2021_[6]).

Figure 2.6 illustrates the composition of environmentally related tax revenue transferred to local budgets. Similar to the state budget, energy taxes account for the largest share (81%) of environmentally related tax revenue in the local budgets. Out of UAH 10.5 billion received by local budgets in 2020, approximately 62% was generated by the excise taxes on imported fuel. As noted in the previous section, all revenue from CO₂ tax should be transferred to the general fund of the state budget according to the Budget Code (Parliament, 2010_[10]). However, the 2020 Budget Law overruled this Budget Code provision by introducing an exemption for the Luhansk and Donetsk regions: 80% of the environmental tax revenue (including CO₂

⁹ Excise tax on fuel applied only to the liquified form of the natural gas.

tax) paid by enterprises in these two regions from 1 May to 31 December 2020 was allocated to the special funds of local budgets (Parliament, 2019^[18]). This is the reason why UAH 122 million generated by the CO₂ tax ended up in local budgets in 2020. As to pollution taxes, local budgets received approximately UAH 1.2 billion from the environmental tax on emissions into the air (except for CO₂), UAH 682 million from the environmental tax levied on the disposal of non-radioactive waste and approximately UAH 84 million from the environmental tax levied on discharges of pollutants directly into water bodies. Although the charge for environmental pollution was substituted by the environmental tax in 2011, local budgets received about UAH 500 thousand as paid off debts per this charge in 2020.

Figure 2.6. Environmentally related tax revenue in local budgets in 2020, UAH mln



Source: Prepared based on the reports of the (State Treasury Service of Ukraine, 2021^[6]).

Non-tax payments in the field of environmental protection

In addition to environmentally related taxes, state and local budgets receive revenue in the form of various non-tax payments in the field of environmental protection. A list of such payments to the state budget is provided in Table A A.2 of Annex A. In absolute terms, the value of environmentally related non-tax payments increased from about UAH 3 billion in 2010 to almost UAH 5 billion in 2020 but in relative terms, their role in the state budget fluctuated from 0.2% to 1.2%. In 2010, the state budget received UAH 1.5 billion in the form of proceeds from the sale of part of the Assigned Amount Units provided for in Article 17 of the Kyoto Protocol to the United Nations Framework Convention on Climate Change. In 2012, about UAH 232 million is recorded under this budget line.

The value of fines for the damage caused by violations of environmental legislation as a result of economic and other activities increased almost twice over the examined period amounting to UAH 28.5 million in 2020.

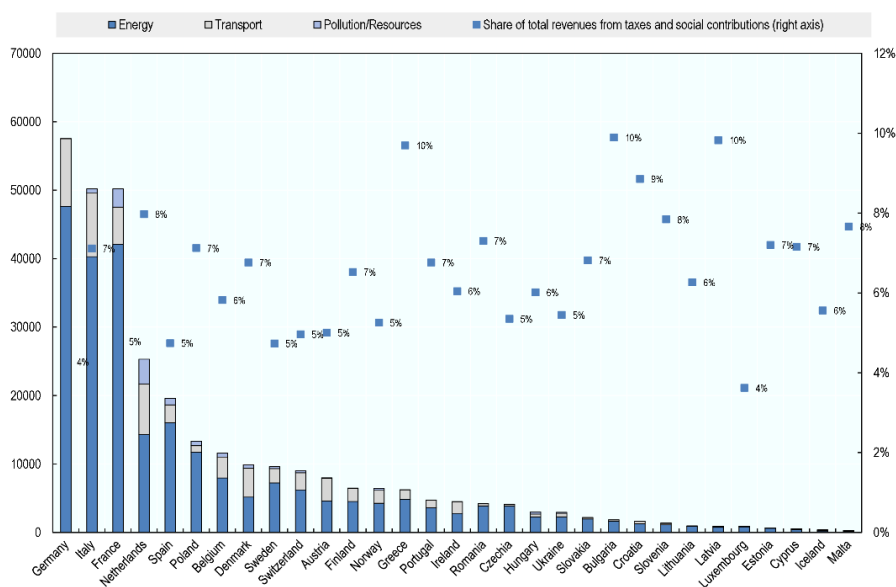
In the transport sector, two non-tax payments were identified. Fee paid upon the acquisition of ownership of cars is one of the fees for mandatory state pension insurance for certain types of business operations generating, which generated UAH 4.5 billion for the state budget in 2020. Tolls for vehicles and other self-

propelled machines and mechanisms, whose weight or dimensions exceed the normative limits, brought approximately UAH 129 million to the state budget in 2020. In 2019, the state budget also received UAH 47.7 million for licences for the production, storage and sale of fuel.

Figure 2.7 compared environmentally related tax revenue in Ukraine to revenue from such taxes generated by the EU countries. In all EU countries, energy taxes constitute the largest share of the revenue ranging from about 48% in Malta to 94% in the Czech Republic. The largest amount of environmentally related tax revenue is generated in Germany at EUR 57.5 billion followed by Italy and France at about EUR 57.5 billion each. Total revenue from environmentally related taxes in Ukraine (EUR 2.9 billion) is comparable to the revenue generated in Hungary (both had around the same level of GDP in 2020 at USD (current) 157 billion (World Bank, 2022^[19])). At the same time, the share of environmentally related tax revenue in total revenues from taxes and social contributions¹⁰ is the highest (10%) in Bulgaria, Greece and Latvia. For Ukraine, this indicator is 5%, which is the same for Austria, the Czech Republic, France, Norway, Spain, Sweden and Switzerland. Figure 2.8 illustrates total environmentally related tax revenue and pollution/resource tax revenue as a share of GDP in the EU countries and Ukraine as of 2020. The highest value of the first indicator is in Greece (3.8%) while the lowest one is in Ireland (1.2%). In Ukraine, total revenue from environmentally related taxes accounted for 2.1% of GDP in 2020, which is the same value as for Austria. The share of pollution/resource taxes of GDP is lower than 1% in all countries. The highest value of this indicator is observed in the Netherlands (0.45%) and Iceland (0.38%). In Ukraine, revenue from pollution taxes constituted just 0.1% of GDP, which is comparable to the value of this indicator for Latvia, Slovenia and France – 0.12%.

It should be noted that the value of environmental tax revenue is a function of industrial output, efficiency and environmental characteristics of technologies as well as tax rates. Thus, a simple cross-country comparison does not provide the grounds for drawing conclusions on the emissions levels or highest/lowest tax rates without a more in-depth analysis of underpinning factors.

Figure 2.7. Environmentally related tax revenue in EU countries and Ukraine in 2020, EUR mln

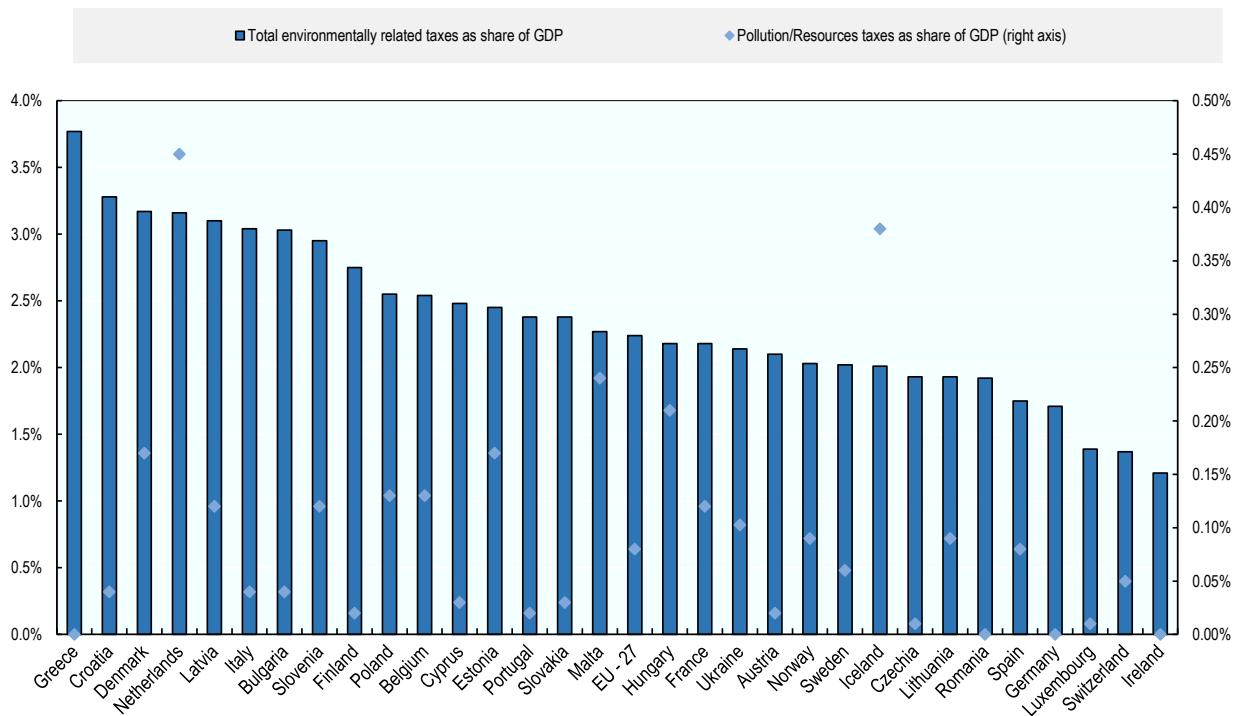


¹⁰ (Eurostat, 2020^[31]) - percentage of total revenues from taxes and social contributions (excluding imputed social contributions).

Note: Total revenues from taxes and social contributions for Ukraine are estimated as the sum of the consolidated budget revenue and own revenue of the Pension Fund.

Source: Prepared based on data from (Eurostat, 2022^[20]), (State Treasury Service of Ukraine, 2021^[6]), (Pension Fund, 2021^[21])/

Figure 2.8. Environmentally related tax revenue as a share of GDP in EU countries and Ukraine in 2020



Source: Prepared based on data from (Eurostat, 2022^[20]), (State Treasury Service of Ukraine, 2021^[6]), (World Bank, 2022^[19]).

Key deficiencies of environmental taxation

Most experts interviewed during the preparation of this paper noted that environmental taxes do not incentivise pollution reduction and serve only fiscal goals in Ukraine. This opinion is also stated in several position papers and studies (e.g., (EBA, 2021^[22]), (PAEU, 2020^[23]), (Zhyva Planeta, 2021^[24]). Ukraine's Accounting Chamber reached a similar conclusion in its audit report which stated that the environmental taxation system does not stimulate business entities to reduce emissions/discharges of pollutants in air/water objects and comply with environmental standards and limits (Accounting Chamber, 2018^[25]). Novitska (2016^[26]), who assessed the static and dynamic effectiveness of environmental taxes in Ukraine, estimated that the increase of environmental tax revenue by 1% increases the environmental protection expenditure of enterprises by 0.4%, which indicates static effectiveness.¹¹ However, the same increase in environmental taxes results in a decrease in the spending on environmental innovations of enterprises by 3.2%, which demonstrates that the dynamic effectiveness of environmental taxes is not observed. This means that environmental taxation is considered by industries as a disincentive for the implementation of innovations and as a seizure of resources that they could invest in eco-innovations instead.

¹¹ Static refers to the ability to influence the level of environmental protection investment and dynamic one is the ability to influence environmental protection innovations.

The Industrial Ecology and Sustainable Development Committee of the European Business Association (EBA) pointed out that market conditions and international requirements are the main drivers of the ecological modernisation of enterprises in Ukraine rather than taxes. The EU Green Deal and Carbon Border Adjustment Mechanism (CBAM) announcement seemed to have bigger effect to incentivise the ecological modernisation of businesses. The business had time to estimate losses and make decisions on how to prepare for the introduction of CBAM: either to modernise processes to improve environmental performance or to reorient trade flows. In some cases, the final product price (including CBAM) would be larger than the prices of analogous products of the EU companies. In certain cases, it was argued that it would make more sense to fully close old production facilities and construct new ones. Thus, the business could also make a decision not to invest now in modernisation but rather concentrate on the construction of new facilities.

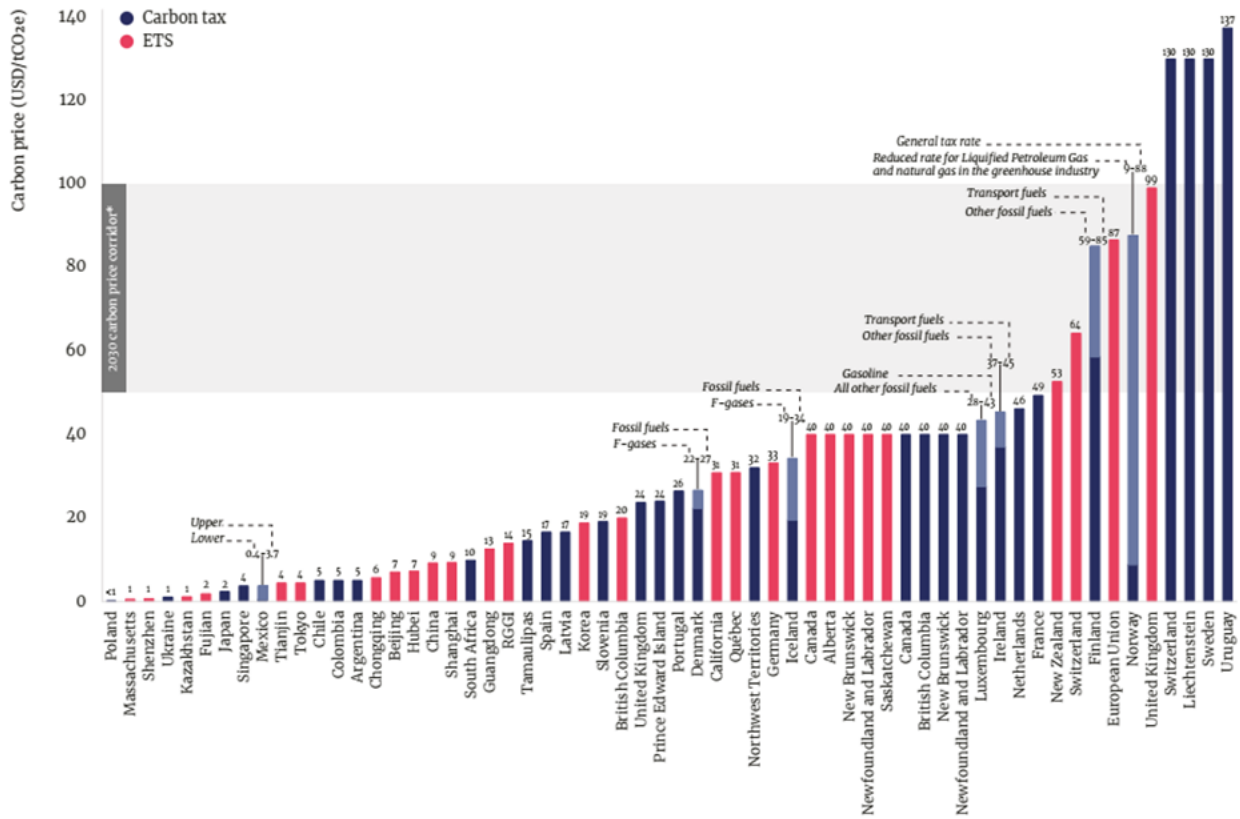
Regarding the argument that environmental taxes are primarily revenue-generating tools in Ukraine, Novitska (2016^[26]) and Kanonishena-Kovalenko K, (2017^[7]) noted that the fiscal function of the environmental tax is limited given that its share in the state budget ranged from 0.2% to 1.2% over the examined period (see Figure 2.4). In local budgets, environmental taxes accounted for just 0.4% of total revenue and 0.7% of tax revenue in 2020 (Ministry of Finance, 2021^[15]). As an exception, environmental tax constituted 2.3% and 4.8% of tax revenue in the Ivano-Frankivsk and Donetsk regions, respectively.

Several interviewed stakeholders highlighted that one of the reasons for the limited effectiveness of environmental taxes is that they are set too low to incentivise polluters to invest in cleaner technologies. Novitska (2016^[26]) noted that low environmental tax rates do not result in the internalisation of negative externalities caused by environmental pollution and are unlikely to allow achieving the socially optimal level of pollution. Comparing carbon prices both as a result of the carbon tax and emissions trading across countries (Figure 2.9), the carbon tax in Ukraine is indeed one of the lowest (about USD 1 per tonne of CO₂ as of April 2022).

The OECD's (2020^[27]) database Policy Instruments for the Environment shows that tax bases and rates of pollution taxes differ considerably across OECD countries. Only a few countries have specific taxes on NO_x and SO₂ emissions and there are cases when tax rates are both lower than in Ukraine and also much higher than in Ukraine. Tax rates for SO₂ and NO_x emissions are set at the same level in Ukraine at EUR 81 per tonne.¹² In the Slovak Republic, the air pollution charge is set at EUR 48 per tonne of NO_x emissions and EUR 64 per tonne of SO₂ emissions. In the Community of Valencia in Spain, tax rates of these emissions are differentiated depending on the amount of annual emissions of particular sources and range from EUR 9 per tonne to EUR 50 per tonne. In Latvia, the tax rate for NO_x emissions is a bit higher than in Ukraine while in most other countries, which have analogous taxes, it is much higher: EUR 129 per tonne in the Czech Republic, EUR 196 per tonne in Lithuania, EUR 209 per tonne in Italy, EUR 385 per tonne in Hungary and as much as EUR 709 per tonne in Denmark. SO₂ tax rates are also higher in most countries with similar instruments than in Ukraine: Lithuania - EUR 104 per tonne, Italy - EUR 106 per tonne, Czech Republic – EUR 164 per tonne, Hungary - EUR 161 per tonne, Denmark – EUR 1 620 per tonne.

¹² UAH 2574.43 per tonne converted to EUR using the National Bank (2022^[85]) exchange rate as of January 2022 (UAH 31.67 per EUR).

Figure 2.9. Comparison of carbon prices across countries



Source: Adopted from (World Bank, 2022_[26]).

Complicated and ineffective administration of environmental tax is another reason for the limited effectiveness of this policy instrument. According to the provisions of the Tax Code, taxpayers are responsible for the calculation of their environmental tax obligations for emissions and discharges. Considering that equipment to measure actual emissions is often unavailable, reporting of tax liabilities is often based on fuel consumption and expected characteristics of technological processes (often according to plan rather than actual performance).

Measurement of actual emission levels is expensive and rarely applied (Novitska N, 2016_[26]). In particular, the State Environmental Inspection does not have enough resources to control the self-declared emissions/discharges of so many polluters. Similarly, tax authorities also do not have documentary proofs of the specific amount of emissions, discharges, and wastes of a particular enterprise to verify whether tax declarations are accurate. In fact, the environmental monitoring system is functioning separately from the tax administration and these systems are not connected. Hence, tax authorities have to search for data on the environmental performance of a particular enterprise from various documents, which is time-consuming. Although, there is an inventory of sites generating, processing and disposing of waste, which is managed by local administrations, no such inventories are available for emissions into air and water. However, in recent years the Ministry has made some efforts into the establishment of online databases at least to cover the largest sources of pollution.

During the period 2015-17 the Accounting Chamber conducted an audit to assess the performance of state authorities to control the completeness and timeliness of environmental tax payments for emissions and discharges over the period 2015-17. In its audit report Accounting Chamber highlighted multiple cases of discrepancies between the amount of emissions/discharges reported in tax declarations and the amount

of pollution reported by the State Statistical Service, which can serve as an indicator of tax liabilities underreporting and tax evasion (Accounting Chamber, 2018^[29]). The Accounting Chamber argues that information exchange between the Ministry of Ecology and Natural Resources¹³ and tax authorities did not work reasonably well despite the existence of the formal Agreement on information cooperation. The State Environmental Inspection did not exercise proper control in the field of air protection, rational use and protection of water resources, which resulted in low rates of collection of fines for violations of environmental legislation. Further, the State Fiscal Service¹⁴ also did not ensure a sufficient level of control over the accounting of taxpayers of environmental tax for emissions and discharges, which creates risks of not covering all polluters. All these drawbacks in the administration allowed taxpayers not to declare or not fully to declare environmental tax liabilities per emissions into air and discharges into water resulting in shortages of the environmental tax revenue for the state budget.

In addition, the current version of the Tax Code lacks clarity regarding the threshold for CO₂ emissions introduced in 2019 and what pollutants are covered under the “hydrocarbons” category of air emissions. For example, it is not clear how to apply a 500 tonne emissions threshold to companies with many regional divisions. Ideally, such entities need to estimate emissions at each division to understand at what point they cross the threshold and need to pay the tax. However, this is difficult to implement in practice. In the second case, the Tax Code specifies a tax rate for emissions of hydrocarbons into the air and sets it at UAH 145.5 per tonne but it does not specify exactly which pollutants are covered in this category. Although methane is not specifically listed as a pollutant in the Tax Code it falls in the category of hydrocarbons and should be reported in the environmental tax declarations.

In another example, one of the largest sources of fugitive methane emissions is the natural gas pipeline network and such emissions can be estimated considering additional amounts of natural gas purchased to compensate for technical losses of the natural gas in the transportation system. However, such types of emissions were not declared in the tax declarations of companies responsible for gas transportation. The State Tax Service conducted a complex investigation of such emission sources across the country, which resulted in a range of lawsuits. Eventually, through a Supreme Court (2021^[30]) case, tax authorities managed to prove that fugitive methane emissions need to be also taxed. The Court ruled out that methane belongs to hydrocarbons. Hence, the environmental tax rate for emissions of hydrocarbons into the air must be applied to methane emissions (Supreme Court, 2021^[30]).

Another concern of stakeholders was that the revenue from environmental taxes paid by the business to state and local budgets is spent in an ineffective and inefficient way and is not recycled into sound environmental projects. These issues are discussed in the second part of the paper on environmental expenditure.

Options for reforming environmental taxation

Reform of environmental taxation has been on the government agenda for more than ten years already. In particular, the Strategy of the State Environmental Policy of Ukraine for the period up to 2020 envisioned improvement of the environmental tax regulatory framework and an increase of the tax burden on environmentally harmful activities and forms of consumption (Parliament, 2010^[31]). Current Strategy of the State Environmental Policy up to 2030 also provides for the improvement of the environmental taxation system and states that environmental modernisation of enterprises can be incentivised by the reduction of the environmental tax rate or by providing a fixed amount of annual tax refund (Parliament, 2019^[32]).

Revision of the environmental taxation is also reiterated in the Cabinet of Ministers Action Plan (2020^[33]) as well as the Strategy for Reforming the State Finance Management System for 2022-2025 (Cabinet of

¹³ Currently Ministry of Environmental Protection and Natural Resources.

¹⁴ Currently the State Tax Service.

Ministers, 2021^[34]). Finally, the Post-War Recovery Plan of Ukraine envisages the harmonisation of the environmental taxation system of Ukraine with the EU one including the implementation of the Eurostat classification standards (National Council for the Post-War Recovery, 2022^[35]).

Currently, at least sixteen draft laws are registered with the Parliament that intend to amend environmental tax legislation in one or another way. Proposed amendments include, among others, changes in the distribution of environmental tax revenue across budgets and funds, a gradual increase of environmental tax rates, abolishing of the CO₂ tax, recycling part of the environmental tax revenue to finance environmental modernisation projects of enterprises. (EBA, 2021^[22]), (Zhyva Planeta, 2021^[24]). Reform of the carbon tax and earmarking of the revenue from it is a special focus of the public debate (see Annex H for an overview of studies on the carbon tax reform). Researchers of the Fiscal Policy Research Institute developed a proposal to substitute the current tax on CO₂ emissions with an upstream fuel tax to be levied at the point of production or import taking into account the carbon content of the fuel (Novitska N. and Khlebnikova I., 2021^[36]). This approach is supported by the State Tax Service and Ministry of Finance as it considerably simplifies the administration of the carbon tax and will considerably decrease the number of taxpayers.

However, the Ministry of Environmental Protection and Natural Resources does not support this proposal because the current CO₂ tax is compatible with the system of monitoring, reporting and verification for emissions trading designed for end-of-pipe GHG emissions. Instead, the Ministry suggests leaving CO₂ tax as it is and additionally introducing a carbon tax for mobile sources of emissions, which are currently exempt from this tax.

Overall, most interviewed experts agreed that there is no comprehensive and coordinated vision for environmental tax reform at the highest political level. The Post-War Recovery Plan of Ukraine envisions the development of a roadmap for the harmonisation of the environmental taxation system of Ukraine with the EU one by December 2023 (National Council for the Post-War Recovery, 2022^[35]). This road map should formulate a comprehensive vision of the reform involving all interested stakeholders.

Reform of the environmental taxation system should commence with the improvement of administrative procedures to eliminate the deficiencies described in the previous section, particularly, by building up cooperation and information exchange between the tax authorities and the State Environmental Inspection. Amendments to the Tax Code should be made to clarify how the 500-tonne emission threshold to charge CO₂ tax should be applied to companies with multiple administrative offices, introduce the notion of fugitive emissions and an explicit tax rate for methane emissions.

It should be noted that the effectiveness of the environmental tax administration is closely linked to the reform of the environmental monitoring and control system. Improvement of environmental monitoring is among the priorities for the Ministry of Environmental Protection and Natural Resources (2020^[37]) for 2020-2024. Ideally, the Environmental Inspection should have a database with information on permits provided to polluters, history of inspections and the State Tax Service should have access to it. The most recent National Economic Strategy until 2030 envisaged *inter alia* the improvement of public administration, monitoring and control in the environmental domain, in particular, the establishment of a procedure for data exchange on the state monitoring of the natural environment, environmental impact assessment and inspections of state supervision and control bodies, integration of environmental data into the information system intended for state management and planning (Cabinet of Ministers, 2021^[38]). The Post-War Recovery Plan of Ukraine envisions also strengthening public administration in the field of environmental protection, reform and development of the environmental monitoring and control systems in line with the EU standards (National Council for the Post-War Recovery, 2022^[35]).

Revision of the environmental tax base should be an essential part of the reform. Ukraine has an exceptionally wide coverage of emissions, which was introduced in the 1990s. As production technologies have changed considerably over the last thirty years, it should be assessed whether differentiated tax rates for so wide emission categories still make sense. For example, the highest tax rate is imposed for the

emissions into air of benzopyrene while no polluters declare their tax liabilities per this pollutant (Novitska N, 2016^[26]).

As can be seen in the OECD (2020^[27]) PINE database tax bases of most EU countries are much narrower than in Ukraine, especially with regard to specific emissions into air or effluents. Novitska (2016^[26]) advocates narrowing the environmental tax base to just the five key largest pollutants which are monitored: hydrocarbons (including methane), nitrogen oxides, sulphur oxide, carbon monoxide, and substances in the form of suspended solids (particles). It was argued that environmental tax revenue would not decrease much in this case as these five pollutants generate most of it.

However, simple copying of the approaches applied in the EU countries should be avoided as the situation with air and water pollution differs considerably. To ensure that the decision for narrowing the environmental tax base is well grounded, a comprehensive analysis needs to be done to examine which environmentally harmful production processes are currently used in Ukraine, environmental tax liabilities per what pollutants are currently declared by enterprises and what pollutants can be effectively monitored so that state bodies can execute control functions adequately.

At the same time, the EU countries have a wide range of energy and transport taxes, which explicitly perform an environmental function. For example, excise taxes on fossil fuels are often differentiated depending on the sulphur content. Novitska (2016^[26]) argued that Ukraine should also consider introducing such amendments to current excise taxes on diesel and proposes how rates should be differentiated. Further, the government should consider introducing taxes on environmentally harmful products (e.g. tires, batteries, luminescent bulbs, fertilisers, pesticides) as well as plastic packaging, whose use is much easier to monitor than emissions. A draft law to introduce such amendments to the Tax Code was discussed back in 2013 but it was not approved on the grounds of possible “double taxation” and due to already existing taxes on air emissions, wastewater discharges and waste disposal (OECD, 2015^[39]). However, the introduction of taxes on environmentally harmful products can be part of a wider environmental tax reform. For example, a tax on the use of fertilisers and pesticides can substitute pollution taxes in agriculture. The experience of the EU countries shows that pollution and product taxes can effectively co-exist.

Several interviewed experts highlighted that environmental tax rates need to be increased in Ukraine as the government needs to send a clear signal to the market about what type of technologies should be used. However, an increase of tax rates without considerable improvement of tax administration to eliminate tax evasion would place honest taxpayers in an uncompetitive position compared to producers that underreport their environmental tax obligations or avoid paying them. Further, all stakeholders agree that the increase in taxes needs to be gradual and predictable to allow sufficient time for adaptation.

The Ministry of Environmental Protection and Natural Resources (2021^[40]) proposed to gradually increase tax rates for the discharges into water bodies by ten times by 2029. Novitska (2016^[26]) recommended differentiating tax rates for the discharges into water bodies taking into account the limit for environmental pollution with much higher tax rates if limits are exceeded. The Industrial Ecology and Sustainable Development Committee of the EBA, argued that businesses could accept the increase in environmental taxes on several conditions: businesses should be informed about the planned tax rates increase at least five years in advance to re-assess their costs and implement adaptation strategies, the increase should be implemented in a step-wise way, a guarantee that environmental tax revenue is spent effectively to cut environmental pollution should be given and open access for the business to apply for such funding. In addition, an increase in environmental tax rates would be more acceptable if other taxes are reduced to maintain relatively the same tax burden (i.e. to achieve tax neutrality) and if such a reform is proposed business will be ready to support it.

Most interviewed experts found it reasonable to spend part of the environmental tax revenue on environmental modernisation projects of enterprises and businesses strongly advocate for this approach (e.g., (EBA, 2021^[41]), (PAEU, 2020^[23])). This is also envisioned in the legislation and strategic documents (e.g., (Cabinet of Ministers, 2021^[38]), (Parliament, 2019^[32])), Novitska (2016^[26]) estimated that to stimulate

the reduction of emissions into the air by 1% in three years, the enterprise should receive a 35% refund of the environmental tax it paid to the budget.

Recent amendments to the Tax Code envision that at least 70% of the CO₂ tax payments by the processing industry and the sector supplying electricity, gas, steam and air conditioning are planned to be recycled back to these sectors to support decarbonisation measures (Parliament, 2010^[5]). In May 2023, a law was passed to establish the State Fund for Decarbonisation and Energy-Efficient Transformation which will use revenues from the carbon tax from 2024 onwards (Ministry for Communities, Territories and Infrastructure Development of Ukraine, 2023^[42]). All experts interviewed highlighted that partial redistribution of the environmental tax revenue to businesses should be done only under clear and transparent procedures to avoid misuse of funds. Novitska (2016^[26]) suggested that enterprises would need to develop modernisation plans to receive such funds. The implementation of such plans needs to be inspected by responsible authorities. In case of a violation, sanctions will need to be imposed for not implementing planned technological upgrades.

As for the distribution of the environmental tax revenue across budgets and funds, there are no uniform visions among stakeholders. However, all interviewed experts strongly believe that all revenue from environmental taxes should be earmarked for environmental protection purposes as allocation of budget funding for environmental programmes is unstable and is often done on a residual basis. As shown in Neuweg (2023^[43]) earmarking carbon revenue for green investments can also increase public acceptability of stronger carbon prices. The current National Economic Strategy until 2030 envisions reform of the distribution of the environmental tax revenue and fines for violation of environmental legislation to ensure 100% earmarking of these funds for environmental protection measures and projects (Cabinet of Ministers, 2021^[38]). The Ministry of Environmental Protection and Natural Resources (2021^[40]) proposes to implement the following amendments to the distribution of environmental tax revenue in the short term: 30% of the environmental tax revenue (except for radioactive waste) should be allocated to the state fund for environmental protection, and 70% should be transferred to a special fund of local budgets.

3

Review of the environmental protection expenditure

This chapter presents the definition and scope used in the analysis of public environmental protection expenditure in Ukraine and describes the legal and institutional basis for the state funding of environmental protection measures. Building on extensive data analysis, literature review and interviews with key stakeholders, key deficiencies of environmental protection expenditure are identified and options for reform discussed.

This analysis reflects the policies prior to Russia's full-scale invasion in February 2022. The data cover the period through 2020 and in some cases include estimates for 2021 and 2022, so the impact of the COVID-19 pandemic may not be fully reflected, and post-February 2022 changes in public environmental expenditure management following the war was not assessed. It can be assumed that the war has led to drastic changes in public expenditure, including in public environmental expenditure.

Definitions and scope

A review of environmental protection expenditure in Ukraine builds on the OECD/Eurostat framework for the collection of information environmental protection expenditure (OECD, 2007^[44]), (Eurostat, 2020^[45]). The scope of the analysis is limited to the public sector only covering the central government and local administrations with a primary focus on the former.

The OECD (2007^[44]) framework defines environmental protection as “*all purposeful activities directly aimed at the prevention, reduction and elimination of pollution or any other degradation of the environment resulting from the production process or the use of goods and services*”. A similar definition is used by the Eurostat (2020^[45]): “*economic activities aimed at preventing, reducing and eliminating pollution or any other degradation of the environment*”.

In turn, environmental protection activities are grouped according to the Classification of Environmental Protection Activities (CEPA), which is an international classification designed for “*classifying activities, products, expenditure and other transactions related to environmental protection*” (Eurostat, 2020^[45])(CEPA distinguishes between nine environmental domains (Box 3.1).

In Ukraine a list of environmental protection measures was introduced in 1996 by the Cabinet of Ministers' Resolution No. 1 147. Currently, the list encompasses 85 environmental protection and resource management measures organised in ten categories.

A comparison of the list of measures included in Resolution No. 1 147 with the CEPA shows that although certain cases measures are similar, the general approach is different. In particular, the list elaborates on specific technologies while CEPA provides an approach for tackling environmental pollution (see for example such a comparison based on the air pollution sector in Table A C.4). Furthermore, Resolution No.

1 147 includes measures such as landscaping projects and construction of hydraulic structures, which are not considered as environmental protection ones under the CEPA.

At the level of enterprises, the statistical data collection form on environmental protection was fully harmonised with the CEPA in 2006. An Order of the State Statistics Committee of Ukraine No. 494 of 24 October 2006 defines environmental protection as: *“a set of measures aimed at preventing, reducing or eliminating pollution, other types of harmful effects of economic and other activities on the environment, the provision of services or use of products, as well as the conservation of biodiversity and habitat.”*

Box 3.1 Classification of Environmental Protection Activities

The European standard statistical Classification of Environmental Protection Activities (CEPA) is a generic, multi-purpose, functional classification used for classifying activities, products, expenditure and other transactions related to environmental protection. The CEPA, prepared by UNECE and Eurostat, was adopted by the Conference of European Statisticians in June 1994 and revised in 2000. The CEPA contains nine classes, including first seven called environmental domains.

- 1. Protection of ambient air and climate**
 - 1.1. Prevention of pollution through in-process modifications
 - 1.2. Treatment of exhaust gases and ventilation air
 - 1.3. Monitoring and measurement and similar
 - 1.4. Other activities
- 2. Wastewater management**
 - 2.1. Prevention of pollution through in-process modifications
 - 2.2. Sewerage networks
 - 2.3. Wastewater treatment
 - 2.4. Treatment of cooling water
 - 2.5. Monitoring and measurement and similar
 - 2.6. Other activities
- 3. Waste management**
 - 3.1. Prevention of pollution through in-process modifications
 - 3.2. Collection and transport
 - 3.3. Treatment and disposal of hazardous waste
 - 3.4. Treatment and disposal of non-hazardous waste
 - 3.5. Monitoring and measurement and similar
 - 3.6. Other activities
- 4. Protection and remediation of soil and water**
 - 4.1. Prevention of pollutant infiltration
 - 4.2. Cleaning up of soil and water bodies
 - 4.3. Protection from erosion and other degradation of soil and water
 - 4.4. Prevention and remediation of soil and groundwater salinity
 - 4.5. Monitoring and measurement and similar
 - 4.6. Other activities
- 5. Noise and vibration abatement**
 - 5.1. Preventive in-process modifications at the source

5.2. Construction of anti-noise/anti-vibration facilities

5.3. Monitoring and measurement and similar

5.4. Other activities

6. Protection of biodiversity and landscapes

6.1. Protection and rehabilitation of species and their habitats

6.2. Protection of natural and semi-natural landscapes

6.3. Monitoring and measurement and similar

6.4. Other activities

7. Protection against particle radiation (excluding external safety)

7.1. Protection of ambient media

7.2. Transport and treatment of high-level radioactive waste

7.3. Monitoring and measurement and similar

7.4. Other activities

8. Research and development

9. Other environmental protection activities

9.1. General environmental administration, management and regulation

9.2. Other activities

9.3. Education, training and information

9.4. Activities not elsewhere classified

Source: (Eurostat, 2020^[45]).

This study covers the analysis of environmental protection expenditure in the state and consolidated budget based on the budget execution reports published by the State Treasury Service of Ukraine. State budget programmes were classified according to the CEPA approach to the extent this was possible as in many cases budget programmes incorporate measures which belong to several categories at the same time. Detailed analysis of environmental protection expenditure at the local level is out of the scope of this study.

The analysis covers only those budget programmes under the Ministry of Environmental Protection and Natural Resources, other ministries and government agencies, which are within the scope of CEPA. However, in several cases budget programmes cover measures that are both within the scope and measures that out of the scope of the CEPA and relevant environmental protection expenditures cannot be separated. Quite a few programmes under the Ministry of Environmental Protection and Natural Resources fall under the categories of Classification of Resource Management Activities (CReMA), whose analysis is out of scope of this study.

Legal and institutional setup related to environmental expenditure

In order to ensure effective and purposeful environmental policy of Ukraine, state-targeted programmes have been developed and approved following procedures outlined in the Law of Ukraine “On State

Targeted Programmes” and Cabinet of Ministers Resolution No. 106 of 31 January 2007. Environmental programmes are designed for the implementation of national environmental measures, prevention of environmental disasters and elimination of their consequences (Parliament, 2004^[46]). In turn, budget programmes envision funding of the state targeted programmes, administrative costs for the functioning of the Ministry and subordinated agencies and entities, research and training as well as other expenditure envisioned by the legislation measures (see next section and Table A D.1). Allocation of budget funding under each programme is undertaken according to procedures elaborated in respective resolutions of the Cabinet of Ministers.

Control over the targeted and effective use of the budget is expected to be carried out first internally by the Ministry itself in line with the Cabinet of Ministers Resolution No. 1 062 of 12 December 2018. External audit of selected programmes and measures is undertaken by the Accounting Chamber and the State Audit Service. However, it is not clear to what extent an internal audit of budget programmes is regularly performed.

According to the 1991 Law of Ukraine “On Environmental Protection”, environmental protection measures can be financed from the state and local budgets, own resources of enterprises and organisations, voluntary contributions as well as state and respective local environmental protection funds, which are among the most important public sources of environmental investment in Ukraine.

Although the environmental funds function within state and local budgets and are managed by the Cabinet of Ministers and local authorities, no dedicated legal entities have been created to administer these funds. Environmental taxes, as well as fines for the damage caused by violations of environmental legislation, form the main revenue base for the funds (see chapter 1 for the review of the environmental tax distribution across budgets and funds) (Parliament, 1991^[47]).

The legal basis for the functioning of the state and local environmental funds has undergone significant transformations since 1991 (see e.g., (OECD, 2006^[48]). Currently, environmental funds form part of special funds of the respective state or local budgets. Environmental funds can be used only to finance the implementation of environmental measures, including protection from the harmful effects of water in rural settlements and agricultural lands, resource-saving measures, including research in this area, maintaining the state cadastre of territories and objects of nature reserves, and measures to reduce environmental pollution and compliance with environmental standards, to reduce the impact of environmental pollution on public health (Cabinet of Ministers, 1998^[8]), (Parliament, 1991^[47]).

For example, resources of the State Environmental Fund are particularly used to finance the budget programme “Implementation of Environmental Protection Measures” (code 2701270) following procedures for funds allocation specified in the Cabinet of Ministers Resolution No. 163 of 28 February 2011 and Order of the Ministry of Ecology and Natural Resources No. 194 of 12 June 2015.

In particular, Resolution No. 163 states that budget resources are allocated to finance measures in line with the environmental protection plan taking into account the list of environmental protection measures listed in the Cabinet of Ministers Resolution No 1 147. In turn, an environmental protection plan is developed taking into account the following criteria:

- funds of the general fund of the state budget are directed exclusively to environmental protection measures carried out on state-owned objects
- readiness of the environmental measure at the time of request
- environmental effect
- the calendar plan of implementation is from one to three years

- available documentation for construction projects.¹⁵

An Order of the Ministry of Ecology and Natural Resources No. 194 further elaborates the procedures for the preparation of the environmental plan. First, entities interested in the funding of environmental measures under the budget programme 2701270 are required to formally submit a request to the Ministry along with a package of supporting documentation (including cost estimates and “environmental conclusions” issued by the structural unit on environmental protection of regional state administrations). Requests are allowed to be submitted from 1 January to 15 November of a given year. As a next stage, a preliminary analysis (eligibility screening) of the requests is carried out (completeness and correctness of the package of documents) by the Ministry within 30 working days and can be returned to the applicant for refinement. The Ministry receives about a thousand such requests in one year and many applications are of low quality. If the package of required documents is complete and prepared correctly, the application form is then transferred to the respective department of the Ministry (depending on the environmental domain of the proposed measure), which assesses compliance with the list of environmental protection measures under Resolution No. 1 147, selects measures according to criteria and prepares a proposal for their inclusion into the environmental plan.

Priority is given to those measures, which are envisioned by the laws of Ukraine, acts and instructions of the President and the Cabinet of Ministers and aimed at prevention, reduction and elimination of environmental pollution.

At the subsequent step, the Ministry’s Department of Environmental Protection Financing consolidates all proposals and submits them for consideration of the working group (list of members and functioning procedures are approved by the Ministry), which conducts pre-selection of measures based on the above-mentioned criteria. After taking into account the recommendation of the working group, responsible departments of the Ministry prepare final proposals for the environmental plan, which is approved by the Ministry of Environment and Natural Resources in agreement with the Ministry of Finance.

Budget funding of environmental protection measures

State budget outlays on environmental protection measures

Over the period of 2010-20, state budget outlays on environmental protection measures gradually increased (Figure 3.1).¹⁶ From 2010 to 2013, state budget funding of environmental programmes almost doubled reaching UAH 4.3 billion in 2013, which is largely explained by the record-high spending on the GHG emissions reduction programme funded by the proceeds from the sale of Ukraine’s Assigned Amount Units provided for in Article 17 of the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) (Table A A. 1 and Table A D.1).

In 2014, funding of environmental measures dropped to less than UAH 2 billion due to the economic crisis and budget spending cuts as a result of Russia’s hybrid war, annexation of Crimea and partial occupation of the Donbas region. Since then, state budget funding of environmental measures increased and expanded to almost UAH 5 billion in 2019. Environmental expenditures also decreased in 2020 when the government cut funding for environmental programmes to mobilise resources to fight the COVID-19

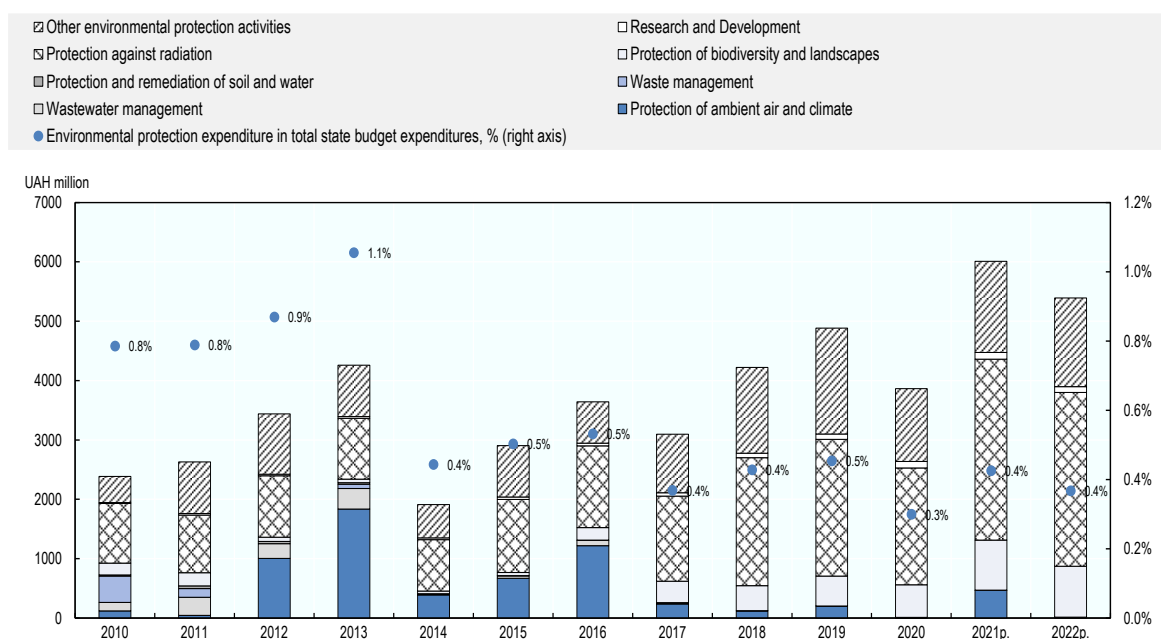
¹⁵ However, the procedures for the allocation of specific scores per each criterion are not defined and it is not clear how cost-effectiveness is assessed. Further, both Resolution No. 163 and Order No. 194 use the term “environmental protection effect” but a definition is not provided. The form “environmental conclusions” requires filling in “expected qualitative and (or) quantitative indicators of the environmental effect, particularly in a given year of funding environmental measure” but no specific requirements for indicators are stated.

¹⁶ The figure present state budget expenditure on environmental protection measures classified according to CEPA over the period from 2010 to 2020 based on actual spending and planned outlays in the 2021 and 2022 budgets.

pandemic and address its socio-economic impacts. In the 2021 budget, a record UAH 6 billion was planned for environmental programmes. However, it is not yet clear to what extent these resources were allocated.

The share of environmental protection measures in the total state budget expenditure never exceeded 1% except for 2013. In recent years state budget outlays on environmental protection measures have not exceeded 0.5%.

Figure 3.1. State budget expenditure on environmental protection measures, 2010-2022, UAH mln



Note: p. – provisional data.

Source: Prepared based on the reports of the State (State Treasury Service of Ukraine, 2021^[6]) and Draft Law on the State Budget of Ukraine for 2022 (Parliament, 2021^[49]).

Expenditure for the protection against particle radiation

About half of the state budget environmental expenditure falls in the CEPA 7 category of “Protection against particle radiation”, which covered eight budget programmes over the examined period. In 2020, budget outlays were allocated under the three major long-term programmes (Table A D. 1) In particular, more than UAH 1.2 billion was provided from the general fund of the state budget to finance the programme “Maintenance in a safe condition of power units and the Shelter facility and measures on preparation for the decommissioning of the Chornobyl NPP” (budget code 2708120). In 2021 and 2022 state budgets of about UAH 1.4 billion are planned to be allocated for this programme. In line with the state programme approved back in 2009, budget resources are mostly spent on activities to maintain in safe conditions power units of the Chornobyl NPP, spent nuclear fuel storage and radioactive waste storage facilities, decommissioning and partial dismantling of separate systems and elements of power units (Ministry of Environmental Protection and Natural Resources, 2021^[50]).

In 2020, considerable funding from the state budget (largely general fund) was also allocated under the programme “Maintenance of environmentally safe conditions in the exclusion and unconditional (compulsory) resettlement zones” (code 2708110) to finance measures aimed to reduce the removal of radionuclides from the territory of the exclusion and resettlement zones, collection, transportation and storage and disposal of radioactive waste, radiation and dosimetry control, support the operation of the Chornobyl Radiation and Ecological Reserve, protection of the territory of exclusion zones and

unconditional resettlement. At the same time, more than half of the resources are spent on the exploitation of infrastructure sites, whose environmental function is unclear (Ministry of Environmental Protection and Natural Resources, 2020^[51]).

Another large budget programme was “Execution of works in the field of radioactive waste management of the non-nuclear cycle, construction of the “Vector” complex and operation of its facilities” under code 2708090. The objective of this budget programme is to implement the state policy in the field of radioactive waste management, aimed at protecting the environment, life and health from the effects of ionising radiation, as well as eliminating radiation accidents. It is funded out of resources of the State Fund for the Radioactive Waste Management, which is fed with revenue raised by the environmental tax levied on the generation of radioactive waste (including already accumulated) and/or temporary storage of radioactive waste by its producers beyond the period established by special conditions of licences.

In 2020, UAH 307 million was allocated under this programme to the operation of infrastructure facilities of specialised enterprises for radioactive waste management, development and construction of the complex “Vector” for long-term storage of spent nuclear fuel (State Treasury Service of Ukraine, 2021^[6]), (Ministry of Environmental Protection and Natural Resources, 2020^[52]). Over UAH one billion was planned in the 2021 and 2022 budgets. The State Agency on Exclusion Zone Management under the Ministry of Environmental Protection and Natural Resources is responsible for the administration of the three above-mentioned programmes.

Before 2018, budget funds were also spent on activities for restoring safe conditions on uranium facilities and former production sites. In the 2021 state budget, about UAH 150 million was planned on two state investment programmes related to the implementation of the second launching complex of the New safe confinement and reconstruction of the Shelter site and establishment of a comprehensive system for the treatment of radioactive materials (State Treasury Service, 2021^[53]).

Expenditure under other environmental protection measures

About a third (UAH 1.2 billion in 2020) of the state budget environmental outlays fall in the category “Other environmental protection activities”. It covers administrative costs of the Ministry of Environmental Protection and Natural Resources as well as agencies subordinated to it and training in the field of environment and natural resources accounting for 38% and 3%, respectively. It also encompasses funding of the hydrometeorological activity under the State Emergency Service (budget code 1006060), which is subordinated to the Ministry of Internal Affairs. This programme is included as environmental protection expenditure as state hydrometeorological organisations perform an important function of undertaking basic environmental monitoring (Ministry of Internal Affairs, 2020^[54]). In 2020, about 4% of resources in this group were allocated within the budget programme “Implementation of environmental protection measures”, which is discussed below in more detail. However, previously it accounted for a much larger share, for example, 36% in 2018. Over the examined period, several *ad hoc* programmes fall into this group such as e.g., implementation of priority environmental measures in Dniprodzerzhynsk (currently Kamianske), financial support for environmental activities, including through the mechanism of cheaper loans from commercial banks, development of e-government in the field of environment and natural resources, transfers to local budgets (Table A D.1 for a complete list).

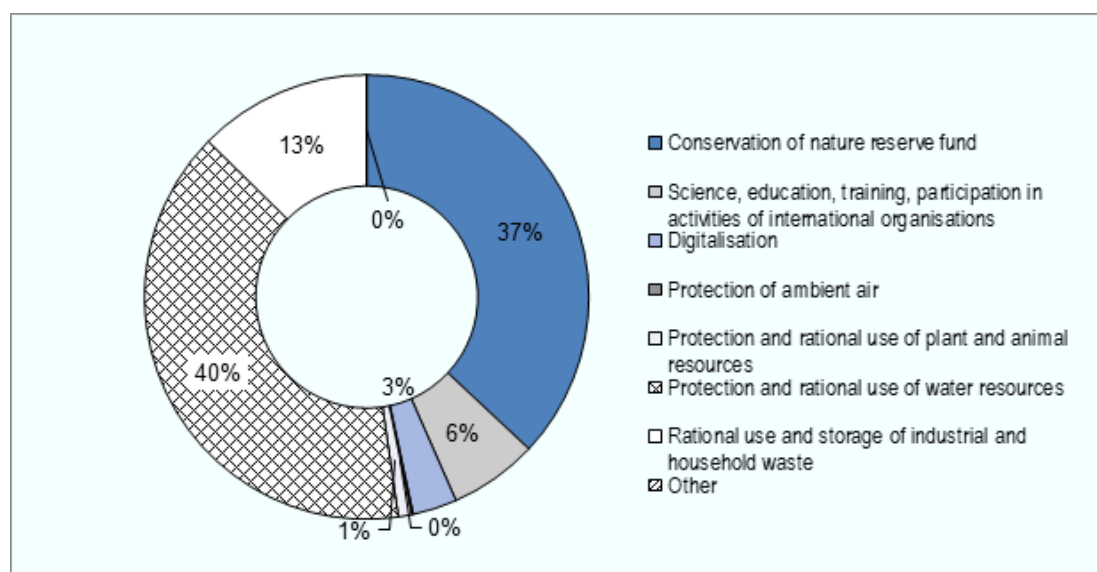
The budget programme “Implementation of environmental protection measures” aims to improve the state of the environment and ensure rational use of natural resources. In 2018, about UAH 643 billion were planned to be allocated both from the general and special funds of the state budget. However, only UAH 522 million were spent on this, which is still the largest amount over the examined period (State Treasury Service of Ukraine, 2021^[6]).

As detailed information on funds allocation to specific measures is unavailable. Figure 3.2 illustrates the planned distribution of budget resources under this programme in 2018. The largest amount of funding was planned to be allocated to the measures on the protection and rational use of water resources and

conservation of the nature reserve fund – about 40% each. About 13% of the programme resources were planned for measures related to rational use and storage of industrial and household waste and 6% on activities related to research, education and training, while on measures related to the protection of ambient air – just UAH 750 thousand. The “passport” of the budget programme listed 44 measures such as the purchase of premises, equipment and transport for protected areas, procurement of laboratory equipment, membership fees to international organisations and funding business trips of delegations, construction of objects for wastewater treatment and household waste landfills, equipment for collection, recycling and storage of waste, development of documentation and methodologies for air quality monitoring, support for research projects (Ministry of Ecology and Natural Resources, 2018^[55]). Several measures funded under this programme were in line with the Cabinet of Ministers Resolution (1996^[56]) No 1 147 but are not considered as environmental protection measures under the CEPA classification. Specifically, this refers to landscaping projects such as the reconstruction of the central walkway and construction of the cascade of waterfalls in the dendrological park “Sofiivka” with a total cost of about UAH 116 million in 2018.

Construction of various objects and hydraulic structures in dendrological parks, zoos and protected areas are envisioned under Resolution No 1 147 while it is clearly stated in the Eurostat (2020^[45]) technical notes that CEPA excludes support for “zoos, recreational structures and spaces such as urban parks and gardens”. Further, it should be noted that a number of measures, particularly, supporting protected areas and research projects, are duplicating the scope of other budget programmes.

Figure 3.2. Distribution of planned budget funding under the “Implementation of environmental protection measures” programme in 2018



Source: Prepared based on the passport of the budget programme (Ministry of Ecology and Natural Resources, 2018^[55]).

In 2019, budget outlays on this programme dropped to UAH 158 million. In 2020, a particularly low amount of UAH 52 million was provided from the special fund, which is less than 50% of planned spending, due to deficiencies and delays in administrative procedures. In particular, support was provided to nature-protected areas (reconstruction of buildings and procurement of transport for firefighting measures), purchase of devices and equipment for the State Environmental Inspection, conducting events and payment of membership fees to international organisations (Ministry of Environmental Protection and Natural Resources, 2021^[57]). In the 2021 and 2022 budgets funding for this programme is planned at UAH 166 million and UAH 129 million, respectively, for similar activities as in 2020 (State Treasury Service of Ukraine, 2021^[6]).

Expenditure for the protection of biodiversity and landscapes

Budget programmes in the category “Protection of biodiversity and landscapes” accounted for over 14% of environmental outlays in 2020. It covered seven budget programmes over the examined period, three of which remain operational. The largest budget programme is the “Conservation of nature fund” (code 2701160), which accounted for almost 80% of expenditure in this group in 2020. It aims to ensure the conservation and expansion of protected areas and is administered by the Ministry of Environmental Protection and Natural Resources. Over the period 2016-2020, budget outlays on this programme increased almost three times from UAH 156 million to UAH 435 million, respectively, and are planned to be increased further to over UAH 660 million in 2021 and 2022. Budget resources are allocated both from general and special funds of the state budget and cover basic costs of 46 nature-protected areas such as staff, utilities, etc. The “passport” of the budget programme provides such performance indicators as the number of preserved plant and animal species listed in the Red Book of Ukraine, expansion of the territory of protected areas and efficiency indicator – average maintenance cost per 1 hectare of protected areas (Ministry of Environmental Protection and Natural Resources, 2021^[58]).

Outlays under the budget programme “Conservation of nature fund in the national nature parks and reserves” (code 301140) increased more than twice since 2016 amounting to UAH 84 million in 2020 and expected to grow further by approximately UAH 140 million in 2021 and 2022 (Parliament, 2021^[49]), (State Treasury Service of Ukraine, 2021^[6]). According to the passport of the budget programme, its objective is “*conservation, reproduction and effective use of natural complexes and objects that have special environmental, health, historical and cultural, scientific, educational and aesthetic value*” and the task “*Protection, rational use and reproduction of flora and fauna*”. At the same time, the state policy target of this programme is formulated as follows: “*ensuring organisational, economic, financial and other conditions for the functioning of the President of Ukraine, the Office of the President of Ukraine and other advisory, consultative and subsidiary bodies and services established by the President of Ukraine*” (State Management of Affairs, 2020^[59]). Thus, there is a clear discrepancy between the title of the programme, its objective and task and the purpose of the state policy it should serve.

Budget programme 301140 envisions funding of 4 national nature parks (Azov-Sivaskyi, Biloozerskyi, Zalisskyi, and Syniohirskyi), which previously officially served as presidential residences and hunting sites. The programme is administered by the State Management of Affairs under the President of Ukraine. In 2009, three national parks were formally established by presidential decrees. Despite the recommendation of the Parliamentary Committee on Environmental Policy to complete the reorganisation of the presidential residences into national parks and to transfer them under the responsibility of the Ministry of Environmental Protection and Natural Resources back in 2014, this has not happened until now. In fact, the State Management of Affairs is spending budget resources for the maintenance and repair of various facilities of presidential residences (EPL, 2017^[60]), (State Management of Affairs, 2020^[59]). It is not clear to what extent this spending serves environmental objectives. Notably, the average maintenance cost per 1 hectare (UAH 667) of the national park is more than twice higher than under budget programme 2701160.

A separate budget programme is used for financing biodiversity conservation and maintenance of the zoo and dendrological park in the Askania-Nova Biosphere Reserve (code 6591100), which is administered by the National Academy of Agrarian Sciences. In 2020, it received about UAH 30 million from general and special funds of the state budget and the average maintenance cost per 1 hectare amounted to approximately UAH 659 (National Academy of Agrarian Sciences, 2020^[61]).

Expenditure for research and development

Category “**Research and Development**” accounted for about 3% (UAH 107 million) of environmental expenditure in 2020. It has covered three budget programmes related to research and development in the field of environmental protection and natural resources, hydrometeorology and scientific support of work and information systems on liquidation of consequences of the Chernobyl catastrophe up until 2015.

Expenditure that falls under other CEPA categories of environmental protection expenditure

Over the examined period, very few budget resources were allocated to measures that fall in other CEPA categories of environmental protection expenditure (Table A D.1 for a complete list of identified programmes) while no measures were identified in the CEPA 5 category “**Noise and vibration abatement**”.

In particular, the CEPA 1 category “**Protection of ambient air and climate**” encompasses three budget programmes. The largest programme in this category is “State support for measures aimed at GHG emissions reduction (increasing absorption), including buildings insulation of social services facilities, development of international cooperation on climate change”, which is funded by the proceeds from the sale of Ukraine’s Assigned Amount Units provided for in Article 17 of the Kyoto Protocol to the UNFCCC. In 2020, about UAH 32 million was planned to be allocated under this programme for the project on capital repair and insulation of social infrastructure buildings. However, the passport of the budget programme was approved only on 30 December 2020 and implementation of projects and payment was transferred to 2021 (Ministry of Environmental Protection and Natural Resources, 2021^[62]). Two other budget programmes in this category refer to “Improvement of air quality” (UAH 2 million were provided only in 2010) and the operation of the National Centre for GHG Emissions.

Category CEPA 2 “**Wastewater management**” covered 12 budget programmes over the examined period but no funding has been provided to the respective programmes since 2018.

Three budget programmes related to waste and hazardous chemicals and elimination of the environmental emergencies related to hazardous waste fall in the category CEPA 3 “**Waste management**”. No measures in this category have been funded since 2016.

Category CEPA 4 “**Protection and remediation of soil and water**” covered two relevant budget programmes, one of which is operational. In particular, from UAH million 3 to UAH 8 million are allocated from the budget annually to finance liquidation and environmental rehabilitation of the territory of influence of mining works of the state enterprise “Solotvynsky salt mine” of the Tyachiv district of the Zakarpattia region (code 1201080). Prior to 2015, budget resources were also spent on the restructuring and liquidation of sites of mining chemistry enterprises and implementation of urgent environmental protection measures in the area of their activity, as well as restructuring of enterprises for underground iron ore mining (code 1201470).

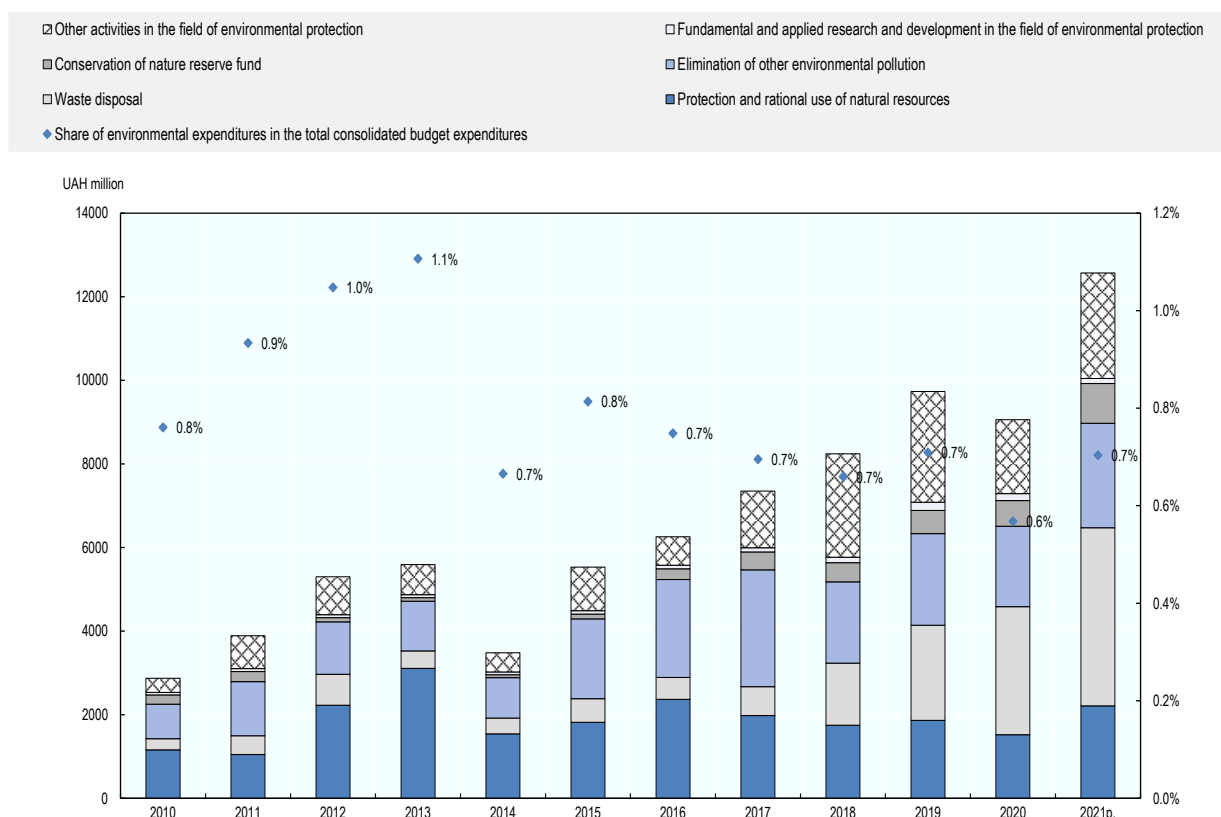
Consolidated budget outlays on environmental protection measures

The consolidated budget is comprised of state and local budgets. Unlike the state budget, for which detailed programme classification of budget spending is available, data on the execution of the consolidated budget is only available in the form of six functional classification subcategories which are defined by the Ministry of Finance under the environmental protection function. Supporting documentation to the draft law on the 2022 budget provides a comparison table showing which budget programmes of the state budget fall under which functional categories of the consolidated budget (Table A F.1).

Environmental protection expenditure in the consolidated budget

Figure 3.3 illustrates that environmental protection expenditure in the consolidated budget increased from UAH 5.6 billion in 2013 to UAH 9.1 billion in 2020 accounting for 0.6%-1.1% of total expenditure. However, it decreases by about 29% if outlays on budget programmes without clear environmental functions (UAH 2.6 billion in 2020), explained further below, are deducted. In this case, the share of environmental expenditures in the total consolidated budget expenditures decreases to 0.4% as of 2020.

Figure 3.3. Expenditure on environmental protection measures in the consolidated budget by functional budget classification, 2010-2021, UAH mln



Note: p. – provisional data.

Source: Prepared based on the reports of the (State Treasury Service of Ukraine, 2021_[6])

In addition to state budget programmes discussed in the above section, the Ministry of Finance also includes four other programmes under the environmental protection function. However, they are either not considered as environmental protection measures under CEPA and/or environmental objectives are unclear or missing. In particular, the budget programme “Protection against floods of rural settlements and agricultural lands, including in the basin of the Tysa River in the Zakarpattia region” (code 2707070) is out of the scope of CEPA as measures related to extreme weather events such as storms, heat waves, droughts, floods, and protection of settlements against natural hazards are excluded.

Administered by the Ministry of Defence budget programme “Utilisation of ammunition, liquid components of the rocket fuel, armaments, military equipment and other military property, ensuring the explosion and fire safety of arsenals, bases and warehouses of the Armed Forces of Ukraine” (code 2101210) aims to prevent man-made disasters in the storages of missiles, ammunition and components of liquid rocket fuel (Ministry of Defence, 2020_[63]). In 2020, approximately UAH 2.5 billion under this programme were spent on the disposal of unusable and redundant ammunition, liquid components of the rocket fuel, weapons, military equipment and other military property, protection and defence of bases, warehouses and arsenals (Ministry of Defence, 2020_[63]), (State Treasury Service of Ukraine, 2021_[6]). The environmental function of this programme is not elaborated in its passport and it is not clear whether the utilisation of ammunition is done in an environmentally safe way.

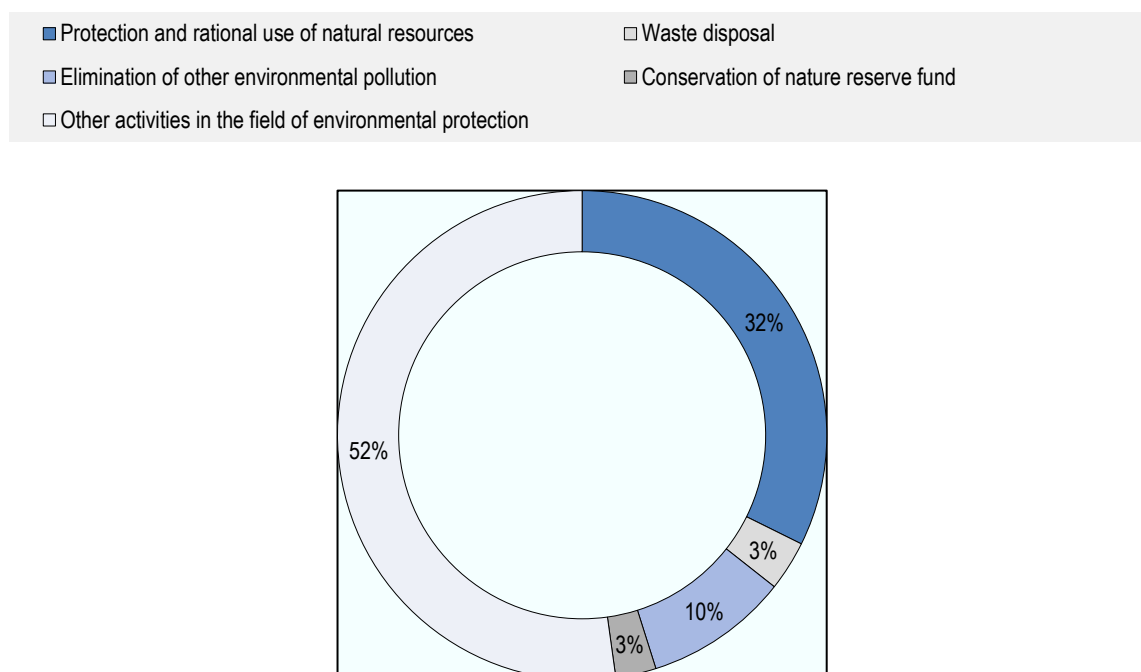
The “passport” of the budget programme “Utilisation of solid rocket fuel” (code 6381120), administered by the State Space Agency, is not available in the public domain and the rationale for including it among environmental programmes is unclear.

Administered by the State Agency on Exclusion Zone Management, the budget programme “Conservation of the ethnocultural heritage of the regions affected by the Chernobyl disaster” (code 2708080) aims to provide scientific support for minimising the consequences of the Chernobyl disaster and preserve the ethnocultural heritage of Polissia region. In 2020, about UAH 7.6 million was allocated under this programme largely to finance the establishment of the information system and functioning of the State Research Centre for the Protection of Cultural Heritage from Man-Made Disasters (Ministry of Environmental Protection and Natural Resources, 2021^[64]). Although the activities of this budget programme are concentrated in the Chernobyl area, it does not serve any environmental function. Thus, classifying it under the cultural function of the state budget would be more appropriate.

Environmental protection expenditure in the local budget

The State Treasury Service (2021^[53]) provides aggregated data on environmental protection expenditure in the local budget of all administrative levels following the functional classification of budget expenditure. In 2020, total environmental expenditure of local budgets accounted for 27% of consolidated budget expenditure (38% if environmental programmes without clear environmental purpose are deducted). Figure 3.4 illustrates that about a third of environmental protection expenditure at the local level falls in the category “protection and rational use of natural resources”, waste disposal and nature conservation account for 3% each while the share of “elimination of other environmental pollution” is 10%. At the same time, the category “Other activities in the field of environmental protection” accounts for more than 50% of environmental expenditure at the local level. Information on particular budget programmes is available in budget documentation of respective administrative units, whose detailed analysis is out of the scope of this study.

Figure 3.4. Environmental protection expenditure of local budget by functional budget classification in 2020



Source: Prepared based on the reports of the State Treasury Service (2021^[5]).

Key deficiencies of public environmental protection expenditure management

Building on data analysis of environmental expenditure as well as other studies and interviews with key stakeholders (see list of experts interviewed and consulted in Annex G), key deficiencies of the current system of public environmental expenditure are discussed below.

Low effectiveness

Most experts interviewed noted that the effectiveness of budget funding for environmental protection measures is rather low. This conclusion is also supported by the findings of the Ukraine's Accounting Chamber (2019^[65]), (2020^[66]) and State Audit Service (2020^[67]) in their audits of budget programmes.¹⁷

Over the last five years, the Chamber audited several budget programmes in the environmental domain and came to similar conclusions. In 2019, the Accounting Chamber audited budget spending under the programme "Execution of works in the field of radioactive waste management of the non-nuclear cycle, construction of the "Vector" complex and operation of its facilities" over the period 2017-18. According to Article 20 of the Budget Code, the state agency responsible for the execution of particular budget programme is required to ensure the effective use of budget resources allocated to budget programmes. However, the audit revealed that budget funding use was ineffective due to untimely management decisions and low effectiveness of internal control of the Ministry of Environmental Protection and Natural Resources and the State Agency on Exclusion Zone Management as well as legislative deficiencies. In particular, key results were not achieved, and implementation of the Strategy for Radioactive Waste Management has been delayed by seven years. The Accounting Chamber also found that about 50% of analytical and technical reports and project documentation funded from the state budget funds did not find further implementation and were not used by specialised enterprises on radioactive waste management, which commissioned them (Accounting Chamber, 2019^[65]).

In 2020, the State Audit Service conducted a state financial audit of seven budget programmes administered by the former Ministry of Energy and Environmental Protection (currently Ministry of Environmental Protection and Natural Resources) from 2018 to 2019 and concluded that the mechanism of using resources of the State Environmental Protection Fund did not support the effective implementation of state environmental policy, fulfilment of objectives and tasks of the Strategy of the State Environmental Policy.

The State Audit Service also revealed several systematic problems such as the allocation of funds for measures with no environmental effect with a total value of UAH 96.7 million (e.g., construction of the pathways and central walkway in the dendrological park "Sofiivka") while measures with explicit environmental effect were funded only partially or not financed at all. Allocation of funds under the budget programme "Implementation of environmental protection measures" focused on the strengthening of material and technical base of nature-protected areas and other institutions subordinated to the Ministry of Environmental Protection and Natural Resources rather than prioritising measures aimed at prevention and elimination of environmental pollution. The State Audit Service argued that such measures could be funded under the budget programmes specifically dedicated to the maintenance of such institutions.

¹⁷ The Accounting Chamber, on behalf of the Parliament, controls the receipt of funds in the State Budget of Ukraine and their use by carrying out a public external financial audit. It applies basic principles of the International Organization of Supreme Audit Institutions (INTOSAI), the European Organization of Supreme Audit Institutions (EUROSAI) and the International Standards of Supreme Audit Institutions (ISSAI) in part that does not contradict the Constitution and laws of Ukraine (Accounting Chamber, 2019^[25]). The State Audit Service is responsible for the execution of state financial control aimed at assessing the effectiveness of targeted use of public financial resources and achieving budget savings. This objective is pursued by conducting inspections, procurement monitoring and checks and public financial audits (State Audit Service, 2020^[71]).

Overall, experts of the State Audit Service (2020^[67]) concluded that the Ministry did not ensure the effective use of public funds of a total value of UAH 350.7 million.

Imperfect procedures for funding

Various other deficiencies in the current procedures for funding environmental measures were noted by interviewed experts, highlighted in the reports of the Accounting Chamber and State Audit Service and other analytical publications. For example, the International Charity Organization “Environment-People-Law” criticised the criteria for selecting projects (Ministry of Ecology and Natural Resources, 2015^[68]) and the list of environmental measures provided in the Resolution of the Cabinet of Ministers № 1 147 which was considered very broad that it can accommodate almost any measure if formulated in the right way even though it may result in undesired environmental consequences. Experts also noted that the selection of projects was untransparent as applications are not published online and there is no access to the meeting of the working group selecting projects (Voytsyhovska A., Norenko K., Testov P., 2018^[69]).

Protracted administrative procedures and decision-making processes result in a situation when available resources are often not fully used. Funding of selected measures is often cancelled if all procedures could not be completed by the end of the year. For example, State Audit Service (2020^[67]) reported that about 40% of planned funding under the programme 2401270 (currently 2701270) was not used and thus had to be returned to the state budget. In 2020, out of 47 measures planned under the programme “Implementation of environmental protection measures” (budget code 2701270), only 7 measures were fully completed, 17 measures were not implemented due to lack of time for conducting open tenders, 13 measures were not performed due to non-completion of works under the contract between the customer and the developer, 10 measures were implemented only in part due to the short deadlines for full completion of work, inability to comply with technological requirements in the winter season (Ministry of Environmental Protection and Natural Resources, 2021^[58]) (Ministry of Environmental Protection and Natural Resources, 2021d). Kuznetsov (2021^[70]) noted that the Ministry of Environmental Protection and Natural Resources has never met planned indicators of budget spending over the period 2016-2020.

Time limitation of the procedures

Another reason for the low effectiveness of the budget programme “Implementation of environmental protection measures” was that allocation of funding and implementation of measures need to fit in one year in line with general budgeting procedures, which is hardly possible in many cases (see e.g., (State Audit Service, 2020^[71]), (Voytsyhovska A., Norenko K., Testov P., 2018^[69])). In reality, the approval process takes months and decisions are often made closer to the end of the financial year making it very challenging to spend planned funds in line with all procurement procedures. At the same time, Order No. 194 does not set marginal terms for approval of the plan of environmental protection measures. Furthermore, certain projects (e.g., construction, repair or reconstruction of water treatment facilities, collectors or sewage systems) require systematic financing over several years to make sure that the project is fully implemented (Voytsyhovska A., Norenko K., Testov P., 2018^[69]). However, current procedures under this budget programme do not guarantee that a given project will receive funding for the whole implementation period.

Another example was the poor execution of measures under the budget programme “Implementation of measures on priorities for the development of environmental protection” (code 2701500). To support the implementation of the Strategy of the State Environmental Policy of Ukraine for the period up to 2020, an agreement between the government of Ukraine and the EU was signed in 2010. Grant resources provided to the government of Ukraine were to be spent under the budget programme 2701500. The long-lasting process of the budget programme approval left not much time for actual implementation. Thus, many measures could not be implemented in 2018 and 2019. Although the EU grant was initially planned for the

period of 5 years, even in the 10 years available resources were not fully used (State Audit Service, 2020_[67]).

Limited institutional capacity at the national and local level

Limited institutional capacity for managing environmental funds both at the central and local levels is also a major challenge to a better use of existing funds. The Ministry of Environmental Protection and Natural Resources is considerably understaffed (308 employees as of 1 June 2022), and all civil servants are very overloaded with operational tasks especially related to international commitments and harmonisation of environmental legislation with the EU *acquis*. The Ministry does not consider it possible to strengthen institutional capacity for the management of environmental funds without increasing the number of employees. However, the government is pursuing a target of decreasing the number of civil servants. Thus, an increase in the number of employees at the Ministry of Environmental Protection would not be supported unless a strong case is put forward.

At the local level, restructuring of environmental bodies has resulted in a situation where very few environmental specialists are available to develop and implement environmentally sound measures. Previously, Regional State Administrations had the responsibility to do an initial assessment of the package of materials for the state funding under the programme “Implementation of environmental protection measures” before such materials were submitted for consideration by the Ministry. Currently, regional authorities are responsible for the preparation of the form “environmental conclusions” (see section Legal and institutional setup for more details) and do a rather superficial analysis of the materials. As a result, the Ministry receives over a thousand application forms that they have to assess which is a lot of work for responsible departments.

Interviewed experts and available studies point out similar problems at the local level as at the state level related to the misuse of funds designated for environmental purposes, deficiencies and inefficiency in procedures. EPL (2018_[72]) provided a range of examples when resources of local environmental funds were spent on a project with limited or no environmental effect and even on environmentally harmful activities in some cases.

Weak monitoring and assessment system

According to Cabinet of Ministers Resolution No. 1 062 of 12 December 2018, the Ministry of Environmental Protection and Natural Resources must carry out internal control over the use of budget funds on the state programmes it is responsible for. The Ministry has a Department of Planning and Implementation of the State Budget and also a Department of Internal Audit in its structure. However, no information is available in the public domain to what extent and how often the Ministry performs an audit of budget spending. Accounting Chamber (2020_[66]) concluded in its audit report that internal control of planning and use of budget funding of the Ministry of Environmental Protection and Natural Resources as well as its subsidiary agencies is rather weak.

Although “environmental effect” is listed among the criteria that need to be fulfilled to get funding under the budget programme “Implementation of environmental protection measures” (see the section on the Legal and institutional setup), *ex-ante* and *ex-post* monitoring is not carried out to assess to what extent implemented measure resulted in the improvement of environmental quality. This leads to cases when measures that can have a positive environmental impact implemented in a way that achieved improvements are levelled off soon after implementation. For example, such measures as clearing riverbeds can improve flowability and decrease silting of the river if implemented in the right way and can be completely ineffective if the wrong approach is applied (Voytsyhovska A., Norenko K., Testov P., 2018_[69]).

Further, the effectiveness' assessment of budget programmes is often hampered by a rather formal system of quantitative indicators such as the number of procured equipment, developed documentation and studies (e.g., the programme "Implementation of environmental protection measures") that does not allow to assess the extent to which budget funding has contributed to the improvement of air and water quality, or biodiversity conservation. *Ex-post* implementation monitoring of the effectiveness of procured services and equipment is not carried out, thus it is not known whether budget-funded technical studies, methodologies and equipment were used and in how this helped the achievement of environmental objectives. For example, State Audit Service (2020^[67]) found that 85% of laboratory equipment purchased by the Ukrainian Scientific Research Institute of Environmental Problems out of the state budget funds back in 2018 was not used as of 2020 due to the delay in the accreditation of laboratory for measuring contamination of water with oil products. It also concluded that the current system of budget planning under the programme "Implementation of environmental protection measures" does not allow estimating achieved environmental effects as a result of budget funded measures.

Ukraine's Accounting Chamber (2020^[66]) reported cases of violation of legislative requirements on the development of budget programmes specifically Law "On State Target Programmes" (Parliament, 2004^[46]) and the Ministry of Finance (2010^[73]) Order No. 1 536 "On the performance Indicators of the Budget Programme". In particular, performance indicators of the budget programme need to be aligned with programmes and strategic documents, objectives of public policy in the relevant field of activity, and whose development/implementation is the responsibility of the budget programme administrator. In its audit report of the budget programme "Maintenance in a safe condition of power units and the Shelter facility and measures on preparation for the decommissioning of the Chernobyl NPP" for the period 2018-19, the Accounting Chamber (2020^[66]) highlights that none of the indicators of the budget programme allows measuring the achievement of the objective and completion of tasks, which violates provisions of the Ministry of Finance (2010^[73]) Order No. 1536. Thus, the link between the short-term indicators (in most cases related to the procurement of services and equipment, development of technical studies and reports) provided in the "passports" of budget programmes and long-term environmental policy objectives is often missing.

The mismatch between policy ambitions and budget funding

Since signing the EU-Ukraine Association Agreement in 2014, the government has voluntarily accepted demanding environmental obligations on implementation of the EU environmental *acquis* comprising of 35 EU directives and covering environmental policy, air and water quality, waste management, industrial pollution and hazards, nature protection, the use of genetically modified organisms in agriculture, and climate change. Transposition of these directives into the national law of Ukraine is planned to be completed within 10 years while technical implementation to ensure compliance with new standards and regulations will require billions of investments and may take decades (CEPS and IER, 2018^[74]).

However, these commitments and ambitions are not reflected in the state budget. Clearly, the achievement of these environmental policy targets should be financed predominantly through private funds while the state should provide incentives to stimulate the implementation of environmental measures by businesses and households. Budget funds are always limited and must be spent in the most cost-effective way possible on policies and measures, which could not be implemented without state funding, for example, the development of environmental monitoring system or big green investment projects that the private sector alone will never be interested to finance. Though a careful analysis needs to be performed to back up the decision on what measures need to be funded from the budget and what not.

Over the period of 2016-2021, eight new strategic documents in the environmental domain were approved (Betlii, 2022^[75]). In most cases, state and local budgets as well as international technical assistance are named as key sources of funding for the implementation of strategies and plans. However, tasks and responsibilities are distributed among responsible agencies and are expected to be done within existing

budget programmes and funding. Overall, out of twelve policy priorities of the Ministry of Environmental Protection and Natural Resources for 2020-24 (see Box 3.2) only three (climate change mitigation, biodiversity conservation and nuclear safety) are explicitly supported with budget funds.

Though there are issues with inefficiency and low effectiveness of environmental spending discussed in the previous section, most experts noted that environmental programmes are considerably underfunded and often financed on a residual basis. Auditors of the State Audit Service (2020^[67]) and Accounting Chamber (2018^[25]) reached similar conclusions. Insufficient funding from state and local budgets for environmental measures and funding for such measures on a residual basis were identified as the root causes of environmental problems in the Strategy of the State Environmental Policy of Ukraine for the period up to 2030 (Parliament, 2019^[32]). The current National Economic Strategy for the Period until 2030 also recognises that funding for environmental protection is insufficient, particularly, a system of state environmental monitoring (Cabinet of Ministers, 2021^[38]). Several examples of revealed cases are discussed below.

State Audit Service (2020^[67]) noted that nature-protected areas are constantly underfinanced. In particular, the audit revealed that the material and technical conditions of the protected area's institutions do not meet state standards as only 20% of their needs are covered, which undermines effective operation. Although the area of nature-protected territories expanded by 94.2 thousand ha in 2019, no additional funding was envisioned to ensure proper management and protection of new areas.

The Accounting Chamber conducted an audit of budget spending under the programme 1006060 “**Hydrometeorological activity**” back in 2018 and found out that development costs of the Ukrainian Hydrometeorological Centre were not funded at all from 2006 through 2015. The environment monitoring system was established 25-40 years ago. It is technically outdated and does not comply with air quality monitoring requirements of Directive № 2008/EC and Directive № 2004/107/EC relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air (Accounting Chamber, 2018^[25]).

Under the request of the State Emergency Service (2020^[76]), experts of the Finnish Meteorological Institute conducted an assessment of Ukraine's air quality monitoring system following the requirements of the EU legislation and concluded that the current system is very outdated and needs to be modernised completely including installation of automated monitoring posts equipped with gas analysers to determine polluting substances. The total cost of modernisation is estimated at EUR 25 million, which is comparable to annual budget outlays under programme 1006060 “**Hydrometeorological activity**”. However, the required funding was not allocated. Thus, critically important functions such as environmental monitoring are constantly underfinanced.

As a result of an audit of another budget programme, the Accounting Chamber (2019^[65]) proposed to amend the Budget Code and introduce provisions on the mandatory allocation of sufficient funds required for the implementation of the Strategy for Radioactive Waste Management and add radioactive waste management measures to the list of protected budget expenditures as underfinancing of this programme increases environmental risks for 10 million people living in large cities – Dnipro, Kyiv, Lviv, Odesa and Kharkiv.

Further, funding of environmental programmes is of a low priority for the government as these budget outlays are always cut in crisis years as illustrated in Figure 3.1. For example, the State Audit Service found that about UAH 443.8 million were reallocated from environmental programmes for other budget needs, particularly, in favour of the COVID-19 Fund and for payment of salaries to coal miners in 2020. Currently, environmental measures account for just 0.3% of the state budget in 2020, while 0.4% were envisioned in the 2021 and 2022 state budgets before 24 February 2022, when Russia started a fully-fledged war against Ukraine. As Ukraine's government had to revise the budget substantially in favour of

defence objectives and humanitarian needs, most likely¹⁸ budget expenditure on the environment was cut to a minimum to keep afloat state-funded organisations in the environmental sector.

¹⁸ Detailed information on budget spending is not available in the public domain since the beginning of Russia's invasion of Ukraine. The government restricted access to this information for security reasons.

Box 3.2. Priorities of the Ministry of Environmental Protection and Natural Resources for 2020-2024

- **Reduction and control of industrial pollution** including *inter alia* introduction of best available technologies, institutional reform of the State Environmental Inspection and digitalisation, the introduction of an adequate system of liability for violating environmental legislation
- **Waste management reform** including the development of the legislative and regulatory framework, adoption of the EU technical regulations and digitalisation
- **Climate change mitigation and adaptation** including the launch of Monitoring, Reporting and Verification (MRV) and emissions trading system, the establishment of the Climate Fund
- **Sustainable forest management** including the launch of the National Forest Inventory, combatting the illegal timber market, implementation of the forest prevention programme
- **Biodiversity conservation and the development of the protected areas** including *inter alia* development of the legislative base, implementation of the EU directives, harmonisation with international standards for Genetically modified organisms (GMO) management, conservation and restoration of wetlands and peatlands; reform of the national parks management and financial support
- **Sustainable management of freshwater resources and marine territories** including implementation of the European environmental assessment system of conditions/potential of river basins, the introduction of electronic accounting for the use of agricultural chemical compounds
- **Sustainable fishery** including implementation of the principles of the EU Common Fisheries Policy, the introduction of electronic control systems, simplification of procedures for aquaculture development
- **Strengthening control over illegal mining of subsoil resources** and increasing transparency in the sector
- **Nuclear safety and the development of the Chernobyl zone** including safe storage and management of spent nuclear fuel, ensuring radiation safety during the decommissioning of the Chernobyl Nuclear Power Plant, making Shelter sites environmentally safe
- **Environmental monitoring** including the development of the roadmap for reforming monitoring systems in line with the European standards, development of the air quality monitoring system, expansion of the network of surface water monitoring observations
- **Digital transformation** including the development of a single information and analytical platform of administrative services in the area of environmental protection, development of instruments for increasing transparency of processes
- **Public administration reform** including increasing transparency and effectiveness of environmental funds, strengthening dialogue and cooperation between the Ministry and local authorities

Source: Adopted from (Ministry of Environmental Protection and Natural Resources, 2020^[77]).

Options for reforming environmental expenditure

Drawing on interviews with key stakeholders, a review of audit reports and available studies (see Annex H), this section identifies key steps for the improvement of environmental effectiveness and efficiency of spending. It is suggested that in the short term, within 1-2 years, legislative and institutional changes should address most of the issues discussed in the previous section. In the medium term, the government can either follow the path of expanding and further strengthening the management of budget programmes under the current institutional and legal setup or consider the establishment of an Environmental Fund as an independent legal institution, which is advocated by many stakeholders. The revenue from environmental taxes can be earmarked within the regular budgetary process and used to capitalise the Fund. In this context, the two approaches are not necessarily mutually exclusive. The government can distinguish what policies and measures to finance through budget programmes managed by the Ministry and/or subordinated agencies and what categories of projects can be supported through the Environmental Fund.

Experience from other countries shows that Environmental Funds, which are financial instruments, should finance investment programmes, while policy making, development of legislative initiatives, research and development, equipment purchase, organisation of events, salary and administrative costs, monitoring and other similar activities should normally be financed by the regular state budget programmes of the Ministry. In any case, the process of identification, appraisal, selection and implementation of projects under these two financing channels are very different and will require different skills and capacities.

Improvement of current procedures for funds allocation and strengthening of institutional capacity

In order to launch and implement the comprehensive reform of environmental expenditure management the following steps are proposed:

Define priorities for budget funding. As resources of state and local budgets are always limited, the government and local authorities need to define priorities for budget funding in the short- and long-term, particularly, focusing on targets of the current Strategy of State Environmental Policy for the period up to 2030 and objectives of other strategic documents, which could not be achieved by administrative or other means (e.g., development of the environmental monitoring system). Considering the massive environmental damage¹⁹ of Russia's invasion of Ukraine, it is likely that restoration of degraded territories would be among the key environmental priorities for the government after the war.

Introduce explicit definitions of environmental protection and resource-saving measures. To avoid ambiguity and inaccurate interpretations, the Ministry of Environmental Protection and Natural Resources could initiate the introduction of the explicit definitions of environmental protection and resource management activities, which should be harmonised with CEPA and CReMA classifications, into key legislative acts in the environmental domain as well as "environmental effect" into secondary legislation.

Review of the Cabinet of Ministers Resolution No 1 147. Resolution of the Cabinet of Ministers No 1147 on the Approval of the List of Activities that Belong to Environmental Protection Measures should be reviewed to exclude measures with weak (e.g., landscaping projects of municipalities) or no environmental functions or even potentially harmful ones (e.g., construction of hydraulic structures) and harmonise it with the Classification of Environmental Protection Activities - CEPA (Box 3.1). Revised Resolution No. 1 147

¹⁹ (Ministry of Environmental Protection and Natural Resources, 2022^[87]) estimated environmental damage caused by Russia's aggression of UAH 962 billion as of 1 September 2022. The Ministry recorded around 2000 facts of environmental damage including pollution directly caused by hostilities, damage to forests and protected areas.

may be used to provide a broad framework of measures that can be considered as environmental at the national and local level. However, priorities for budget funding can be defined in strategic documents.

Review criteria for selecting projects. It will be important to review criteria listed in the Cabinet of Ministers Resolution No. 163 of 28 February 2011 and Order of the Ministry of Ecology and Natural Resources No. 194 of 12 June 2015 for selecting projects that get funding under the budget programme “Implementation of environmental protection measures” (code 2701270) following the principles of environmental effectiveness dimension of the Good Practices for Public Environmental Expenditure Management (OECD, 2006^[48]). Importantly, detailed eligibility, appraisal and selection criteria (including the system of ranking based on scores) should be elaborated for each type of project group (or project pipeline).

Review procedures for allocation of budget funds on environmental programmes. Review procedures for approval and allocation of funds for environmental programmes should also be reviewed and adjusted to avoid the hectic and inadequate disbursement of funds at the end of the year. In particular, this means that specific timelines need to be set for internal procedures at the Ministry to make sure that the passports of budget programmes as well as a plan of environmental protection measures are approved within a few months. Implementation of medium-term budgeting²⁰ at the state level could also support the planning of environmental expenditure.

Introduce regular monitoring of environmental expenditure programmes. Introduction of *ex-ante* and *ex-post* environmental monitoring should help to assess the extent to which the budget programme or a single measure has helped to improve environmental quality. It is also important to monitor whether achieved results are sustained and whether such outputs as developed methodologies and studies as well as purchased equipment are implemented in practice. Further, performance indicators of budget programmes in most cases need to be reviewed and aligned with strategic objectives and targets of the state public policy.

Increase institutional capacity for management of environmental expenditure. Improvement of staff capacity is also needed to strengthen the function of an internal audit and control over the effectiveness of budget spending on the programmes in the responsibility of the Ministry. This should be accompanied by strengthening the institutional capacity of environmental departments of regional administrations. For this purpose, the Ministry of Environmental Protection could prepare a portfolio of typical projects that can be funded by local environmental funds. The Ministry could also support the development of capacity-building programmes on effective management of environmental funds for local authorities. International technical assistance projects should be sought to support such capacity-building activities.

Increase transparency of budget funding of environmental programmes. The Ministry of Environmental Protection and Natural Resources should work to increase the transparency of budget funding and ensure online publication of all results (methodologies, technical and resources papers) whose development was funded from the budget. These steps will open up documentation to public scrutiny, which will stimulate better quality appraisal and improve the effectiveness of spending.

Review budget classifications. The Ministry of Environmental Protection and Natural Resources should initiate the review of budget classifications of environmental expenditure (particularly functional classification) in cooperation with the Ministry of Finance to enable the collection and publication of accurate data on environmental expenditure to underpin government decisions in this field.

²⁰ Law of Ukraine on Amendments to the Budget Code of Ukraine Regarding the Introduction of Mid-Term Budget Planning № 2 646-VIII was approved at the end of 2018. However, implementation of the mid-term budgeting was suspended in April 2020, because of the COVID-19 crisis.

Establishment of the Environmental Fund as a legal entity

The establishment of the Environmental Fund as an independent legal entity with its own management structure was supported by many experts interviewed. This is also envisioned in the current National Economic Strategy for the Period until 2030 (Cabinet of Ministers, 2021^[38]). Contrary to the current system of environmental funds at the state and local level with rather vague management arrangements and processes, new institution should be designed and implemented to eliminate all the deficiencies highlighted in the previous section. Representatives of environmental NGOs interviewed were more optimistic about the establishment of such a fund and believe that it can be effective under certain conditions while business agents were more sceptical as previous experience with various funds in Ukraine is largely negative.

Some experts considered the establishment of the "Environmental Protection Fund" as a separate legal entity, following the example of the EU countries as an ideal solution for the reform of environmental expenditure management in Ukraine. All revenue collected from the environmental tax should be accumulated in this fund and the allocation of resources for financing projects at the local level should be organised through its regional territorial units.

The independence of the fund from the political leadership of the Ministry of Environment would minimise subjective factors in the decision-making in the allocation of funds. A key advantage of the fund would be the possibility of providing long-term guaranteed funding (for several years) for strategic environmental projects. In addition, EPL proposes a range of legislative and institutional changes to improve existing procedures as a suboptimal solution (Voytsyhovska A., Norenko K., Testov P., 2018^[69]). However, making the Fund a legal entity *per se* will not ensure its performance unless clear rules and procedures for project selection and financing are put in place. Such rules and procedures will ensure the technical independence of the decision-making process of the Fund.

If such an initiative will come forward, the Polish National Fund for Environmental Protection and Water Management was considered as a good example for Ukraine to follow.

Some experts (2021^[22]) advocated that a special institution needs to be established to take the responsibility for attracting international funding for environmental modernisation of enterprises and combating climate change risks with clear and transparent procedures for funds access for all enterprises in Ukraine. Depending on the defined priorities and scope, either Environmental Fund can encompass such responsibility or a separate agency might be created to aid businesses with attractive investments for environmental modernisation projects.

Upon request of the government of Ukraine, OECD conducted a comprehensive performance review of the State Environmental Fund in 2006. The review evaluated its environmental effectiveness, fiscal prudence and management efficiency in line with the Good Practices for Public Environmental Expenditure Management (Box 3.3). Since then, the public finance system of Ukraine has evolved and was considerably strengthened. Although the study was published more than fifteen years ago, many conclusions and recommendations of the review are still relevant (see Annex I for a list of updated recommendations). The authors note that reforms should be based on three decisive factors. First of all, a strategic niche for the Fund needs to be identified, where it can demonstrate a value-added in addressing environmental problems, narrow down the scope and prevent the dispersal of limited resources. Secondly, procedures and processes need to be revised in a way to make sure that support is provided only to cost-effective projects that bring concrete environmental benefits on the ground. Thirdly, a strong political commitment at the highest government level is pivotal for the commencement and successful completion of reform (OECD, 2006^[48]).

Most experts highlighted that a transparent and trustworthy management structure is a crucial factor for the effective operation of the fund. Good international practices suggest that the management structure of public environmental finance institutions should consist of two bodies. The first one - is an executive unit that should be responsible for the daily functioning of the Fund such as project cycle management, external

relations and financial management. The second one is a multi-stakeholder supervisory board responsible for defining spending priorities, approving the annual plan and budget, and approval of internal policies, procedures and project portfolios (OECD, 2006_[48]). The supervisory board could incorporate representatives of key stakeholders such as government, international finance institutions, environmental NGOs and business associations to build trust in its decisions. Though environmental NGOs advocate for the establishment of the Fund as completely independent from the Ministry of Environmental Protection institution, OECD (2006) experts note two other options for administrative arrangements. The executive unit of the Fund could either become a part of the Finance Department of the Ministry of Environmental Protection (this will help to save on administrative costs) or the government might consider the establishment of an independent government agency under the auspices of the Ministry of Environmental Protection.

Further, to ensure the successful functioning of the fund, it is critically important to vest it with proper financial resources and dedicated full-time staff. The executive unit of the Fund should be comprised of at least 4-8 technically competent people with the necessary skills and qualifications to deliver high-quality project cycle management (OECD, 2006_[48]). The limited staff capacity of the Ministry of Environmental Protection to effectively manage environmental expenditure programmes is among the key reasons for support for the establishment of the Environmental Fund as a distinguished legal entity with its own management structure.

Several experts noted the importance of recycling back environmental tax revenue to local communities. Even though the new Environmental Fund is likely to be established as a centralised institution, it should have territorial branches or envision other mechanisms for funding environmental projects on the ground, where pollution takes place. Local communities should have access to funds under the transparent procedure on a competitive basis. Ideally, a new funding mechanism should enable project finance across several communities where necessary.

Box 3.3. Good Practices for Public Environmental Expenditure Management

The Good Practices of Public Environmental Expenditure Management (Good Practices for PEEM) is one of the practical tools developed within the Task Force for the Implementation of the Environmental Action Programme (Currently, the GREEN Action Task Force). The Good Practices provide recommendations on how to design, implement and manage public environmental expenditure programmes in line with the sound principles of public finance and can serve as a general roadmap for reforming existing public environmental finance institutions. The methodology was used to assess environmental funds in the region of Central and Eastern Europe, Caucasus and Central Asia.

In May 2003, Environment Ministers at the Fifth “Environment for Europe” Ministerial Conference endorsed the Good Practices to inspire their use by economies in transition for strengthening their systems of environmental finance. Further, OECD member states approved the Good Practices for PEEM as a Council Recommendation to serve as a guidance for work in the field of public environmental expenditure.

The Good Practices for PEEM comprises of three checklists that can be used for evaluating the performance of environmental expenditure programmes against internationally recognised standards of public finance. Each checklist presents five major principles, which are further elaborated with specific criteria. Key principles for appraisal of environmental effectiveness, fiscal prudence and management efficiency are provided below.

Principles of environmental effectiveness dimension

- Additionality and consistency with other environmental policy instruments
- Sound and well-defined programming framework
- Sound consideration of environmental effects
- Maximising environmental effect from available funds
- Leveraging additional private and foreign finance for the environment

Principles of fiscal prudence dimension

- Fiscal integrity of revenue
- Negative efficiency impacts of earmarking minimised
- High standards of fiscal discipline
- Accountability and transparency
- Collection of revenues and public procurement separated from expenditure management

Principles of management efficiency dimension

- Sound governance
- Professional executive management
- Sound project cycle management
- Fair and unbiased relations with external stakeholders
- Effective management of financial products and related risks

Source: Adopted from (OECD, 2003^[78]), (OECD, 2006^[48]).

4 Conclusions and the way forward

This chapter highlights five areas where environmental tax policy could be improved. They are closely related to wider policy reforms in the environmental domain but also to public finance policy more generally. The chapter also suggests several steps the government of Ukraine can take to make environmental budget spending more efficient and effective. The analysis reflects the policy and institutional set-up in the sector prior to Russia's full-scale invasion in February 2022 which will undoubtedly have a significant impact on fiscal and budgetary policies. These changes will have to be taken into account in any further post-war period analysis.

Main findings

Reform of environmental finance practices in Ukraine is very closely linked to wider reforms in the environmental domain and political will is needed to roll it out. For example, improvement of environmental monitoring and control is essential for strengthening the administration of environmental taxes. The post-War Recovery Plan of Ukraine outlines ambitious plans for reforms in various sectors including environmental and control systems and harmonisation with the European Union (EU) standards. Further, better dialogue and cooperation need to be built between the Ministry of Environment and the Ministry of Finance to ensure the balance of fiscal and environmental functions of environmental taxes and the timely allocation of budget funds for environmental programmes.

Although the reform of environmental taxation has been on the government agenda for more than ten years, there is no comprehensive and coordinated vision at the highest political level. However, the Post-War Recovery Plan of Ukraine envisions the development of a roadmap for the harmonisation of the environmental taxation system of Ukraine with the EU's by December 2023 (National Council for the Post-War Recovery, 2022^[35]) which hopefully will fill this gap.

Reform of the environmental taxation system, first of all, should commence with the improvement of administrative procedures and interactions between different state bodies, particularly, by building up cooperation and information exchange between the tax authorities and the State Environmental Inspection.

Secondly, the exceptionally wide environmental tax base concerning emissions, effluents and waste in Ukraine should be narrowed down. However, simple copying of the approaches applied in the EU countries should be avoided as the situation with air and water pollution differs considerably. To ensure that the decision for narrowing the environmental tax base is well grounded, a comprehensive analysis needs to be done to examine what environmentally harmful production processes are currently used in Ukraine, environmental tax liabilities per what pollutants are currently declared by enterprises and what pollutants can be effectively monitored so that state bodies can execute their control functions adequately. At the same time, and thirdly, the government should consider differentiating excise taxes on fossil fuels depending on the sulphur content and introducing taxes on environmentally harmful products (e.g. tires,

batteries, luminescent bulbs, fertilisers, pesticides) as well as plastic packaging, whose use is much easier to monitor than emissions.

Fourthly, the government should consider increasing environmental tax rates in order to send a clear signal to the market about what type of technologies should be used. However, an increase in the environmental tax rates should be gradual and predictable to allow sufficient time for businesses to adapt.

Fifthly, considering that the allocation of budget funding for environmental programmes is unstable and is often done on a residual basis, earmarking of all revenue from environmental taxes could be viewed as a solution to have a reliable funding source for environmental protection measures. Part of the environmental tax revenue can be allocated to finance environmental modernisation projects of businesses but clear and transparent funding mechanism should be developed to avoid the misuse of funds.

The way forward

Drawing on interviews with key stakeholders, a review of audit reports and available studies, key steps for the improvement of effectiveness and efficiency of environmental spending are proposed for consideration of the government. In the short term, the Ministry of Environmental Protection should take the following steps to improve the effectiveness of budget environmental expenditure:

- **Define priorities for budget funding** in the short- and long-term, particularly, focusing on strategic targets, which could not be achieved by administrative or other means (e.g., development of the environmental monitoring system).
- **Introduce explicit definitions of environmental protection and resource-saving measures**, which should be harmonised with the Classification of Environmental Protection Activities and Expenditure (CEPA) and the Classification of Resource Management Activities (CReMA) and included into key environmental legislative acts. A clear definition of “environmental effect” should be introduced into secondary legislation.
- Review of the Cabinet of Ministers Resolution No 1 147 to exclude measures with weak (e.g., landscaping projects of municipalities) or no environmental objectives or even potentially harmful ones (e.g., construction of hydraulic structures) and harmonise it with the CEPA.
- **Review criteria** listed in the Cabinet of Ministers Resolution No. 163 of 28 February 2011 and Order of the Ministry of Ecology and Natural Resources No. 194 of 12 June 2015 for **selecting projects** that get funding under the budget programme “Implementation of environmental protection measures” following the principles of environmental effectiveness dimension of the Good Practices for Public Environmental Expenditure Management (OECD, 2006^[48]).
- **Review procedures for allocation of budget funds on environmental programmes** to avoid the disbursement of funds at the end of the year. In particular, specific timelines need to be set for internal procedures at the Ministry to make sure that the passports of budget programmes as well as a plan of environmental protection measures are approved within a reasonable timeframe (e.g. few months).
- **Introduce regular monitoring of environmental expenditure programmes** to assess the extent to which a budget programme or a single measure help improve environmental quality. It is also important to monitor whether achieved results are sustained and whether such outputs as developed methodologies and studies as well as purchased equipment are implemented in practice. Further, performance indicators of the budget programmes in most cases need to be reviewed and aligned with strategic objectives and targets of the state public policy.
- **Increase institutional capacity for management of environmental expenditure** to strengthen the function of an internal audit and control over the effectiveness of budget spending on the programmes under the responsibility of the Ministry.

- **Increase transparency of budget funding of environmental programmes** and ensure online publication of all results (methodologies, technical and resources papers) whose development has been funded from the budget. These steps will open up documentation to public scrutiny, which will stimulate better quality appraisal and improve the effectiveness of spending and trust of the public at large.
- **Initiate the review of budget classifications** of environmental expenditure (particularly functional classification) in cooperation with the Ministry of Finance to enable the collection and publication of accurate data on environmental expenditure to underpin government decisions in this field.

In the medium term, the government can either follow the path of expanding and further strengthening the budget programmes funding mechanisms under the current institutional and legal setup or consider the establishment of a National Environmental Fund as an independent legal institution, which is advocated by many stakeholders and already stated as a policy goal in a number of strategies and plans. At the same time, the two approaches are not necessarily mutually exclusive. The government can distinguish what policies and measures it will finance through budget programmes managed by the Ministry and/or subordinated agencies and what categories of projects can be supported through the National Environmental Fund.

For the establishment of a National Environmental Fund as an independent entity, it is important to carefully consider issues in the current system of environmental funds and design it in line with the OECD Good Practices for Public Environmental Expenditure Management (OECD, 2006^[48]) to ensure the highest performance in terms of environmental effectiveness, fiscal prudence and management efficiency.

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Annex A. Environmentally related taxes and non-tax revenue in the state budget

Table A A.1. Environmentally related tax revenue in the state budget, billion UAH

Tax ^a	Budget Code ^b	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021p.	2022p.
Excise tax on electricity	14021300	n.a.	n.a.	n.a.	n.a.	n.a.	3.5	4.0	4.7	5.4	4.8	2.8	2.9	3.5
Excise tax on fuel (produced in Ukraine) ^c	14021900	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	7.2	9.5	10.0	9.3	12.0	9.8	14.0
Excise tax on liquefied gas (produced in Ukraine) ^c	14021100	n.a.	0.0	0.0	0.0	0.3	0.4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Excise tax on gasoline for cars (produced in Ukraine) ^c	14021700	2.8	2.7	3.3	1.8	1.4	3.2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Excise tax on other petroleum products (produced in Ukraine) ^c	14021800	1.1	0.7	0.7	0.5	0.9	1.5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Excise tax on fuel (imported) ^c	14031900	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	30.0	36.6	40.9	38.3	42.0	42.1	45.4
Excise tax on liquefied gas (imported) ^c	14031100	n.a.	0.1	0.1	0.2	0.3	0.8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Excise tax on gasoline for cars (imported) ^c	14031700	2.0	3.8	4.4	3.4	6.3	6.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Excise tax on other petroleum products (imported) ^c	14031800	0.8	1.8	2.7	2.3	6.9	12.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Special surcharge to the current tariff for electricity and heat, except for electricity produced by qualified cogeneration units	17050000	2.3	1.9	2.4	2.6	2.7	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Special surcharge to the current tariff for natural gas for consumers of all forms of ownership, accrued until 1 January 2016	17060000	1.5	1.9	1.8	1.6	1.8	2.7	0.3	0.0	0.0	0.0	0.0	n.a.	n.a.
Environmental tax levied on CO2 emissions into the air by stationary sources of pollution	19011000	-	-	-	-	-	-	-	-	-	1.0	0.9	-	-
Environmental tax on trade in the customs territory of Ukraine with the fuel of own production and/or produced from toll raw materials ^c	19010500	n.a.	0.1	0.0	0.1	0.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Environmental tax on the fuel import into the customs territory of Ukraine ^c	19010600	n.a.	0.0	0.1	0.2	0.2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Energy total		10.4	13.1	15.6	12.7	20.9	31.1	41.5	50.8	56.3	53.4	57.8	54.8	62.9

Excise tax on vehicles (produced in Ukraine) ^c	14020800	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Excise tax on motorcycles and bicycles (produced in Ukraine) ^c	14020900	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	n.a.	n.a.	n.a.	n.a.
Excise tax on bodies for motor vehicles (produced in Ukraine) ^c	14021000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	n.a.	0.0
Excise tax on vehicles (imported) ^c	14030800, 14031200 14031300	0.6	0.9	1.1	1.1	0.8	2.5	2.7	3.6	4.4	11.9	11.0	7.1	12.4
Excise tax on motorcycles and bicycles (imported) ^c	14030900	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	n.a.	n.a.	n.a.	n.a.
Excise tax on bodies for motor vehicles (imported) ^c	14031000	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.002
Environmental tax levied on the import of vehicles and/or bodies ^c	19010700	n.a.	n.a.	n.a.	n.a.	0.7	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Environmental tax levied on the sale of vehicles produced in Ukraine on the domestic market ^a	19010800	n.a.	n.a.	n.a.	n.a.	0.0	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Environmental tax levied on the purchase of vehicles from persons who are not payers of this tax ^a	19010900	n.a.	n.a.	n.a.	n.a.	0.0	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Transport total		0.7	1.1	1.3	1.2	1.6	2.5	2.8	3.8	4.6	12.0	11.1	7.2	12.5
Duty on petroleum products, vehicles (except for vehicles imported into the customs territory of Ukraine and placed in customs transit or temporary importation in the period from 1 January 2015, to the date of entry into force of the Law of Ukraine of 8 November 2018 "On Amendments to the Tax Code of Ukraine on Excise Tax on Passenger Cars") and tires for them, imported by business entities and citizens ^c	15010500	1.3	2.1	2.4	2.2	1.4	2.1	4.3	6.1	6.3	8.5	8.7	-	-
Duty on vehicles imported into the customs territory of Ukraine and placed in customs transit or temporary importation in the period from 1 January 2015, to the date of entry into force of the Law of Ukraine of 8 November 2018 "On Amendments to the Tax Code of Ukraine on Excise Tax on Passenger Cars" ^c	15011200	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.1	0.7	0.0	-	-
Energy and transport aggregated		1.3	2.1	2.4	2.2	1.4	2.1	4.3	6.1	6.4	9.2	8.7	0.0	0.0
Environmental tax total	19010000	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3.7	3.7
Environmental tax levied on emissions of pollutants into the air by stationary sources of pollution (excluding CO ₂ emissions) ^c	19010100	n.a.	0.3	0.4	1.0	1.3	0.2	0.6	0.5	1.2	1.2	0.8	-	-
Environmental tax levied on discharges of pollutants directly into water bodies ^c	19010200	n.a.	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	-	-
Environmental tax levied on the disposal of waste in specially designated areas or facilities, except for the disposal of certain types of waste as secondary raw materials ^c	19010300	n.a.	0.1	0.2	0.4	0.6	0.1	0.2	0.2	0.5	0.6	0.5	-	-
Environmental tax levied on the generation of radioactive waste (including already accumulated) and/or temporary storage of	19010400	n.a.	0.6	0.6	0.6	0.7	0.7	0.8	1.0	1.0	1.1	1.0	-	-

radioactive waste by its producers beyond the period established by special conditions of licences ^c														
Charge for environmental pollution ^c	19050000	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
Pollution total		1.0	1.1	1.2	2.1	2.6	1.1	1.6	1.7	2.8	2.9	2.4	3.7	3.7
Total all sectors		13.4	17.4	20.4	18.1	26.5	36.9	50.2	62.4	70.1	77.5	79.9	65.7	79.0
Share in total state budget revenue, %		5.6	5.5	5.9	5.3	7.4	6.9	8.2	7.9	7.6	7.8	7.4	5.7	6.2

Notes:

n.a.: not applicable, p. – provisional, - no data.

a. Titles of several taxes slightly changed over the examined period; the most recent titles are provided in the table.

b. Budget codes changed over the examined period; the most recent codes are provided in the table.

c. Revenue is fully or partially earmarked, i.e., allocated to the special fund of the state or local budgets.

Source: Prepared based on the reports of the (State Treasury Service of Ukraine, 2021^[6]) and Draft Law on the State Budget of Ukraine for 2022 (Parliament, 2021^[13]).

Table A A.2. Environmentally related non-tax revenue in the state budget, million UAH

Non-tax payments to the state budget ^a	Budget Code ^b	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021p.
Fee for fuel production licences	22013100	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.1	n.a.	n.a.
Fee for the licences for the wholesale fuel trade	22013200	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	25.7	n.a.	n.a.
Fee for the licences for the retail fuel trade	22013300	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	16.8	n.a.	n.a.
Fee for licences for the fuel storage	22013400	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	5.1	n.a.	n.a.
Tolls for vehicles and other self-propelled machines and mechanisms, whose weight or dimensions exceed the normative limits ^c	22160100	17.4	15.9	11.1	13.5	9.3	10.4	21.1	40.7	85.0	101.5	128.8	25.0
Fines for damage caused by violations of environmental legislation as a result of economic and other activities ^c	24062100	14.4	29.6	18.4	17.0	27.5	17.2	46.2	3.4	37.0	28.8	28.5	17.7
Proceeds from the sale of the part of the Assigned Amount Units provided for in Article 17 of the Kyoto Protocol to the UNFCCC ^c	24062400	1538.2	n.a.	231.7	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.0	n.a.
Fee upon acquisition of ownership of cars	24140300	1279.1	1688.9	1669.6	1463.7	1056.2	1254.8	2230.4	3031.6	3283.0	4438.3	4548.0	5517.2
Total non-tax payments		2849.1	1734.5	1930.9	1494.2	1092.9	1282.4	2297.6	3075.7	3405.0	4616.3	4705.3	5559.8
Share of non-tax payments in total state budget revenue, %		1.2	0.6	0.6	0.4	0.3	0.2	0.4	0.4	0.4	0.5	0.4	0.5

Notes: n.a.: not applicable, p. – provisional, - no data.

a. Titles of several non-tax payments slightly changed over the examined period; the most recent titles are provided in the table.

- b. Budget codes changed over the examined period; the most recent codes are provided in the table.
- c. Revenue is earmarked, i.e., allocated to the special fund of the state or local budgets.

Source: Prepared based on the reports of the (State Treasury Service of Ukraine, 2021^[6]) and Draft Law on the State Budget of Ukraine for 2022 (Parliament, 2021^[13]).

Annex B. Resource rent revenue in the state budget

Table A B.1. Resource rent revenue in the state budget, billion UAH

Resource rent payments to the state budget ^a	Budget Code ^b	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021p.	2022p.
Rent for special use of forest resources	13010000	0.2	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.4	0.6	0.7	0.7	0.8
Rent for special use of water	13020000	0.9	0.6	0.7	0.7	0.6	0.6	0.7	0.8	1.0	0.9	0.8	0.9	0.7
Rent for subsoil use	13030000	1.3	1.2	1.5	13.0	18.2	37.0	39.7	43.9	39.8	41.3	47.1	35.2	41.1
Fee for the use of other natural resources	13070000	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Rent for oil produced in Ukraine, which accrued until 1 January 2013	17010100	3.6	8.3	5.3	0.0	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Rent for natural gas produced in Ukraine, which accrued until 1 January 2013	17010200	2.5	3.1	3.5	0.2	0.0	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Rent for gas condensate produced in Ukraine, which accrued until 1 January 2013	17010300	1.3	2.9	2.1	0.1	0.0	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total resource rent		9.7	16.2	13.2	14.2	19.0	37.8	40.7	45.0	41.2	42.8	48.6	36.7	42.6
Share of resource rent in total state budget revenue, %		4.0	5.1	3.8	4.2	5.3	7.1	6.6	5.7	4.4	4.3	4.5	3.2	3.4

Notes: n.a.: not applicable, p. – provisional.

Titles of several resource rent payments slightly changed over the examined period; the most recent titles are provided in the table.

Budget codes changed several times over the examined period; the most recent codes are provided in the table.

Source: Prepared based on the reports of the (State Treasury Service of Ukraine, 2021^[6]) and Draft Law on the State Budget of Ukraine for 2022 (Parliament, 2021^[13]).

Annex C. Compatibility of the List of Environmental Protection Measures under the Resolution of No 1 147 and CEPA

Table A C.1. Compatibility of the list of environmental protection measures under the Cabinet of Ministers Resolution No 1 147 and CEPA (air pollution sector)

List of Environmental Protection Measures under the Cabinet of Ministers Resolution No 1 147	Classification of Environmental Protection Activities and Expenditure (CEPA)
Protection of atmospheric air	CEPA 1. Protection of ambient air and climate
18. Organisation of production, installation and reconstruction of equipment for purification of gas and dust flow from pollutants of chemical and biological origin emitted into the atmosphere, and reducing the impact of physical and biological factors on ambient air; development of technology, organisation of production and use of materials, use of methods and implementation of technologies that prevent, reduce or eliminate the factors of air pollution	CEPA 1.2. Treatment of exhaust gases and ventilation air: Activities involving 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 either from the combustion of fuels or from processes
19. Construction of Research and Development facilities for the development of methods for cleaning gases discharged from sources of harmful emissions into the atmosphere	CEPA 8. Research and development
20. Development and manufacture of control systems and devices and their installation on stationary sources of emissions of harmful substances into the atmosphere and points of control and monitoring of air pollution	CEPA 8. Research and development
21. Construction and equipment of control and regulation points for testing and reducing the toxicity of exhaust gases of vehicles	CEPA 1.3. Monitoring and measurement and similar
22. Development and organisation of production of devices for cleaning exhaust gases of engines and equipping vehicles with them.	CEPA 1.4. Other activities
23. Carrying out of works on the inventory of pollution sources of the environment	CEPA 8. Research and development CEPA 1.2. Treatment of exhaust gases and ventilation air CEPA 1.3. Monitoring and measurement and similar CEPA 1.4. Other activities
No equivalent measures in the Cabinet of Ministers Resolution No 1 147	CEPA 1.1. Prevention of pollution through in-process modifications Activities and measures aiming to eliminate or reduce air pollution through In Process Modifications (IPMs) related to: <ul style="list-style-type: none"> cleaner production processes and other technologies (cleaner technologies) the consumption or use of 'cleaner' (adapted) products

Source: Prepared based on the (Cabinet of Ministers of Ukraine, 1996^[56]) and (Eurostat, 2020^[3]).

Annex D. Expenditures on environmental protection measures in the state budget by programme budget classification

Table A D.1. Expenditures on environmental protection measures in the state budget by programme budget classification, million UAH

Programme ^a	Budget Code ^b	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021p.	2022p.
Improvement of air quality	2401290	2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
State support for measures aimed at GHG emissions reduction (increasing absorption), including buildings insulation of social services facilities, development of international cooperation on climate change	2701530	119	46	1 005	1 834	388	669	1 219	235	119	199	n.a.	457	1
Ensuring operation of the National Centre for GHG Emissions	2701520	n.a.	n.a.	1	1	1	1	2	2	3	3	3	10	11
Total protection of ambient air and climate		121	46	1 006	1 835	390	670	1 221	237	122	202	3	467	12
Subvention (transfer) from the state budget to the budget of the Odesa region for carrying out priority works on the construction of the sewage disposal system from biological treatment station "Pivnichna" in the city of Odesa on "Hlybokovodnyi Vypusk" site	2761390	n.a.	155	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Carrying out priority works on the construction of the system of the sewage disposal system from the station of biological treatment "Pivnichna" in the city of Odesa on "Hlybokovodnyi Vypusk" site	7851800	96	0.5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Wastewater treatment	2401230	1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Measures for wastewater treatment in the city of Odesa	2401330	n.a.	9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Implementation of the project "Reconstruction of sewage treatment facilities and construction of a technological line for treatment and disposal of sludge of the Bortnytsia aeration station"	2751520	n.a.	n.a.	n.a.	n.a.	5	33	89	18	n.a.	n.a.	n.a.	n.a.	n.a.
Implementation of urgent environmental measures for the preparation of project documentation for sewerage facilities	2751520	n.a.	n.a.	14	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Reconstruction of sewage treatment plants and other facilities to protect the waters of the Azov-Black Sea coast and the Dnipro and Siversky Donets river basins from pollution	2751850	n.a.	117	234	318	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Reconstruction of the water supply system with the implementation of modern water treatment technologies in Slovyansk, Donetsk region	2751860	n.a.	n.a.	n.a.	29	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Construction of sewage treatment plants in Baryshivka village with a capacity of 2000 m3/day	2751860	n.a.	n.a.	n.a.	n.a.	n.a.	10	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Construction of sewerage network and water reduction in the area of flooding of mine № 2 in Novovolynsk, Volyn region	7731850	n.a.	n.a.	n.a.	0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Carrying out of reconstruction works on liquidation of consequences of the emergency which has developed on sewer collectors in the city of Kherson	7911700	18	21	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Construction of the second line of the Main City Sewerage Collector in Kyiv in preparation for Euro-2012	6651040	29	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total wastewater management		144	302	249	348	5	43	89	18	n.a.	n.a.	n.a.	n.a.	n.a.
Waste and hazardous chemicals management	2401250	43	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Implementation of measures related to the elimination of the consequences of a natural emergency at the hazardous waste landfill in the conservation zone of the Dombrovsky quarry in the Kalush district	7791700	n.a.	150	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Implementation of measures related to the elimination of the consequences of the environmental emergency on the territory of the city of Kalush and the villages of Kropyvnyk and Sivka-Kaluska of the Kalush district of the Ivano-Frankivsk region	7791700	398	n.a.	n.a.	70	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total waste management		441	150	n.a.	70	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Liquidation and environmental rehabilitation of the territory of influence of mining works of the state enterprise "Solotvynsky salt mine" of the Tyachiv district of the Zakarpattia area	1201080	4	8	3	5	3	3	3	4	4	3	8	5	5
Restructuring and liquidation of sites of mining chemistry enterprises and implementation of urgent environmental protection measures in the area of their activity, as well as restructuring of enterprises for underground iron ore mining	1201470	15	37	33	21	14	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total protection and remediation of water		19	45	36	26	16	3	3	4	4	3	8	5	5
Conservation of nature fund in the national parks and nature reserves	301140	69	71	58	48	32	38	37	59	66	76	84	138	139
Conservation of nature fund (under State Agency of Forest Resources of Ukraine)	1901080	43	51	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Development of the national ecological network	2401260	5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Conservation and research of various species of trees and shrubs in specially created conditions	2751150	1	1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Conservation of the nature fund in the Askania-Nova Biosphere Reserve	6591100	10	11	12	14	13	16	17	23	28	27	30	39	54
Conservation of nature fund (under the Ministry of Environmental Protection and Natural Resources of Ukraine)	2701160	71	87	n.a.	n.a.	n.a.	n.a.	156	279	326	399	435	664	665
Subvention (transfer) from the state budget to the budget of the Autonomous Republic of Crimea for the implementation of a nature protection measure on the development of project materials to change the boundaries and expand the territory of the Yalta Mountain and Forest Nature Reserve	7711020	n.a.	n.a.	2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total protection of biodiversity and landscapes		199	221	72	61	45	54	210	362	420	502	550	842	857
Bringing uranium facilities to safe conditions	1101480	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	17	7	n.a.	n.a.	n.a.	n.a.	n.a.
State Targeted Ecological Programme of Priority Measures for Bringing Facilities and the Site of Former Uranium Production of the Prydniprovsky Chemical Plant Production Association into Safe Conditions for 2019-2023	2401210	282	9	7	7	1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Execution of works in the field of radioactive waste management of the non-nuclear cycle, construction of the "Vector" complex and operation of its facilities	2708090	38	48	52	60	51	67	56	76	519	424	307	1 007	1 086
Maintenance in a safe condition of power units and the Shelter facility and measures on preparation for the decommissioning of the Chornobyl NPP	2708120	494	659	728	722	632	918	996	992	1 182	1 387	1 215	1 355	1 365
Implementation of the state investment project "Establishment of a comprehensive system for the treatment of radioactive materials accumulated during the decommissioning of power units and the reconstruction of the Shelter"	2708810	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	63	n.a.
Implementation of the state investment project "Realisation of the second launching complex of the New safe confinement and reconstruction of the Shelter site"	2708820	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	87	n.a.
Implementation of state investment projects for the closure of radioactive waste disposal sites "Chornobyl NPP III line" and conservation of Buryakivka storage facility №29	2408800	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Maintenance of environmentally safe conditions in the exclusion and unconditional (compulsory) resettlement zones	2708110	192	255	246	235	182	242	302	359	454	493	447	534	476
Total protection against radiation		1 006	971	1 033	1 023	865	1 228	1 379	1 434	2 156	2 304	1 969	3 046	2 927
Research and development in the field of hydrometeorology	1006070	13	14	16	19	16	15	19	24	26	28	48	46	41
Scientific support of work and information systems on liquidation of consequences of the Chornobyl catastrophe	2408080	3	3	4	3	3	3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Research and development in the field of environmental protection and natural resources	2701040	1	9	10	9	9	22	27	32	50	63	59	67	57
Total research and development		17	26	29	31	28	41	45	56	76	91	107	112	98
Hydrometeorological activity	1006060	167	192	208	224	203	255	254	326	365	415	663	691	690
Implementation of priority environmental measures in Dniprodzerzhynsk	1101430	n.a.	4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Subvention (transfer) from the state budget to local budgets for the implementation of environmental measures on the sites of municipal property	2411020	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	480	n.a.	n.a.	n.a.
Monitoring the environment and ensuring state control over compliance with environmental legislation	2401190	3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Financial support for environmental activities, including through the mechanism of cheaper loans from commercial banks	2401320	1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Development of e-government in the field of environment and natural resources	2401540	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2	n.a.	n.a.	n.a.	n.a.
Management and administration in the field of environmental investments	2402010	5	5	6	7	7	3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Financing measures on the fulfilment of Ukraine's international obligations under the UN Framework Convention on Climate Change and Kyoto Protocol	6351030	n.a.	0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Development of e-government in the field of exclusion zone management	2408130	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2	n.a.	n.a.	n.a.	n.a.
General management and administration in the field of environmental protection and natural resources	2701010	249	101	100	74	29	35	40	60	95	283	63	145	152
Training and retraining in the field of ecology, natural resources and water management, training of scientific and teaching staff	2701090	11	14	15	16	11	12	14	30	29	28	41	57	48
Implementation of environmental measures, particularly, to improve the state of the environment	2701270	n.a.	422	534	389	209	421	143	202	522	158	52	166	129
Implementation of measures on priorities for the development of environmental protection	2701500	n.a.	n.a.	n.a.	n.a.	1	n.a.	88	115	17	35	n.a.	1	n.a.
Ensuring operation of the National Commission for Radiation Protection of the Population of Ukraine	2701560	n.a.	1	1	1	1	1	1	1	1	1	1	2	2
Management and administration in the field of environmental control	2705010	n.a.	109	142	144	93	126	149	243	392	365	384	448	445
Management and administration of the exclusion zone	2708010	n.a.	5	5	6	6	5	6	8	16	16	19	25	25
Radiological protection of the population and environmental rehabilitation of the territory exposed to radioactive contamination	2708070	2	14	5	4	1	8	2	3	3	4	4	5	6
Subvention (transfer) from the state budget to the city budget of Dobropillya, Donetsk region, for the development of a feasibility study	2761460	n.a.	1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

for the project to protect the territory of Belozerske, which was affected by mining operations of the existing mine "Belozerska" and closed mine "Krasnoarmeyskaya"

Total other environmental protection activities	438	867	1 016	864	561	865	696	988	1 445	1 784	1 229	1 538	1 495
TOTAL	2 385	2 630	3 441	4 259	1 910	2 903	3 643	3 098	4 222	4 885	3 865	6 011	5 393
Share of environmental expenditures in the total state budget expenditures, %	0.79	0.79	0.87	1.06	0.44	0.50	0.53	0.37	0.43	0.45	0.30	0.43	0.37

Notes: n.a.: not applicable, p. – provisional.

Titles of several budget programmes slightly changed over the examined period; the most recent titles are provided in the table.

Budget codes changed several times over the examined period; the most recent codes are provided in the table.

Source: Prepared based on the reports of the (State Treasury Service of Ukraine, 2021^[6]) and Draft Law on the State Budget of Ukraine for 2022 (Parliament, 2021^[13]).

Annex E. Expenditures on environmental protection measures in the consolidated budget by functional budget classification

Table A E.1. Expenditures on environmental protection measures in the consolidated budget by functional budget classification, million UAH

Programme	Budget Code	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021p.
Protection and rational use of natural resources	0511	1 159	1 049	2 230	3 111	1 543	1 820	2 371	1 981	1 751	1 866	1 523	2 216
Waste disposal	0512	266	450	739	419	376	565	521	690	1 486	2 274	3 061	4 257
Elimination of other environmental pollution	0513	830	291	1 254	1 185	969	1 910	2 343	2 794	1 943	2 193	1 923	2 496
Conservation of nature reserve fund	0520	219	245	102	87	72	113	259	428	459	554	614	954
Fundamental and applied research and development in the field of environmental protection	0530	59	68	68	69	66	81	85	104	130	197	168	121
Other activities in the field of environmental protection	0540	338	787	905	723	456	1 040	677	1 352	2 472	2 646	1 767	2 520
Total		2 872	3 891	5 298	5 594	3 482	5 530	6 255	7 349	8 242	9 731	9 057	12 565
Share of environmental expenditures in the total consolidated budget expenditures, %		0.8	0.9	1.0	1.1	0.7	0.8	0.7	0.7	0.7	0.7	0.6	0.7

Note: p. – provisional data.

Source: Prepared based on the reports of the (State Treasury Service of Ukraine, 2021^[6])

Annex F. Comparison of the functional and programme budget classifications

Table A F.1. Comparison of the functional and programme budget classifications

Functional classification of budget expenditures		Programme classification of budget expenditures	
Budget Code	Programme	Budget Code	Programme
0511	Protection and rational use of natural resources	1006060	Hydrometeorological activity
		2701530	State support for measures aimed at GHG emissions reduction (increasing absorption), including buildings insulation of social services facilities, development of international cooperation on climate change
		2707070	Protection against floods in rural settlements and agricultural lands, including in the basin of the Tysa River in the Zakarpattia region
0512	Waste disposal	2101210	Utilisation of ammunition, liquid components of the rocket fuel, armaments, military equipment and other military property, ensuring the explosion and fire safety of arsenals, bases and warehouses of the Armed Forces of Ukraine
		2708090	Execution of works in the field of radioactive waste management of the non-nuclear cycle, construction of the "Vector" complex and operation of its facilities
		6381120	Utilisation of solid rocket fuel
0513	Elimination of other environmental pollution	1201080	Liquidation and environmental rehabilitation of the territory impacted by the mining works of the state enterprise "Solotvynsky salt mine" of the Tiachiv district of the Zakarpattia region
		2708010	Management and administration of the exclusion zone
		2708070	Radiological protection of the population and environmental rehabilitation of the territory with radioactive contamination
		2708110	Maintenance of environmentally safe conditions in the exclusion zone and areas of unconditional (compulsory) resettlement
		2708120	Maintenance in safe conditions of the nuclear units and "Shelter" facility and measures on the decommissioning of the Chornobyl NPP
0520	Conservation of nature reserve fund	0301140	Conservation of nature fund in the national parks and nature reserves
		2701160	Conservation of nature fund
		6591100	Conservation of the nature fund in the Askania-Nova Biosphere Reserve
0530	Fundamental and applied research and development in the field of environmental protection	1006070	Research and development in the field of hydrometeorology
		2708080	Conservation of ethnocultural heritage of the regions affected by the Chornobyl disaster
		2701040	Research and development in the field of environmental protection and natural resources
0540	Other activities in the field of environmental protection	2701010	General management and administration in the field of environmental protection and natural resources
		2701270	Implementation of environmental measures, particularly, to improve the state of the environment
		2701520	Ensuring operation of the National Centre for GHG Emissions
		2701560	Ensuring operation of the National Commission for Radiation Protection of the Population of Ukraine
		2705010	Management and administration in the field of environmental control

Source: Prepared based on Draft Law on the State Budget of Ukraine for 2022 (Parliament, 2021^[13]).

Annex G. List of experts interviewed and consulted

- Ms. Iryna Stavchuk, Deputy Minister of Environmental Protection and Natural Resources of Ukraine for European Integration
- Ms. Valentyna Kanievska, Head of the Department of the Environmental Protection Financing, Ministry of Environmental Protection and Natural Resources
- Ms. Antonina Storchous, Chief Specialist of the Sector for Tax Policy in the Field of Environment and Internal Control of the Economics and Finance Department of the Ministry of the Environmental Protection and Natural Resources of Ukraine
- Mr. Oleksandr Shumskiy, Head of the Department of Administration of Resource Payments, Rent and Local Taxes and Fees from Legal Entities of the Department of Tax Administration, State Tax Service of Ukraine
- Ms. Marharyta Zhenchuk, Climate Policy Project Manager, Reform Support Team of the Ministry of Environmental Protection and Natural Resources of Ukraine
- Ms. Rimma Kushtym, Senior Expert on Air Quality Monitoring, Reform Support Team of the Ministry of Environmental Protection and Natural Resources of Ukraine
- Ms. Olga Boiko, Industrial Ecology and Sustainable Development Committee Coordinator, European Business Association
- Mr. Vladislav Antypov, Vice-President of the Professional Association of Ecologists, Founder and CEO of the Center for Ecology and Development of New Technologies
- Mr. Illia Yeremenko, Expert of the “Ecoclub” NGO
- Ms. Yevheniia Zasiadko, Head of Climate and Transport Department, Center for Environmental Initiatives “Ecoaction”
- Ms. Olena Kravchenko, Executive Director, International Charity Organisation “Environment-People-Law” (EPL)
- Ms. Svitlana Berzina, President of the All-Ukrainian NGO “Zhyva Planeta”, Chairman of the Public Council at the Ministry of Environmental Protection and Natural Resources of Ukraine
- Ms. Nadiia Novitska, Head of the Excise Tax Research Department of the Fiscal Policy Research Institute of the University of State Fiscal Service of Ukraine
- Ms. Oleksandra Betliy, Independent Expert on Fiscal Policy

Note: Institutional affiliations of interviewed experts are indicated as of January 2022.

Annex H. Overview of studies on environmental taxes and budget funding of environmental programmes in Ukraine

Table A H.1. Overview of studies on environmental taxes and budget funding of environmental programmes in Ukraine

Author/ Institution	Year	Title	Scope	Key conclusions and recommendations
Breuing J.	(2021 ^[79])	A revision of Ukraine's carbon tax	The study reviews the current system of carbon taxation in Ukraine, proposes an alternative approach to carbon pricing and provides an assessment of the carbon tax impacts.	The study, undertaken under the "Low Carbon Ukraine" project, proposes to reform the current downstream CO ₂ tax to a hybrid upstream-midstream carbon tax where coal and natural gas are taxed when they enter the market (imported or extracted) while oil products are taxed when they leave the refinery. At the same time, fuel exports should be eligible for exemptions. To avoid the application of the Carbon Border Adjustment Mechanism (CBAM) on Ukraine's exports, the authors propose to gradually increase CO ₂ tax starting from 4.2 EUR/t in 2022 to 39 EUR/t in 2030, which is in line with the EU ETS price projections. Authors suggest using the largest share of the tax revenue to support tax benefits or subsidies for businesses and households. In particular, part of the revenue can be allocated to finance housing and utility subsidies for low-income households.
Kanonishena-Kovalenko K.	(2017 ^[7])	Environmental Taxes: From A to (Novitska, N., 2016 ^[80])Z	The study analyses the main elements of the environmental taxation system in Ukraine, including the history of its development, current trends and prospects for its improvement.	The author concludes that environmental tax in Ukraine does not perform its compensatory, stimulating and fiscal functions due to a range of problems in the field of environmental taxation. In particular, one of the problems is the unstable earmarking of the tax revenue as its distribution changed several times. This hinders the development of consistent environmental policy and the implementation of multi-year state programmes. Another problem is that the amount of tax revenue remains insignificant and insufficient for funding necessary environmental measures.
Kuznetsov K.	(2021 ^[70])	Analysis of Certain Directions of the State Budget Policy in the Environmental Protection Area	The study analyses the effectiveness of Ukraine's budget policy in the field of environmental protection.	The author uncovered a number of deficiencies in the current system of budget funding of environmental protection measures. These include ineffective planning of budget resources as the Ministry of Environmental Protection and Natural Resources has never met planned indicators of budget spending over the examined period. Another issue is a mismatch of set objectives and indicators for monitoring state programmes implementation and delayed approval of passports of state programmes.

Novitska N., Khlebnikova I.	(2021) ^[36]	Approaches for the Improvement of the CO2 Tax in Ukraine	The study examined theoretical aspects of carbon dioxide taxation, systematised EU practices for combining the CO2 tax and GHG emissions trading system and also analysed the impact of energy subsidies on the effectiveness of the CO2 tax.	Authors propose to reform the current tax on CO2 emissions to upstream fuel tax taking into account the carbon content of fuel as this will considerably simplify the administration process and increase tax revenue without increasing the tax rate. Authors argue that biomass should be exempt from this tax as it is carbon neutral. It is estimated that this reform will have a minor impact on the end prices of fuel. In particular, petroleum, diesel and liquefied petroleum gas (LPG) prices are likely to increase by 0.2-0.4%, natural gas and fuel oil prices will increase by 0.3% on average and coal prices by 0.9%. Authors conclude that a simple increase of the CO2 tax rate will not deliver considerable emissions reductions. Target use of CO2 tax revenue on decarbonisation, environmental protection and resource efficiency measures is essential. Thus, the authors support the establishment of the special fund as an independent legal entity to ensure efficient spending of the CO2 tax revenue. However, allocation of funds should be done on a competitive basis and control mechanisms should be introduced.
Novitska N.	(2016) ^[80]	Environmental Taxation in Ukraine: State and Development Prospects	The study focused on the research of theoretical underpinnings, international and domestic trends in environmental taxation, and analysis of the effectiveness of environmental and energy taxes.	The author estimated that increase of environmental tax revenue by 1% increases the environmental protection expenditure of enterprises by 0.4%, which indicates static effectiveness. However, the same increase in environmental taxes results in a decrease in the spending on environmental innovations of enterprises by 3.2%, which demonstrates that the dynamic effectiveness of environmental taxes is not observed. This means that environmental taxation is considered by industries as a disincentive for the implementation of innovations and considered by the enterprise as a seizure of resources that could be invested in eco-innovations.
OECD	(2015) ^[39]	Economic Instruments for Managing Environmentally Harmful Products in Ukraine	The report reviews the design and implementation of the environmentally related product taxes and extended producer responsibility schemes and provides recommendations based on international best practices.	Authors recommend introducing environmentally motivated differentiation of excise taxes on energy products and transport vehicles to introduce price incentives for consumers to choose less environmentally harmful options. In particular, excise taxes rates for energy products could be revised to reflect their carbon and sulphur content. Further, the authors recommend considering the introduction of environmentally related product tax for other product categories such as fertilisers, pesticides, electric light bulbs, paints and other solvent-containing products, detergents and other cleaning liquids to stimulate behavioural change and reduce consumption of these products. Authors suggest that increasing budget revenue from excise taxes may allow considering reduction of other taxes, for example, on labour and investment.
OECD	(2006) ^[48]	Performance Review of the State Environmental Protection Fund of Ukraine	The report provides a comprehensive review of the State Environmental Protection Fund of Ukraine and proposes a Reform Plan for strengthening its management.	The authors identified a range of deficiencies in the functioning of the State Environmental Protection Fund and propose a path for reforms to address them. In particular, it is advised that the focus area of the Fund should be identified where it could play a strategic role in supporting environmental policy priorities. It is also recommended that the number of local funds should be reduced to concentrate resources at the national and regional level in order to accumulate a critical mass of resources for funding environmental projects. The introduction of a medium-term budget framework will enable the implementation of multi-year projects. Further, appropriate organisational and management structures need to be designed and implemented, project appraisal procedures need to be revised in line with good international practices and regular monitoring and control systems need to be introduced.
PMR Ukraine	(2019) ^[81] , (2019) ^[82]	Carbon Pricing Options: Policy Report	The report analyses options of co-existence between the carbon tax and an emission trading scheme (ETS), and potential interaction effects between them from	Based on the modelling of several scenarios, the authors conclude that a good design of the combination of ETS and carbon tax can mitigate negative interaction effects and ensure that multiple climate policy objectives are achieved. It is estimated that long-term macroeconomic impacts are minimal regardless of the carbon pricing mechanism chosen. Authors provide recommendations on specific design elements of

			international experience and provides recommendations to the government of Ukraine.	the ETS and advise to review the current scope of carbon tax after the ETS launch. Further, it is proposed that revenue from allowances under the ETS should be used to support efficiency improvements in the industrial sector while carbon tax revenue can be used to support households.
Tokmylenko O.	(2014) ^[83]	Fiscal Methods for Regulating CO2 Emissions from Motor Vehicles in Ukraine	The report analyses the international experience of taxing car owners depending on the number of emissions from their vehicles, reviews the fiscal policy of Ukraine with regard to passenger cars and proposes options for reform.	The author concludes that the excise duty currently used in Ukraine is an economic instrument which does not take into account the quality of fuel and, consequently, its harmful effects on the environment. Other fiscal instruments in the transport sector (excise duty on the car and the charge for the first registration of the car) take into account the impact on environmental pollution indirectly as the tax base is defined by the engine capacity. However, these instruments do not reflect the level of emissions directly. So, there is no single fiscal instrument in the transport sector that fully adheres to the polluter pays principle, i.e., taxes car owners according to the amount of emissions from their vehicles. The author proposes three scenarios for the development of differentiated taxes on CO2 emissions from motor vehicles in Ukraine.
Voytsyhovska A., K. Norenko, P. Testov	(2018) ^[69]	Clean Environment – Healthy Future: New Policy on the Use of Special Funds for Environmental Protection	The policy paper highlights key problems of accumulation and use of environmental funds, which often do not bring environmental improvement and even lead to environmental deterioration in certain cases. The paper also provides examples of misuse of funds at the local level and proposes solutions for reform.	The study identified numerous violations, manipulations and deficiencies in procedures for allocation of funding for environmental programmes. As an ideal solution, Environment-People-Law (EPL) authors propose the establishment of the "Environmental Protection Fund" as a separate legal entity, following the example of the EU countries. All revenues collected from the environmental fund should be accumulated in this fund and the allocation of resources for financing projects at the local level should be organised through its regional territorial units. The independence of the fund from the leadership of the Ministry of Environment will minimise subjective factors in the decision-making in the allocation of funds. A key advantage of the fund would be the possibility of providing long-term guaranteed funding (for several years) for strategic environmental measures. In addition, EPL proposes a range of legislative and institutional changes to improve existing procedures.
Yeremenko I.	(2021) ^[84]	Carbon Pricing in Ukraine and Practices for CO2 Tax Revenue Use	The study analyses the current system of carbon pricing in Ukraine, possible approaches for effective tax revenue use and minimising negative economic and social impacts of the tax based on international experience.	The study concludes that the CO2 tax in Ukraine should be increased particularly to avoid the application of the CBAM to Ukraine's export. The tax base should be widened with the introduction of the upstream tax as a possible solution. It is stressed that tax increases should be implemented in line with the reform of the tax revenue used to ensure public and political support. Authors propose to earmark CO2 tax revenue exceptionally for decarbonisation purposes. However, the CO2 tax reform should be based on a detailed assessment of different options and evaluation of economic and social impacts.
Zhyva Planeta	(2021) ^[24]	Report on the Incentives for Green Modernisation of Industrial Enterprises in the EU Countries and Ukraine	The report reviews economic instruments (state support and tax benefits, etc.) for stimulating the green modernisation of industrial enterprises in the EU and Ukraine.	The study concludes that environmental tax in Ukraine is ineffective and serves only a fiscal function and does not stimulate a decrease in environmental pollution. Authors argue that environmental tax revenue should be spent only on environmental protection measures and propose to establish a special fund (independent legal entity) to manage the funding of environmental protection measures. Allocation of funds should be performed in line with procedures and criteria established by the Cabinet of Ministers. Environmental taxes should be set at the level which will ensure a decrease in emissions and discharges but, at the same time, do not stifle economic activity in Ukraine.

Annex I. Proposed Reform Plan for the State Environmental Protection Fund

As a result of the Performance Review of the State Environmental Protection Fund of Ukraine conducted by the OECD back in 2006, detailed recommendations for its reform in the short- and medium-term were provided, most of which are still relevant. Below is a slightly updated summary of the original OECD recommendations.

I. Short-term Improvements (to be implemented through internal organisational restructuring):

- Conduct consultations with all major stakeholders in order to agree on a strategy for the use of the Fund's resources. On the basis of the state-targeted programmes and the List of Environmental Activities (Cabinet of Ministers of Ukraine, 1996^[56])Resolution No 1 147, which needs to be updated), identify a specific narrow niche and a few priority types of projects to be financed by the Fund.
- Distinguish the Fund's identity from that of the Ministry of Environmental Protection. Split and clearly specify responsibilities for programming and project cycle management. Improve relations with the local level.
- Design a proper organisation and management structure (director, multi-stakeholder supervisory board, own functional department and procedures). Specify the appointment procedures for the supervisory and management boards and the performance criteria against which they will be evaluated.
- Establish an executive unit within the structure of the Ministry of Environmental Protection staffed with 4-8 people exclusively responsible for managing the complete cycle of environmental projects to be financed with support from the Fund. Strengthen the capacity of this unit in project cycle management.
- Allocate clear responsibilities for project appraisal and selection to the expenditure management unit.
- Introduce and maintain regular monitoring and control of individual investment projects implemented with support from the Fund. Collect data at the national level and develop a database on projects financed by the Fund, containing their key financial, technical and environmental information.
- Develop information disclosure tools (website, communication actions on the Fund's activities)

II. Medium-Term: Recommendations for Reform in the Legal Basis and Institutional Framework of the Fund

Legal Framework and Objectives

- Reduce drastically the number of local Funds and concentrate the resources at the national and oblast level, thus bringing them closer to project owners.
- Return revenue from pollution taxes currently used by other ministries to the management supervision of the Ministry of Environmental Protection. This would make it possible to create a critical mass of resources for significant environmental investments and ensure better control with regard to the achievement of environmental objectives.
- Introduce a medium-term budget framework to allow for the smooth implementation of multi-year projects.

- Introduce provisions (procedures, rules, appraisal and selection criteria) for ensuring operational independence and proper accountability of staff working on the Fund and operationalise these provisions in regulations on the Fund.

Fund Administration – Institutional and Management Set-up

- Reduce discretionary elements in the selection of projects for financing and shorten the decision-making process: reduce the number of stakeholders taking part in the process; rank projects by priority; affirm the leadership of the Ministry of Environmental Protection.
- Develop specific training programmes for staff in line with the Fund's activities.
- Explore the opportunity of establishing an independent government agency with its own account and assets under the auspices of the Ministry of Environmental Protection or of outsourcing the management of the Fund to a professional manager.

Revenue

- Limit the number of revenue-raising pollution taxes to fewer than 10 on the basis of a detailed analysis of the performance of these charges.
- Consider introducing taxes on environmentally-damaging products (e.g. tires, used batteries, etc.), which could ensure a stable revenue stream for the Fund.
- Fight tax evasion by reinforcing control of the level of pollution declared by polluters.
- Favour revenue stability, i.e. limit as much as possible changes in the share of environmental pollution taxes allocated to the Fund.
- Improve forecasting tools to increase the visibility of revenue and minimise fund leftovers at the end of the budget year.
- Ensure the strict respect of earmarking, i.e. ensure that higher than projected revenue is not used for purposes other than those stipulated by law.

Expenditure

- Define the programmes of the Fund in line with good international practices – in terms of eligible projects and beneficiaries (municipalities, industries, NGOs), eligible project costs, and clearly identified and robust criteria for appraisal, selection and financing of projects.
- Establish co-financing rates for different classes of projects and set maximum/minimum thresholds (in terms of project financial size) for projects to be supported by the Fund.
- Initiate multi-year budgetary projections (for instance on a three-year horizon).

Project Cycle Management

- Make managers responsible and accountable for project cycle management, including project identification, appraisal, selection, and monitoring.
- Strengthen the capacity of managers conducting project appraisal. Particular improvement will be needed in engineering, economic/financial and legal skills of the staff.
- Introduce rigorous and binding eligibility, appraisal and selection criteria. Make cost-effectiveness (achieving environmental results at minimum costs) a prominent selection criterion.
- Improve communication with potential applicants. Provide clear signals with regard to the types of projects that the Fund is willing to support.
- Introduce and maintain regular monitoring and evaluation of investment projects implemented with support from the Fund (technical, financial, and environmental performance).

Source: Adopted from (OECD, 2006^[48])