GREEN FISCAL POLICY IN MOLDOVA: ALIGNMENT WITH THE EUROPEAN UNION STANDARDS FOR SUSTAINABLE TRANSITION

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SUMMARY

Moldova has been a candidate country for European Union (EU) membership since 2022. With this status came the commitment to align its national policies with European standards. This article analyses the current state of green fiscal policy, the actions needed to meet EU requirements, and highlights its role in the green transition and sustainable development. The methodology used includes both a comparative analysis of the legal framework and a quantitative analysis of green tax revenues between 2018 and 2024, the data being selected from the Eurostat and the Ministry of Finance of Moldova databases. The results suggest that fiscal policies are not yet fully integrated into a coherent strategy for financing the green transition. However, progress has been made towards building an environmental taxation system. Several obstacles have been identified. These include the lack of a comprehensive carbon-pricing system, underfunding of green projects, and structural and administrative barriers. This article is relevant due to the main gaps and opportunities for fiscal alignment that have been identified. It was emphasised that the establishment of a carbon pricing system, climate budget tagging (CBT), and extended producer responsibility (EPR) schemes is necessary. The paper provides insights for policy decisions, helping to transform green fiscal policy from a mere revenue-raising tool into an engine for Moldova's sustainable transition.

Keywords: *Moldova, green fiscal policy, ecological taxes, sustainable transition, fiscal instruments, European standards*

INTRODUCTION

The global challenge of climate change has made it imperative to abandon the traditional model of economic development. Based on these considerations, most states have chosen to green their national economies through specific consumption and production models. Fiscal policy, through its instruments, has a central role in this transformation.

In the case of Moldova, although the basic legislative framework exists, green fiscal policy currently operates with major structural deficiencies that limit its contribution to the sustainable transition. Among the most serious dysfunctions are: the absence of a comprehensive carbon pricing system, the extremely low share of pollution and natural resource use taxes in total environmental taxes, the chronic underfunding of environmental protection expenditures, the lack of green budgeting mechanisms and the recycling of environmental tax revenues into dedicated green projects, and limited administrative capacity for effective monitoring, reporting, and collection of these taxes. These shortcomings mean that green fiscal instruments primarily function as a source of general budget revenue, rather than as real levers for changing economic behaviour and reducing emissions.

The central research question of this study is the following: To what extent do the current green fiscal instruments in the Republic of Moldova effectively contribute to financing and accelerating the green transition, and what are the priority reforms needed for full alignment with European Union standards by 2027–2030?

The identified scientific gap lies in the absence of recent systematic analyses, based on 2018–2024 data, that combine a quantitative assessment of environmental tax revenues and structure with a detailed comparative mapping of alignment with key EU instruments (ETD, ETS, CBAM, CBT, EPR) and an examination of the socio-economic effects on consumers, SMEs, and industry. As a result of its international commitments and EU candidate status, Moldova is under pressure to quickly address the inefficiencies in its green fiscal policy. This situation is confirmed by analyses showing that existing fiscal-budgetary instruments are failing to generate significant benefits. Among the causes of this inefficiency are the suboptimal tax structure and the lack of effective mechanisms to incentivise eco-friendly behaviour. Institutional challenges continue to be a major obstacle to policy implementation. This context explains the slow progress in achieving sustainability goals.

Initially, there were a limited number of fiscal instruments that were neither adapted to real needs nor integrated into a clear strategy, and they failed to bring environmental benefits. Subsequently, both the adjustment of the legal and institutional framework and the development of economic stimulus mechanisms compatible with decarbonization objectives are taking place. European states provide instructive examples, such as the comprehensive integration of the polluter-pays principle across all economic sectors. Key measures have also included implementing carbon taxes, reforming environmental funds, and a strategic shift of the tax burden from labour onto pollution. Each of these tools has the potential to improve the environment and the economy.

To meet its commitments to the European Green Deal, Moldova needs to undergo major structural transformations. These efforts are being hampered by climate risks, whose impacts have been amplified by recent crises. These include dependence on imported energy resources and economic vulnerabilities. This article analyses how Moldova's fiscal policy aligns with green and sustainable transition in light of the current accelerated European integration process. The evolution and structure of budget revenues from environmental taxes are examined in relation to green

fiscal instruments in the EU and Moldova. In addition to identifying the primary strategic gaps, obstacles, and opportunities associated with this transition, the paper attempts to evaluate the financial significance of these instruments and their historical development.

Although the analysis is based on official sources and internationally comparable data (Eurostat, Ministry of Finance), certain limitations must be acknowledged: the lack of complete data on private environmental protection expenditures by economic agents and households, the difficulty of precisely quantifying the effects of "carbon leakage" in the absence of a national carbon pricing system, and the predominantly descriptive nature of some segments of the institutional analysis. However, these limitations do not affect the validity of the conclusions and policy recommendations formulated.

LITERATURE REVIEW

Green fiscal policy has been studied by several researchers, who have analysed it through environmental taxes, tax reform, efficiency, and economic growth, among others etc. The theoretical principles of environmental taxation are attributed to the works of Pigou (1920), Pearce (1991), Baumol and Oates (1971), and Mohr (1990). The concept of externalities was introduced into the literature by Pigou (1920), recommending special taxes to correct negative externalities and compensation for enterprises that improve the environment. Pearce (1991) popularised the concepts of green economy, carbon tax, and double dividend, and developed the idea of the potential of environmental taxes to reduce pollution and contribute to the reduction of other taxes. Baumol and Oates (1971) believed that the state can establish a ceiling level of pollution; at the same time, it is necessary to establish a tax or subsidy that allows reaching this level, which implies a uniform price for polluting emissions. Mohr (1990) defined the concept of environmental fiscal policy as a set of instruments, in the form of environmental taxes and/or levies, through which a price can be charged for environmental goods to protect them, either in the form of incentives offered to decrease the overall demand for polluting activities, or to replace polluting substances with less harmful ones.

The European Union is a pioneer in integrating sustainability into fiscal policy. This leadership position is highlighted by the implementation of concrete measures, including the Carbon Border Adjustment Mechanism (CBAM) and the European Green Deal (European Commission, 2025).

Statistical data have shown an increase in the share of environmental taxes in GDP in the EU Member States, the most prominent tax category being the energy and transport taxes. In countries that have registered higher environmental taxes, greenhouse gas emissions have decreased, and at the same time, investment in renewable energy sources has climbed (Carfora et al., 2021; Degirmenci and Yavuz, 2024; Dogan et al., 2023). Moreover, empirical results uncovered a directly proportional relationship between the degree of harmonisation of environmental tax policies and economic efficiency (Glavaški et al., 2023). This contributes to reducing disparities between developed and emerging economies (Antohi et al., 2025). Against this backdrop, there is a need for public policies at the EU level that harmonise the application of green taxes to minimise the social impact that the green transition may have. The EU could externalise its internal environmental policy and use it as an instrument of global influence (Pander Maat, 2024). To avoid externalising emissions by emerging countries, the CBAM is the solution to ensure the EU's competitiveness in international trade (Fontagné and Schubert, 2023).

Some studies argue that environmental taxes have a positive impact on green public investment. Darvas and Wolff (2022) recommend the formation of a green fiscal pact and a green golden rule, by which green public investment would be excluded from the calculation of the budget deficit of states. In order to have the support of the population for green investments, financing them through public debt in the form of green bonds is more accepted than through tax increases or carbon taxes (Kantorowicz et al., 2024). Furthermore, fiscal instruments contribute to promoting the circular economy, so that, through mechanisms such as environmental taxes, extended producer responsibility, green public procurement, and SDGs for companies, the costs of pollution are internalised, and waste reduction is stimulated (Chenavaz and Dimitrov, 2024). Thus, the combination of strict fiscal regulations and public financing strategies stimulates innovation in circular economy sectors.

One important solution for sustainable and decarbonised economic development can be the simultaneous use of all EU environmental fiscal policy instruments. These can range from eliminating fossil fuel subsidies or setting the right price for carbon to subsidising energy technologies (Antimiani et al., 2023). At the same time, a very important role in the transition to a green economy is played by environmentally oriented research and environmental taxes (Trinh et al., 2023), given that climate change influences the need to invest in green technologies and sustainable infrastructure.

According to Rosales-Asensio et al. (2024), promoting the energy transition requires a rigorous regulation of support mechanisms for renewable energy to avoid high costs and market distortions. Separately, Căpraru et al. (2025) observe that the EU's green fiscal reforms have had spill-over effects, which have influenced Eastern European countries and candidate states to adopt similar policies.

Moldova has the basic legal framework for a green fiscal policy. The state's potential in this area is limited due to structural and administrative challenges. However, EU accession requires rapid adaptation of Moldovan fiscal policy by revising legislation, introducing new fiscal instruments, and along with compensatory measures to maintain fiscal stability (Chironachi, 2024). To strengthen administrative capacity and finance investments in green infrastructure, European funds and technical assistance, models of good practice can be used. Thus, Moldova can transform green fiscal policy from a revenue collection tool into an engine of sustainable transition.

Although there are numerous studies that have analysed the multiple aspects of green fiscal policy and the instruments through which environmental problems can be solved, it is necessary to further develop and study the issue of the efficient functioning of green fiscal instruments.

DATA AND METHODS

This research was carried out using quantitative and comparative analysis of environmental taxes in the EU and Moldova, between 2018 and 2024. This time span was selected to capture both pre-pandemic trends and the impact of successive crises such as COVID-19, the 2021-2023 energy crisis, and the war in Ukraine, as well as the first alignment measures adopted after obtaining EU candidate country status in 2022.

The logical model of the analysis was structured on three successive levels. Initially, the primary quantitative indicators were examined. This consisted of evaluating the evolution and structure of environmental tax revenues, both overall and by category: energy, transport, pollution, natural resources. The indicators were expressed as a percentage of GDP and as a percentage of total tax revenues. At the same time, the dynamics of public spending allocated to environmental protection as a percentage of GDP and of total budget expenditures were analysed.

At the second level, performance and alignment indicators were analysed based on the weight of each tax category in total environmental taxes, the degree of fiscal coverage of polluting activities, as well as the existence/absence of key institutional instruments such as carbon pricing systems, climate budgeting, and extended producer responsibility schemes.

Based on these two levels of analysis, the conclusions and recommendations were synthesised by evaluating the degree of coherence and efficiency of green fiscal policy, identifying gaps compared to EU standards, and formulating short and medium-term reform priorities.

The choice of indicators was justified by the joint Eurostat-OECD methodology for environmental taxes, which allows for international comparability and enables a correct assessment of the tax base, considered to be the physical unit or its equivalent with a proven negative impact on the environment. These indicators were supplemented with data on budget execution to highlight the gap between collected revenues and the expenditures actually allocated to environmental protection, which is an essential element for assessing the "green recycling" of tax revenues.

The information and data used in the article consist of legislative and policy sources, including the national legislation of Moldova, EU directives, and relevant strategy documents. The statistical sources included official data banks of national institutions, such as the National Bureau of Statistics and the Ministry of Finance, but also international databases such as Eurostat. Finally, the specialised literature, consisting of indexed scientific articles, case studies, monographs, and expert reports in the field of green taxation and circular economy, provided the theoretical and conceptual framework necessary for the interpretation of the data and for the formulation of the results. By integrating these methods and sources, the article aims to provide a robust and applicable analysis, which will support the decision-making process in the field of green fiscal policy in Moldova.

ENVIRONMENTAL TAX SYSTEM IN THE EUROPEAN UNION AND MOLDOVA

Green fiscal policy is an integral part of the European Green Deal that aims to create a competitive and sustainable economy. It uses both incentives for green investments and taxes on pollution to promote the environmental transition. The EU launched the Green Deal strategy in response to the worrying acceleration of climate change caused by human activity. This set of policies aimed to decouple economic development from the consumption of energy resources. Through this strategy, the EU aims to achieve climate neutrality by 2050. The areas, objectives, and strategies or Action Plans through which the European Green Deal is intended to be implemented are represented in Figure 1.

Figure 1.

The architecture of the European Green Deal

Zero Pollution → *Zero Pollution Action Plan, Strategy on the sustainable use of chemicals, Clean Air and Water Action Plan*

- goals: Air, water and soil pollution will no longer be considered harmful by 2050; Reducing the health impacts of air pollution by more than 55% by 2030.

Circular Economy → *Circular Economy Action Plan*

- goals: Ensure all plastic packaging reusable or recyclable by 2030; Moving towards circular products and functional market for waste; Recycl or reuse 65% of municipal waste by 2035.

Green ICT → *Digital Strategy*

- goals: Climate neutral data centers by 2030.

Preserving and Restoring Ecosystems and Biodiversity → *EU Biodiversity Strategy for 2030*

- goals: Protection of 30% of EU's land and sea by 2030.

Sustainable Mobility → *Sustainable and smart mobility strategy*

- goals: A 55% reduction in emissions from cars by 2030; A 50% reduction in emissions from vans by 2030; Zero emissions from all cars and vans by 2035.

Sustainable Built Environment → *Renovation Wave for Europe*

- goals: Encouraging the renovation of 35 million buildings and creating an additional 160,000 green jobs in the construction sector by 2030.

Sustainable Agriculture and Food System → *Farm to For Strategy*

- goals: At least 40% of the Common Agricultural Policy budget will be climate -r elevant.

Sustainable Energy System → *Fit for 55 Package and updates via REPowerEU*

- goals: Increase the share of renewable energy in the European energy mix to 40% by 2030; Improve energy efficiency to achieve an overall reduction of 36-39% for final and primary energy consumption by 2030; Review existing energy legislation; Create a European framework for gas; Review the Energy Taxation Directive.

Transformation of agriculture and rural areas → *CAP reform proposal*

- goals*:* Establishing a Vision for Inclusive Rural Areas and an Africa-Europe Agenda.

Achieving Climate Neutrality

- goals: Revising the 2030 Climate targets; Extending the Emissions Trading System (ETS); Implementing the Climate Pact; Enacting the Climate Law; Introducing a Carbon Border Tax.

Just Transition- Leave no one behind → *Green Financing Strategy, Sustainable Europe Investment Plan*

- goals:I mplementingt he Just Transition Instrument,i ncluding theJ ustT ransitionF und;E stablishingt he European Investment Bank as theE uropeanC limate Bank; Mainstreaming climate transition ands ustainabilitya crosst he MultiannualF inancial Frameork (MTF); Mainstreamingt he principles of aJ ustT ransition across the MTF.

Source: Author's representation based on European Commission (2019) and Hedberg & Šipka (2022).

To align the objectives of the European Green Deal, several directives and regulations have been developed or revised over time, such as the Energy Taxation Directive (ETD), the Carbon Border Adjustment Mechanism (CBAM), the Corporate Sustainability Reporting Directive (CSRD), the Circular Economy Action Plan (CEAP), etc. Thus, to ensure the proper functioning of the EU internal energy market, ETD sets minimum rates for taxes on electricity, fuels, and energy products that apply to all Member States. Under this regulation, taxation is based on energy content and CO_2 emissions, while volume-based taxation has been eliminated (European Commission, 2021). In addition, to ensure a green industry and fair competition for domestic producers, CBAM applies taxes on carbon emissions from production activities. This mechanism establishes the tax treatment of goods imported from third countries with a high carbon footprint (European Commission, 2025). CSRD assesses the sustainability performance of large companies, as part of the European Green Deal. Starting from 2024, this directive obliges companies to report social and environmental risks and opportunities, including their impact on the environment, by publishing green tax information, in accordance with the EU taxonomy. Furthermore, CEAP recommends taxes on virgin materials, introduces Extended Producer Responsibility (EPR) schemes, and provides incentives for recycling. This program aims to increase the circularity rate from 12% in 2020 to 24% by 2030.

The new EU budgetary rules for the 2024-2025 period integrate green objectives into the Stability and Growth Pact. It foresees a constant budget deficit for investment in the green and digital transition, with a focus on reducing public debt and prioritising sustainable spending. These standards are binding for Member States and candidate countries, through negotiating chapters such as Chapter 16 Taxation and Chapter 27 Environment and Climate Change.

The architecture of the European Green Deal (Figure 1) clearly shows that the green transition is not just an environmental issue, but a profound reconfiguration of the entire economic and fiscal model. Figure 1 illustrates the main pillars of the European Green Deal and their objectives by 2030–2050. For the Republic of Moldova, as an EU candidate country with the obligation of progressive alignment by 2030, this architecture is a mandatory "roadmap" in the accession negotiations. The degree of alignment and challenges for each pillar are as follows:

1. Regarding achieving climate neutrality, Moldova is at an early stage. Law No. 154/2024 on Climate Change only introduced the MRV (monitoring, reporting, verification) system for 12 major industrial emitters. The lack of a national carbon pricing system makes the country vulnerable to the future European CBAM, which will come into effect in 2026. Consequently, exports of cement, steel, and electricity will be subject to additional taxes, increasing prices by 20–40% if an internal carbon price is not introduced.

2. According to the Sustainable Energy System pillar, the share of renewable energy in Moldova was over 16% in 2024 and continues to grow. Energy taxes are based on volume, not on energy content and CO_2 emissions, as required by the revised ETD. Partial alignment is provided for in the 2025–2027 Economic Reform Programme to achieve the interim target of 30% by 2030.

3. Sustainable Mobility. Moldova's vehicle fleet is one of the oldest in Europe, with an average age of over 17 years. Even though road taxes and fuel excise duties have been increasing, they have not been accompanied by compensatory mechanisms for low-income households or subsidies for vehicle fleet renewal. However, the 2030 Mobility Strategy foresees increasing the share of electric cars to 15% of the total car fleet by 2030. Thanks to tax breaks granted for the purchase of these cars and the development of electric charging infrastructure, this goal could be achieved.

4. The Circular Economy Action Plan sets a municipal waste recycling rate of 65% and EPR targets by 2035. While in Moldova, only 3% of plastic waste is recycled and only 7% of packaging sold is collected for recycling. Extended Producer Responsibility (EPR) schemes exist only for PET packaging and WEEE, and the waste disposal tax is symbolic. Alignment with the CEAP is one of the most urgent priorities. because without rapid reforms, Moldova risks infringement immediately after joining.

5. Regarding Just Transition - Leave no one behind chapter, Moldova still lacks a National Just Transition Fund and clear mechanisms for compensating vulnerable households for rising energy and fuel prices. Revenues from environmental taxes are not "earmarked."

6. Regarding the Just Transition - Leave no one behind chapter, The "European Village" program was implemented under the Sustainable Built Environment pillar, and IFI funds (EBRD, EIB) are financing energy efficiency. However, mandatory deep renovation standards and fiscal incentives such as reduced VAT on insulation materials or tax deductions for energy renovation, which exist in most member states, are lacking.

7. Preserving and Restoring Ecosystems and Biodiversity. In this chapter, Moldova has made notable progress by expanding protected areas and banning the export of raw timber. However, implementation is uneven, and compensation for farmers who adopt ago-ecological practices is insufficient.

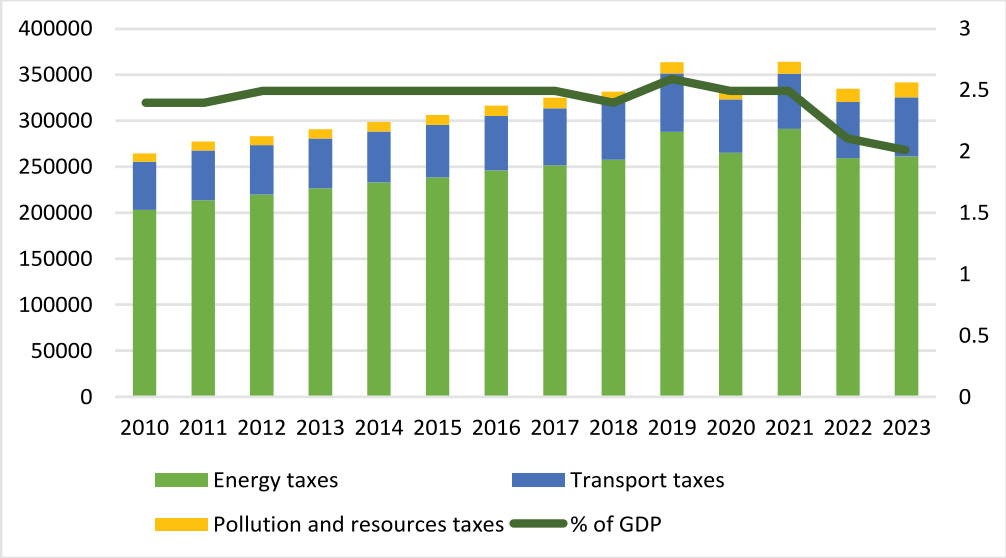
8. Zero Pollution & Sustainable Agriculture. The use of chemical fertilisers and pesticides is high, and agricultural subsidies are not sufficiently conditioned on environmental performance. The post-accession CAP reform will require rapid alignment with "eco-schemes" and the target of 25% organic farming by 2030.

The architecture of the European Green Deal functions as an interconnected system where each pillar is directly or indirectly supported by green fiscal instruments. In the case of Moldova, the lack of carbon pricing, green budgeting, and consolidated EPR schemes creates a domino effect. Although the budget collects green tax revenues, these do not generate the correct price signal and are not recycled into green investments. This means that Moldova remains outside the Green Deal's financial and regulatory circuit, even after the opening of accession negotiations. Under these conditions, rapid alignment with these pillars between 2025 and 2027 becomes not just an accession obligation, but a condition for economic survival in the new European commercial and climate reality.

A central element in achieving the objectives of the European Green Deal is the use of green taxes, which represented around 2.0% of the EU's GDP in 2023, with energy taxes having the largest contribution (Figure 2). These taxes aim to discourage polluting activities and generate revenue for investment in clean technologies. At the same time, the goal is to increase the share of these environmental taxes in GDP by providing necessary fiscal reforms.

Figure 2.

Evolution of environmental taxes by type (in billion euros) and as a share of GDP (% GDP) in the European Union, between 2010 and 2023



Source: Authors' representation based on Eurostat data (2024).

The European Commission, the OECD, and the International Energy Agency define environmental taxes as mandatory taxes and charges, the tax base of which is a physical unit or its equivalent, which has a proven negative impact on the environment and which is defined in the European System of Accounts (ESA 2010) as a tax (OECD, 2010). The tax base is the main criterion for identifying them as environmental taxes, in order to allow international comparison. More than that, depending on the field of use, the Directorate-General for Taxation and Customs Union of the European Commission has classified environmental taxes into four groups: energy taxes, transport taxes, pollution taxes, and taxes for the use of natural resources. In Moldova, at the legislative level, there is no express definition of environmental taxes, but a classification according to the Eurostat methodology can be made. Table 1 presents the range of environmental taxes used in the EU and Moldova.

Table 1.

Environmental tax system in the European Union and Moldova

European Union	Moldova
Energy Taxes (including fuel for transport)	
- *Energy products for transport purposes* (unleaded petrol, leaded petrol, diesel, other energy products for transport purposes like LNG, LPG, natural gas, kerosene, or fuel oil) - *Energy products for stationary purposes* (light fuel oil, heavy fuel oil, natural gas, coal, coke, biofuels, Electricity consumption and production, district heat consumption and production, other energy products for stationary use); - *Greenhouse gases* (carbon content of fuels, emissions of greenhouse gases (including proceeds from emission permits recorded as taxes in the national accounts).	- Excise on petroleum products; - Excise on liquefied gases.
Transport Taxes (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, airplanes, railways, etc.); - Transportation infrastructure (ports, harbours and airports, roads, rail, and pipeline networks, etc.); - Flights and flight tickets; - Vehicle insurance (excludes general insurance taxes).	- Excise on imported cars; - Road taxes; - Vignette.

European Union	Moldova
Pollution Taxes	
- Measured or estimated emissions to air (measured or estimated NO_x emissions, measured or estimated SO_x emissions, measured or estimated particulate matter (PM) emissions, measured or estimated volatile organic compounds (VOC) emissions, other measured or estimated emissions to air (excluding energy-related CO_2); - Ozone-depleting substances (e.g., CFCs or halons); - Measured or estimated effluents to water (measured or estimated effluents of oxydisable matter (BOD, COD), 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) and synthetic pesticides; artificial fertilisers (based on e.g., phosphorus or nitrogen content or price); manure); - Solid waste management (collection, treatment, or disposal, individual products (e.g., packaging, beverage containers, plastic bags, batteries, tyres, lubricants, motor oil, hazardous waste); - Noise (e.g., aircraft take-offs and landings); - Other pollution (paint and solvents, biomedical and personal care products, cleaning products, radiation, etc.).	- Payments for environmental pollution caused by emissions of air pollutants from stationary sources, - Payments for environmental pollution caused by discharges of wastewater pollutants into water bodies and sewage systems; - Payments for environmental pollution caused by the landfill of production waste; - Taxes on goods that, in the process of use, cause environmental pollution.
Resource Taxes	
- Fresh water abstraction; - Harvesting of biological resources (e.g., timber, hunted and fished species); - Extraction of raw materials (e.g., minerals); - Landscape changes and cutting of trees; - Semi-natural and natural land conversion to (intensive) agriculture and forestry, urban and infrastructure development, mining, etc.	- Water tax; - Tax for the extraction of useful minerals; - Tax on standing timber; - Tax for carrying out geological surveys; - Tax for carrying out geological explorations; - Tax for the use of underground premises for the construction of underground sites other than for the extraction of useful minerals; - Tax for the operation of underground structures for entrepreneurial activity other than for the extraction of useful minerals.

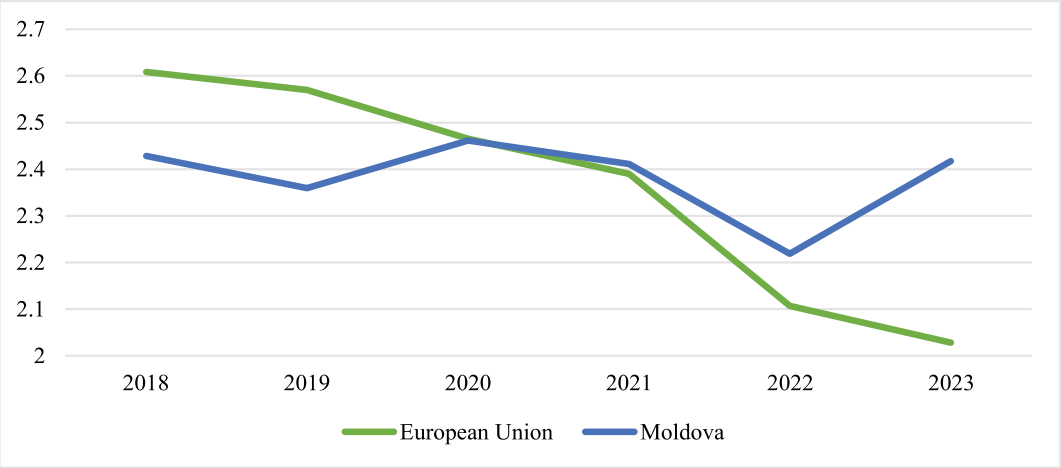
Source: Compiled by the authors based on Eurostat (2024) and Fala (2023).

The EU Regulation No 125/2022 introduced some amendments to Annexes I-V to the EU Regulation No 691/2011. According to it, Member States provide information by breakdown of environmental taxes for CO2 taxes under the EU Emissions Trading System (EU ETS) and other CO2 taxes. These categories include carbon taxes on fuels, sector-specific taxes, taxes on carbon-embedded goods, aviation and maritime taxes, border adjustments, and carbon offsets. The carbon border adjustment mechanism aims to align carbon prices for imported and EU-produced goods with the aim of achieving cleaner industrial production globally. EU ETS was launched in 2005 and covers EU Member States and the EEA-EFTA states Iceland, Liechtenstein, and Norway. The EU ETS is currently in its fourth phase (2021-2030). It is a cap-and-trade system covering around 40% of EU greenhouse gas emissions from over 11,000 power plants, industrial plants, and commercial airlines. In 2023, the EU ETS emissions cap was tightened to reduce emissions by 62% by 2030. At the same time, ETS2 is expected to be introduced in 2027, covering buildings, road transport, and specific industrial fuels. Revenue from both schemes will be directed to finance climate and energy initiatives, including heating and transport, as well as the Social Climate Fund.

To compare the tax burden of environmentally harmful activities, tax revenues from environmental taxes as a % of EU and Moldovan GDP were analysed over the period 2018-2023 (Figure 3).

Figure 3.

Evolution of environmental taxes in the EU and Moldova, between 2018 and 2023 (% of GDP)



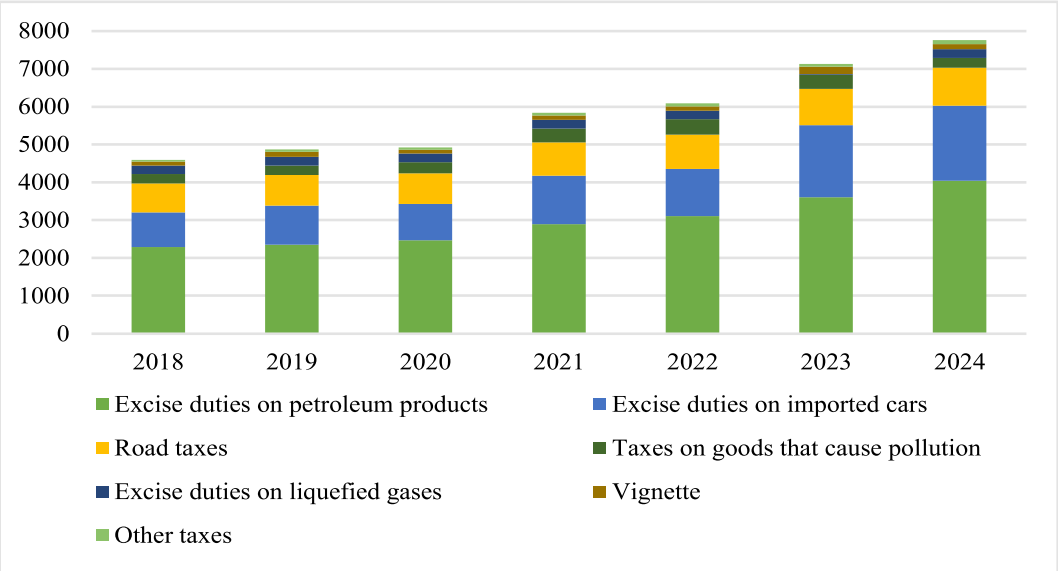
Source: Authors' representation based on Eurostat (2024) data and the Ministry of Finance of Moldova (2025).

In the EU, the share of environmental taxes in GDP decreased from 2.61% in 2018 to 2.03% in 2023. This was due to the reduction of the tax base related to electrification, structural changes in the economy, the absence of energy price subsidies, and resistance to environmental taxes. While in Moldova, the share of environmental taxes in GDP fluctuated from 2.43% in 2018 to 2.22% in 2022, when the lowest share was recorded, and in 2023 it reached 2.2% of GDP. Such fluctuations were determined by the faster growth of the value of environmental taxes collected, in relation to the value of GDP, and by the regional crises that affected the country's economy.

For a better understanding of the situation of environmental taxes in the development of the green economy of Moldova and to identify possible improvement solutions, it is necessary to analyse the changes in the structure of environmental taxes during the 2018-2024 period (Figure 4). The data shows a constant increase in environmental taxes from 4.59 billion lei in 2018 to 7.76 billion lei in 2024. In 2020, due to the COVID-19 pandemic, tax revenues from these taxes had the lowest dynamics. Energy taxes contributed the highest revenues to the national budget, observing a constant increase. More exactly, excise duties on petroleum products contributed 2.29 billion lei in 2018 and approximately 4.04 billion lei in 2024.

Figure 4.

Dynamics of environmental taxes in Moldova by category, between 2018-2024 (in million lei)



Note: Other taxes include tax for the extraction of useful minerals, water taxes, payments for environmental pollution, other payments for environmental pollution, tax for the use of underground, tax for the standing timber, tax for carrying out geological surveys, tax for carrying out geological explorations, tax for the use of underground premises for the construction, tax for the operation of underground structures. Because the value of these taxes is very small, they have been aggregated into the other taxes category.

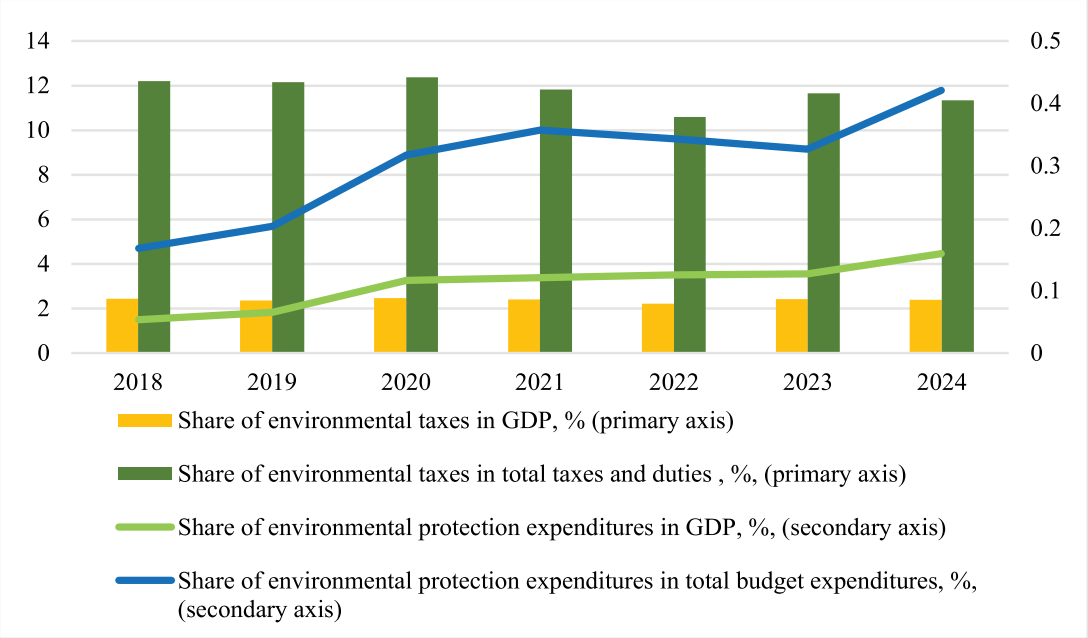
Source: Authors' representation based on the Ministry of Finance of Moldova (2025) data.

This increase was determined by high fuel and natural gas prices, increased excise duties, and energy efficiency policies. Transport taxes doubled during this period from 1.78 billion lei to 3.13 billion lei, due to the expansion of the tax base through registration taxes, road taxes, taxes on large vehicles, as well as through policies to renew the car fleet by discouraging old and polluting vehicles. In this category, the largest revenues were collected from excise duties on imported cars, from 915 million lei in 2018 to 1.99 billion lei in 2024. Pollution and natural resource taxes have a smaller share of total environmental taxes. This evolution was determined by the improvement of environmental practices and stricter application of environmental norms to prevent emissions for taxation. Another reason is the undervaluation or delay in the collection of these taxes. In the structure of pollution taxes, the largest share is the taxes on goods that cause environmental pollution. Natural resource taxes had a moderate oscillation, with a significant increase in 2024, which reflects an increase in royalties for the exploitation of natural resources, in the context of the adjustment of the fiscal-ecological framework.

According to the OECD and the EU methodology, environmental taxes applied in Moldova exceed the average of other European countries. They contribute over 10% to total tax revenues (Figure 5), with a pronounced downward trend from 12.2% in 2018 to 10.6% in 2022, and a slight increase in 2024. This was due to a rise in tax and duty revenues (for goods and services, because of increased imports), compared to the level of environmental taxes, even though environmental fiscal policies remained constant.

Figure 5.

Environmental taxes (% of GDP and % of total taxes) and environmental protection expenditures (% of GDP and % of total budget expenditures), between 2018 and 2024



Source: Authors' representation based on the Reports on the execution of the state budget (2018-2024).

A constant situation is observed in the share of environmental taxes in GDP, which reached a level between 2.2% and 2.5% of GDP during the reference period, reflecting the stability of environmental tax revenues in relation to the size of the economy. In 2022, these taxes recorded the lowest share, at 2.2%, but this was due to the significant increase in GDP, compared to the previous year (Figure 5). Environmental protection expenditures indicate that environmental protection priorities in Moldova are underfunded. Data on environmental protection expenditures contain only data on government expenditures, since Moldova does not keep records of expenditures made by economic agents or households in this regard. In addition, the share of environmental protection expenditures in total state budget expenditures is negligible, but has a growing trend from 0.17% in 2018 to 0.42% in 2024 (Figure 5). Moreover, in 2018, government expenditures for environmental protection represented 0.05% of GDP, reaching 0.16% of GDP in 2024, which reflects an increase in the priority of public investment for the environment.

The share of environmental protection expenditures in the 2018-2024 period denotes a weak prioritisation of the interests of Moldova in terms of preventing, reducing, or eliminating pollution or environmental degradation and suggests the need for a restructuring of green fiscal policies to increase their efficiency and impact on the environmental transition.

The constant increase in fuel excise duties and road taxes between 2018 and 2024 has generated regressive socio-economic effects in the absence of compensatory mechanisms. For final consumers,

especially poor households and those in rural areas, rising energy and transport prices reduced purchasing power during the peak years of the energy crisis, according to World Bank estimates. SMEs in the transport, trade, and agriculture sectors have incurred significant additional costs without benefiting from support schemes equivalent to those existing in EU member states, such as temporary excise duty reductions, electrification grants, or green tax credits.

In industry, the lack of a carbon pricing system keeps costs seemingly low for large emitters, but on the other hand, it exposes exports to the risk of CBAM. The pollution taxes currently collected are less than 60% of the estimated amounts, indicating weak administrative capacity and poor incentives for investment in clean technologies (Fala, 2023).

Thus, in its current form, green fiscal policy functions more like a regressive tax on consumption and economic activity rather than an instrument to stimulate a sustainable transition and protect vulnerable groups.

DISCUSSIONS

According to the data analysed, Moldova has made progress in aligning its environmental fiscal policy with EU directives. This conclusion was reached by the Stockholm Environment Institute, which assessed the progress of Moldova's green transition and highlighted the areas where the country has made significant progress, namely, regarding emission reduction and the circular economy. It was also found that fiscal and budgetary policies are not fully aligned with climate change financing needs. In addition, Moldova does not have a comprehensive environmental taxation system and has not implemented Climate Budget Labelling (CBT). The implementation of these policies is very important to ensure the alignment of public financial flows with the objectives of the green transition and sustainable development (Tammiste, 2025).

The efficiency of environmental tax collection in the Republic of Moldova remains suboptimal, with revenues growing from approximately MDL 4.59 billion in 2018 to MDL 7.76 billion in 2024, yet administrative challenges, including inconsistent enforcement and limited digitalization, result in collection rates estimated at 85-90% for key categories like energy excises, as per Ministry of Finance reports; this inefficiency hinders revenue maximization for green investments, exacerbated by structural vulnerabilities noted in IMF assessments, necessitating reforms in tax administration to enhance compliance and reduce evasion.

Some steps have been made in this direction through the Economic Reform Program 2025-2027, which adopted several fiscal measures to align with EU rules and harmonise with the ETD Directive. More than that, in 2025, Moldova completed the bilateral screening for some chapters, including taxation, and implemented the Reform and Growth Mechanism (EU Regulation 2025/535), which supports green investments through EU funds (Government of Moldova, 2025). In addition, the alignment with the CEAP is achieved by promoting reforms regarding waste management and recycling. For Moldova, the circularity rate has been estimated at 5-10%. In this regard, there are several partnerships with the EU, such as SWITCH to Green. The Reform Agenda under the Growth Plan includes IT strategies for green taxation, increasing revenues through pollution taxes, and alignment with EU customs standards (since 2017). For instance, incorporating the SDGs into fiscal policy with an emphasis on sustainability is part of fiscal alignment with the UN 2030 Agenda. Additionally, the Republic of Moldova has developed the framework and procedures for carbon certification outlined in Article 6.2 of the Paris Agreement. In accordance with the principles of the EU ETS, the 2024 Climate Action Law established essential frameworks for emissions monitoring, reporting, and verification systems. Twelve of the industrial polluters have greenhouse gas licenses that are managed by the Environmental Agency. The Environmental Agency oversees greenhouse gas permits for 12 of the industrial emitters. Feasibility studies are currently being conducted on the establishment of carbon pricing mechanisms.

To illustrate alignment levels, Table 2 provides a comparative overview of Moldova's status relative to the EU on key environmental instruments, based on European Commission enlargement reports.

Table 2.

Alignment of the key instruments of the European Green Deal: European Union and Moldova

Instrument	EU Status	Moldova Status	Alignment Level	Key Gaps/ Progress
ETD (Energy Taxation Directive)	Fully implemented across Member States, with minimum rates on energy products based on CO_2 emissions (revised 2023).	Partial harmonization via Economic Reform Program 2025-2027; excises on fuels increased but not fully aligned with EU minima.	Moderate	Progress in excise adjustments; gap in comprehensive CO_2-based taxation.

Instrument	EU Status	Moldova Status	Alignment Level	Key Gaps/ Progress
CBAM (Carbon Border Adjustment Mechanism)	Operational since 2023, full phase-in by 2026 for high-carbon imports; simplified in 2025.	Not implemented; preparatory studies under EU4Climate project for potential adoption as candidate.	Low	Feasibility ongoing; gap in carbon pricing for imports, risking competitiveness.
CEAP (Circular Economy Action Plan)	Targets doubled circularity to 23% by 2030; EPR schemes widespread.	Reforms in waste management; circularity at 5-10%; partnerships like SWITCH to Green.	Moderate	Progress in recycling policies; gap in EPR implementation and virgin material taxes.
CSRD (Corporate Sustainability Reporting Directive)	Mandatory for large companies since 2024, requiring ESG disclosures aligned with EU taxonomy.	Limited adoption; no mandatory framework, though some voluntary reporting in EU-funded projects.	Low	Initial steps via Association Agreement; gap in enforcement for sustainability risks.
ETD (Energy Taxation Directive)	Fully implemented across Member States, with minimum rates on energy products based on CO_2 emissions (revised 2023).	Partial harmonization via Economic Reform Program 2025-2027; excises on fuels increased but not fully aligned with EU minima.	Moderate	Progress in excise adjustments; gap in comprehensive CO_2-based taxation.

Source: Compiled by authors based on European Commission Enlargement Report (2024) and Tammiste, 2025).

Moldova has made some progress toward aligning with EU green fiscal instruments, especially in the areas of energy and circular economy reforms. However, there are still gaps in comprehensive taxation systems and administrative efficiency. This highlights the need for quicker policy harmonization. To close these gaps and ensure a strong foundation for sustainable development and successful integration into the goals of the European Green Deal, it will be essential to make use of EU partnerships and continuous feasibility studies.

CONCLUSION

The article analysed the current state of green fiscal policy in Moldova, identified directions for harmonisation with the European standards, such as the introduction of the carbon border adjustment mechanism, subsidies and incentives for sustainable investments, and the promotion of the circular economy. The findings unveiled several important conclusions. Moldova has made noticeable steps toward designing a fundamental fiscal-ecological framework, green fiscal policy is still mostly a tool for revenue collection rather than a true catalyst for sustainable transition. Environmental tax revenues are comparable to the EU average in terms of GDP, but their seriously imbalanced structure and lack of recycling into green initiatives almost eliminate the "double dividend" and signalling effect. The urgent priorities for the period 2025–2027 are: introducing a national carbon pricing system (carbon tax or ETS pilot), implementing Climate Budget Tagging, expanding and strengthening Extended Producer Responsibility (EPR) schemes, and increasing the administrative capacity of the Environmental Agency and the State Tax Service for efficient monitoring and collection. In the medium to long term (2027–2030), the key objectives include full alignment with the revised Energy Taxation Directive (ETD), preparing a CBAM-mirror mechanism, developing the green bond market, and integrating the EU taxonomy into national legislation. Limited administrative capacity remains the main structural obstacle. The small number of environmental inspectors, the absence of an integrated electronic emissions register, and poor inter-institutional coordination are hindering the pace of reforms. The Republic of Moldova's green transition is essentially a financial transition. Without a coherent green budgeting system, without a carbon price, and without real just transition mechanisms, the social and economic costs of alignment will increase exponentially after accession. The proposed reforms are not just a condition of the accession negotiations – they represent the only way fiscal policy can move from being a simple source of revenue to becoming a true catalyst for a resilient and competitive economy.

The limitations of the study stem from the lack of complete data on private environmental protection expenditures and the impossibility of precisely quantifying the effects of "carbon leakage" in the absence of a national carbon pricing system. However, the analysis provides a solid and up-to-date basis for policymakers in the context of accession negotiations with the European Union.

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REFERENCES

Antimiani, A., Costantini, V., & Paglialunga, E. (2023). Fossil fuels subsidy removal and the EU carbon neutrality policy. *Energy Economics*, *119*, 106524. https://doi.org/10.1016/j.eneco.2023.106524

Antohi, V. M., Fortea, C., Zlati, M. L., & Dinca, M. S. (2025). The impact of green taxation on sustainable economic development in the European Union. *Journal of Financial Studies*. *10*(18), 240-263. https://doi.org/10.55654/JFS.2025.10.18.12

Baumol, W. J., & Oates, W. E. (1971). The use of standards and prices for protection of the environment. *The Swedish Journal of Economics*, *73*(1), 42-54. http://dx.doi.org/10.2307/3439132

Căpraru, B., Georgescu, G., & Sprincean, N. (2025). Fiscal rules, independent fiscal institutions and sovereign risk: Evidence from the European Union. *International Journal of Finance*. https://doi.org/10.1002/ijfe.3127

Carfora, A., Pansini, R. V., & Scandurra, G. (2021). The role of environmental taxes and public policies in supporting RES investments in EU countries: Barriers and mimicking effects. *Energy Policy*, *149*, 112044. https://doi.org/10.1016/j.enpol.2020.112044

Chenavaz, R. Y., & Dimitrov, S. (2024). From waste to wealth: Policies to promote the circular economy. *Journal of Cleaner Production*, *443*, 141086. https://doi.org/10.1016/j.jclepro.2024.141086

Chironachi, C. (2024, August 23). Fiscal instruments to support sustainable development and encourage environmentally friendly business practices. In: *Development Through Research and Innovation IDSC-2024:* international scientific conference. Collection of articles (5th edition, pp. 259-265). Chișinău: SEP ASEM. https://doi.org/10.53486/dri2024.29

Darvas, Z., & Wolff, G. B. (2022). A green fiscal pact for the EU: Increasing climate investments while consolidating budgets. *Climate Policy, 23*(4), 409-417. https://doi.org/10.1080/14693062.2022.2147893

Degirmenci, T., & Yavuz, H. (2024). Environmental taxes, R&D expenditures, and renewable energy consumption in EU countries: Are fiscal instruments effective in the expansion of clean energy? *Energy*, 299, 131466. https://doi.org/10.1016/j.energy.2024.131466

Dogan, E., Hodžić, S., & Šikić, T. F. (2023). Do energy and environmental taxes stimulate or inhibit renewable energy deployment in the European Union? *Renewable Energy*, *202*, 1138-1145. https://doi.org/10.1016/j.renene.2022.11.107

European Commission. (2019). *The European Green Deal*. COM 640 final. https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1576150542719&uri=COM%3A2019%3A640%3AFIN

European Commission. (2021). *Revision of the Energy Taxation Directive*. https://taxation-customs.ec.europa.eu/taxation/excise-duties/revision-energy-taxation-directive_en

European Commission. (2024). *Republic of Moldova 2024 Report*. SWD 698 final. https://enlargement.ec.europa.eu/document/download/858717b3-f8ef-4514-89fe-54a6aa15ef69_en?filename=Moldova%20Report%202024.pdf

European Commission. (2025). *Carbon Border Adjustment Mechanism*. https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en

Eurostat. (2024). *Environmental tax statistics*. Statistics explained. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental_tax_statistics&oldid=48200

Eurostat. (2024). *Environmental taxes*. A statistical guide. Publications Office of the European Union. https://data.europa.eu/doi/10.2785/730717

Fala, A. (2023). *Pollution tax reform – A necessary step to ensure green economic growth*. Chișinău: Expert-Grup. https://www.expert-grup.org/en/biblioteca/item/2487-reforma-taxelor-pe-poluare-%E2%80%93-un-pas-necesar-pentru-asigurarea-unei-cre%C8%99terii-economice-verzi&category=180

Fontagné, L., & Schubert, K. (2023). The economics of border carbon adjustment: Rationale and impacts of compensating for carbon at the border. *Annual Review of Economics*, *15*, 389-424. https://doi.org/10.1146/annurev-economics-082322-034040

Glavaški, O., Beker Pucar, E., Beljić, M., & Stojkov, S. (2023). Coordination EU vs. competitiveness of effective average tax rates in relation to FDI: The case of emerging economies. *Sustainability*, *15*(1), 227. https://doi.org/10.3390/su15010227

Government of the Republic of Moldova. (2025). *Reform agenda under the Republic of Moldova's growth plan for the years 2025–2027*. https://mded.gov.md/wp-content/uploads/2025/05/Agenda-_260-en.pdf

Hedberg, A., & Šipka, S. (2022). The role of European Union policies in accelerating the green transition. *Field Actions Science Reports. Special Issue, 24, 86-91*. http://journals.openedition.org/factsreports/6989 _

Kantorowicz, J., Collewet, M., DiGiuseppe, M., & Vrijburg, H. (2024). How to finance green investments? The role of public debt. *Energy Policy, 184,* 113899. https://doi.org/10.1016/j.enpol.2023.113899

Ministry of Finance of Moldova. (2025). *Taxes and fees*. https://www.mf.gov.md/ro/impozite-%C8%99i-taxe

Mohr, E. (1990). Environmental policy and international trade: The case of Germany. *The World Economy, 13*(4), 489-504.

Organisation for Economic Co-operation and Development (OECD). (2010). *Taxation, innovation, and the environment*. Paris: OECD Publishing. https://www.oecd.org/content/dam/oecd/en/publications/reports/2010/10/taxation-innovation-and-the-environment_g1g1044d/9789264087637-en.pdf

Pander Maat, E. (2024). How to be a green global standard-setter - The EU's externalization of the environmental integration principle. In: R. A. Wessel, J. Bergamaschine Mata Diz, J. Péret Tasende Társia, & S. E. Akdogan (Eds.), *EU external relations law and sustainability: The EU, third states and international organizations* (pp. 29-64). T.M.C. Asser Press. https://doi.org/10.1007/978-94-6265-655-0_3

Pearce, D. (1991). The role of carbon taxes in adjusting to global warming. *The Economic Journal*, *101*(407), 938-948. https://doi.org/10.2307/2233865

Pigou, A. C. (1920). *The economics of welfare*. London: Macmillan. http://pombo.free.fr/pigou1920.pdf

Rosales-Asensio, E., Diez, D. B., Cabrera, P., & Sarmento, P. (2024). Effectiveness and efficiency of support schemes in promoting renewable energy sources in the Spanish electricity market. *International Journal of Electrical Power & Energy Systems, 158*, 109926. https://doi.org/10.1016/j.ijepes.2024.109926

Tammiste, L., Iordanov, R., Ciobanu, N., Echim, T., & Lahtvee, V. (Coords.). (2025). *National comprehensive green transition assessment report for Moldova*. Green Agenda for Armenia, Georgia, Moldova, and Ukraine. https://green-agenda.org/en/green-transition-assessment

Trinh, H. H., McCord, M., Lo, D., & Squires, G. (2022). Do green growth and technological innovation matter to infrastructure investments in the era of climate change? Global evidence. *Applied Economics*, *55*(35), 4108-4129. https://doi.org/10.1080/00036846.2022.2125493

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