JEL Classification: Q18, Q52, Q53 **DOI**: https://doi.org/10.31521/modecon.V50(2025)-27

Khrystenko Olha, PhD (Economics), Associate Professor, Head of the Department of Enterprise Economics, Mykolayiv National Agrarian University, Mykolayiv, Ukraine

ORCID ID: 0000-0003-0431-5328
e-mail: hristenko@mnau.edu.ua

Poltorak Anastasiia, Doctor of Economics, Professor, Head of the Department of Management and Marketing, Mykolayiv National Agrarian University, Mykolayiv, Ukraine

ORCID ID: 0000-0002-9752-9431
e-mail: poltorak@mnau.edu.ua

Burkovska Anna, PhD (Economics), Associate Professor of the Department of Management and Marketing, Mykolayiv National Agrarian University, Mykolayiv, Ukraine

ORCID ID: 0000-0003-0563-6967
e-mail: anna.burkovskaya12@gmail.com

Dovgal Ivan, Graduate Student, Mykolayiv National Agrarian University, Mykolayiv, Ukraine

ORCID ID: 0009-0008-0093-1362
e-mail: dovgalov@mnau.edu.ua

Environmental Taxation as a Basis of Stimulating Sustainable Development and Ensuring Financial and Economic Security

Abstract. Introduction*. The modern challenges of sustainable development require the active implementation of mechanisms that promote the rational use of natural resources and reduce the negative environmental impact. Environmental taxation is becoming one of the tools that can replenish the state budget and stimulate environmentally responsible business behavior. In Ukraine's context, especially in the aftermath of war-related destruction, an effective environmental tax system is of strategic importance. However, the current system does not fulfill its stimulating and compensatory functions, and businesses mainly perceive it as an additional financial burden.*

Purpose*. This study aims to strengthen the conceptual basis of environmental taxation as a means of promoting sustainable development in Ukraine. Particular attention is paid to analyzing the current state of the tax system and its legislative regulation. Recommendations for increasing the efficiency of environmental taxes are developed, taking into account international experience..*

Results. *An analysis of environmental tax distribution depending on the physical nature of the taxed object was conducted and five main categories were identified. The main problems of the existing system were recorded, including the taxes' low stimulating and compensatory role, the inefficient distribution of revenues between budgets of different levels, and the weak control over compliance with environmental standards. Proposals for modernizing environmental taxation are presented, including reforming the CO_2 emission tax, adjusting the distribution of tax revenues, and introducing incentives for transitioning to a carbon-free economy.*

Conclusions*. Environmental taxation in Ukraine requires comprehensive modernization to fulfill its role as a tool for sustainable development. Improving the legislative framework, rationally distributing tax revenues, and introducing a system of incentives will foster environmental responsibility among businesses and encourage investments in environmentally friendly technologies. In the long term, these changes will lay the groundwork for transitioning to a sustainable economy, particularly in the context of post-war reconstruction, while ensuring the interests of all stakeholders are considered.*

Keywords*: environmental taxation, sustainable development, taxes, CO_2 emissions, Ukraine, economic policy, environmental technologies.*

УДК 336.144:334

Христенко О. А., кандидат економічних наук, доцент, завідувач кафедри економіки підприємств, Миколаївський національний аграрний університет, Миколаїв, Україна

Полторак А. С., доктор економічних наук, професор, завідувач кафедри менеджменту та маркетингу, Миколаївський національний аграрний університет, Миколаїв, Україна

Бурковська А. І., доктор філософії (економіка), доцент кафедри менеджменту та маркетингу, Миколаївський національний аграрний університет, Миколаїв, Україна

[1]**Стаття надійшла до редакції**: 16.04.2025
Received: 16 April 2025

Довгаль І.В., аспірант, Миколаївський національний аграрний університет, Миколаїв, Україна

Екологічне оподаткування як основа стимулювання сталого розвитку та забезпечення фінансово-економічної безпеки

Анотація. *Поглиблено концептуальні основи екологічного оподаткування як основи стимулювання сталого розвитку. Проаналізовано розподіл об'єктів екологічного податку в Україні залежно від фізичної природи суб'єкта оподаткування на п'ять категорій та актуальність законодавчих норм у сфері екологічного оподаткування. Проведено моніторинг стану екологічного оподаткування в Україні та систематизовано його основні проблеми. Визначено, що екологічний податок в Україні не виконує стимулюючої та компенсаційної функцій, крім того, бізнес-спільнота досить часто сприймає підвищення податків лише як додаткове фіскальне навантаження. Обґрунтовано рекомендації, спрямовані на підвищення ефективності екологічного оподаткування як основи стимулювання сталого розвитку з урахуванням передового світового досвіду. Основними пропозиціями є: вдосконалення концепції екологічного податку на викиди CO2 та модернізація інших категорій екологічного податку; коригування пропорцій розподілу податкових надходжень від екологічного оподаткування між бюджетами різних рівнів, що сприятиме формуванню послідовної та узгодженої політики у сфері екологічного оподаткування; підвищення ефективності використання податкових надходжень від екологічного оподаткування; посилення комплексного контролю за комплексним дотриманням стандартів; запровадження системи стимулюючих заходів, спрямованих на поступовий перехід до безвуглецевої економіки. Застосування цих пропозицій підвищить рівень екологічної свідомості та загальну ефективність екологічних податків в Україні, що сприятиме залученню бізнесу до інвестування в екологічно безпечні технології та виробничі процеси. У довгостроковій перспективі стимулювання екологічної трансформації бізнесу та формування практики відповідального використання енергоресурсів сприятиме поступовому переходу економіки до сталого розвитку, впровадженню інновацій у післявоєнний період та врахуванню інтересів усіх зацікавлених сторін.*

Ключові слова: *екологічне оподаткування, сталий розвиток, податки, викиди CO_2, Україна, економічна політика, екологічні технології.*

JEL Classification: *A22; C13; I20; I21.*

Formulation of the problem. Sustainable development means meeting the needs of the current generation without compromising the ability of future generations to meet their own needs. Economic activities and industry usually result in increased emissions of harmful substances and environmental pollution. In these conditions, environmental taxation can encourage companies to adopt clean technologies and make efficient use of resources. Effective taxation of negative environmental impacts contributes to the development of new environmentally friendly technologies and effective decision-making. Companies that invest in sustainable manufacturing research and development gain a competitive advantage. Additionally, environmental taxation reduces "consumer aggression" by changing consumer habits and directing consumers toward less environmentally burdensome decisions. Modern investors are increasingly paying attention to companies' sustainability and environmental responsibility. Effective environmental taxation makes "green" investments more attractive to investors. Increasing tax rates on environmentally hazardous activities can generate additional budget revenues for financing sustainable development and environmental projects.

Ukraine's ongoing war has already had a serious impact on the environment. The destruction of important infrastructure, including energy companies and chemical plants, exacerbates the negative impact. Fires, explosions, and the destruction of industrial facilities release hazardous chemicals and pollutants into the air, soil, and water sources. This has led to poor air and water quality, public health threats, and polluted natural ecosystems. Hostilities also hinder the restoration of natural resources and biodiversity. A large number of explosions and shelling damage forests, fields, and other natural areas. This disrupts ecosystems and leads to environmental pollution from military equipment, waste, fuel, lubricants, and other harmful substances. Long-term environmental degradation can have serious consequences for nature and public health.

The importance of the chosen scientific issues is evident because environmental taxation is an effective means of promoting sustainable development, conserving natural resources, and ensuring the planet's viability for future generations.

Analysis of recent research and publications. Using the Vosviewer v.1.6.19 toolkit and Google Analytics, a thorough bibliometric analysis was conducted to identify groups of scientists with significant contributions to environmental taxation research. We carried out bibliographic analysis using the capabilities of Google Analytics and Vosviewer.

We selected a list of scientific publications on the researched topic that had the most significant impact on the formation of the research paradigm in recent years using the search, clustering, and keyword highlighting functionality provided by the toolkit and Google Analytics. Monographic and bibliographic methods, as well as analysis, synthesis, deduction, and induction, made it possible to identify a field of scientific problems requiring more detailed research and to develop a framework for our scientific inquiry.

The study [1] examines indicators from 1990 to 2019 for G7 countries in tax policy and economic openness and their impact on environmental sustainability. However, it is unclear whether the conclusions can

inform management decisions in low- or middle-income countries.

The authors of study [2] attempted to investigate the relationship between environmental tax rates, pollutant emissions, and corporate tax rates. The empirical analysis was based on a preliminary sample of 20 years of data from 10 industrialized economies worldwide. The authors did not consider indicators of countries with weak economies. Work [3] studied the impact of environmental taxes on energy efficiency, proving that green technologies and environmental taxes are important factors in increasing energy efficiency and reducing energy intensity.

The authors of Article 4 claim that environmental taxation is an important state tool used to encourage enterprises to undergo "green" transformations. The study's results indicate that environmental tax legislation increases the ESG indicators of enterprises that significantly pollute the environment. However, a similar relationship was not confirmed for enterprises with less negative environmental impact. Study [5] emphasizes that reengineering state support for the agricultural sector should aim to implement digital technologies, contributing to sustainable development, increasing sector efficiency, and reducing the need for state support.

Work [6] claims that "green" fiscal and budgetary policies are important tools for financing the "green" economy. These policies are associated with technological innovations that reduce CO2 emissions. The authors emphasize that a "green" tax is the most important element of "green" fiscal policy and that "green" finance promotes technological innovation and prevents CO_2 emissions.

Study [7] analyzes the specifics of tax risks and generalizes the main forms of tax risks (including environmental risks) in the economic security system and monitors methods of calculating tax burden indicators. Article [8] proposes alternative approaches to increasing the effectiveness of the carbon tax due to the authors' belief that it is ineffective. However, the researchers pay much attention to the fiscal function of this tax, bypassing its ecological significance.

[9] notes that the Chinese government introduced a nationwide environmental taxation policy to address pollution. This policy encourages businesses to optimize their production processes. We agree with this conclusion and draw attention to the findings of the authors of [10], who emphasize that analyzing data from 287 Chinese cities from 2010 to 2019 revealed that this national environmental tax policy is ineffective in promoting sustainable development and reducing emissions. The authors of paper [11] note that monitoring companies registered on the A-share exchange from 2012 to 2021 revealed that environmental taxation in China negatively affects these companies' overall productivity. Considering the heterogeneity of the enterprises studied, the authors emphasize that such an impact is minimal for large enterprises with high investment efficiency located in western regions.

Increased carbon dioxide emissions threaten environmental sustainability. Thus, the authors of article [17] investigated the interaction between environmental taxes and CO_2 emissions using data from 21 OECD countries from 1990 to 2020. The study resulted in a recommendation to promote "green" financing and tax collection in polluting industries. Study [18] models an alternative carbon tax scheme that takes household consumption in 88 countries into account. The study proposes differentiated environmental tax rates, which would contribute to reducing annual global household emissions.

The authors of the study [19] focused on specific aspects of environmental taxation and its impact on stimulating sustainable development. Specifically, they examined whether environmental taxation causes spatial side effects in Italy, France, and Germany from 1994 to 2020. Another study examined the validity of the double dividend hypothesis for certain African countries (Cameroon, Mali, and Uganda) from 1994 to 2017. This study uses panel cointegration and long-run estimates to analyze the idea that environmental taxes can affect employment as well. It proposes an approach to environmental taxation as a financial incentive rather than a command-and-control policy to combat environmental degradation and unemployment.

Formulation of research goals. Highly appreciating the results of the above-mentioned scientific works, we are convinced that in modern conditions the issue of facilitating the efficiency of environmental taxation as a basis for stimulating sustainable development requires further thorough consideration by the scientific community.

This article aims to present theoretical and methodological concepts and practical approaches to environmental taxation as a means of promoting sustainable development.

To efficiently achieve the scientific goal, the following research tasks were identified:

– to deepen the conceptual foundations of environmental taxation as a basis for stimulating sustainable development;

– to analyze the state of environmental taxation as a basis for stimulating sustainable development;

– to justify proposals for increasing the efficiency of environmental taxation as a basis for stimulating sustainable development.

Presentation of the main research material. Current ecological problems are issues of special attention that require responsible action from the state. The necessary measures aim to minimize destructive impacts while supporting sustainable economic development. The government has a variety of tools at its disposal, one of the most important of which is the effective use of environmental taxes.

An environmental tax is a mandatory payment to the state for the registered volumes of emissions released into the atmosphere, pollutants released into water resources, waste disposal, and the volume of temporary storage of radioactive waste by producers. It also applies to the volume of radioactive waste generated and accumulated as of April 1, 2009 [12].

In the context of international practices, Ukraine's application of the environmental tax is quite specific. Depending on the physical nature of the taxable entity, all entities are divided into five categories (Fig. 1). The rates for each category are specified in Chapter VIII of the Tax Code and vary based on the associated hazard and risk level.

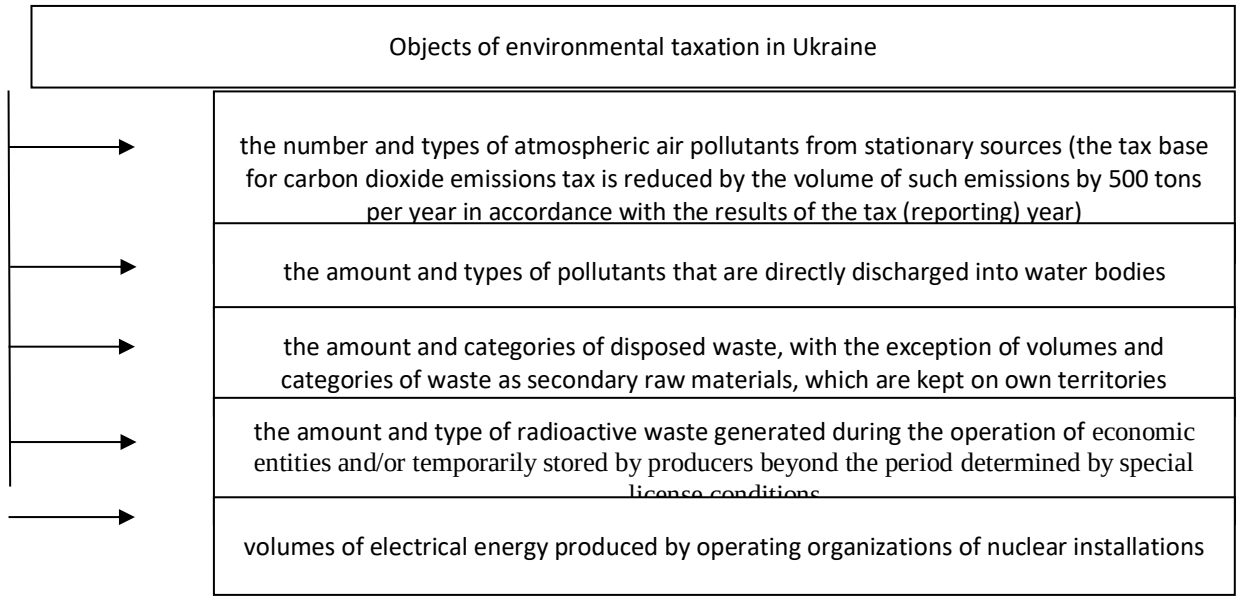

Figure 1 – **The complex of objects subject to environmental tax in Ukraine**

Source: built by the authors on the basis [12].

In the case of performing business operations that lead to various pollution of the environment and/or emissions of various types of pollutants, the business entity has the obligation to determine a separate amount of tax for each type of pollution and/or each type of pollutant.

From January 1, 2022, changes were made to the legislative norms of environmental taxation [13] (Fig. 2).

The increase in environmental tax rates was planned to influence the economic activity of business entities, aiming to minimize harmful effects, preserve the environment, and encourage pollution reduction. Currently, however, environmental taxes do not stimulate or compensate. Additionally, the business community often perceives tax increases as an additional fiscal burden. At the same time, the volume of environmental tax revenues in Ukraine remains insignificant (Fig. 3), providing insufficient funds to finance necessary environmental protection measures. Thus, from 2011 to 2022, the environmental tax accounted for no more than 1.4% of tax payments to the Consolidated Budget of Ukraine, and this percentage has a tendency to decrease.

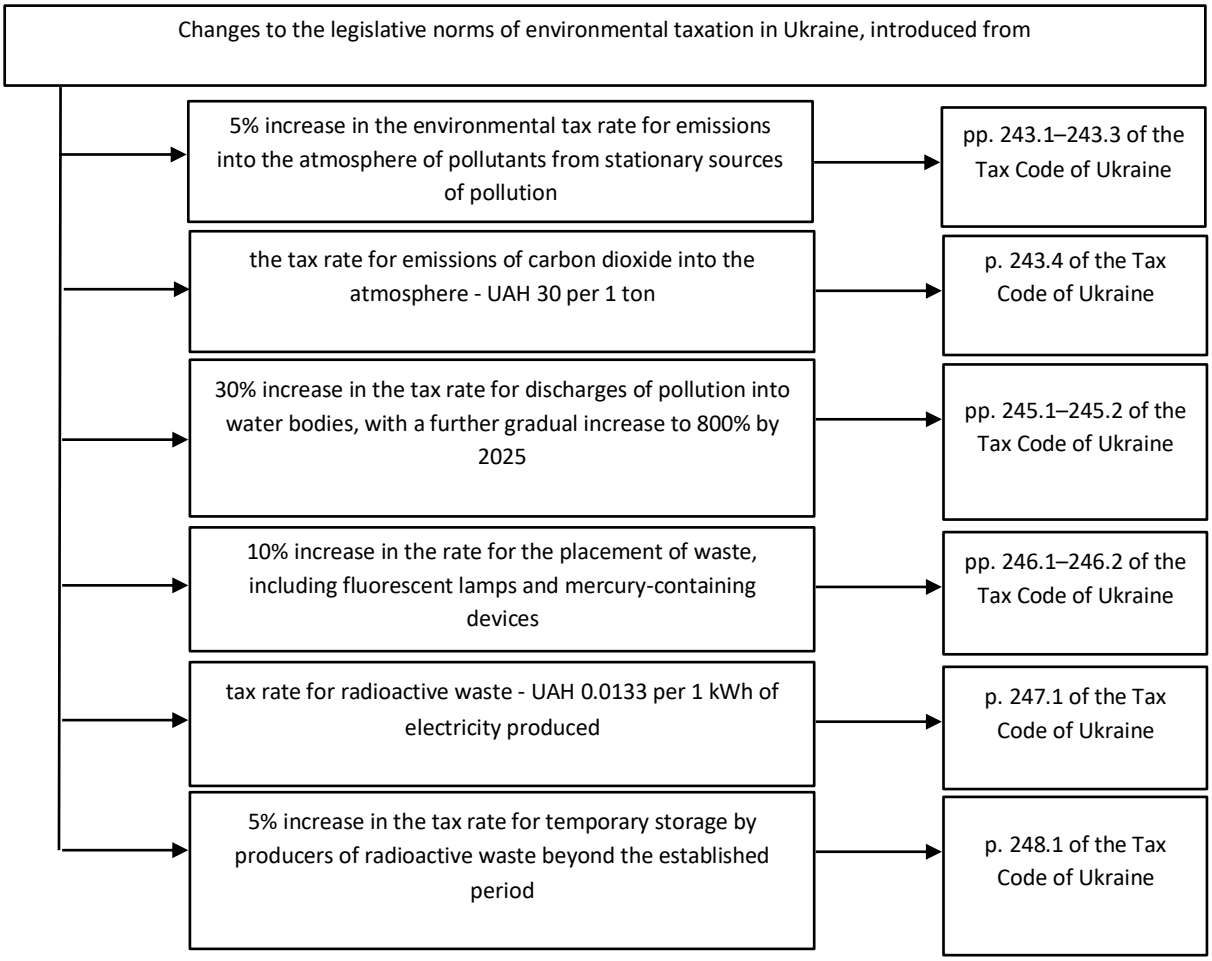

Figure 2 – **Adjustment of legislative norms in the field of environmental taxation in Ukraine**

Source: built by the authors on the basis [12, 13].

It should be noted that in most European countries, the environmental tax effectively performs a compensatory function. This means that tax revenue is several times greater than government spending on environmental protection measures. Additionally, in most European countries, the environmental tax performs a fiscal function, accounting for up to 10% of tax revenues (Fig. 4). In 2021, the specific weight of environmental taxes in the total tax payments of European Union countries ranged from 3.76% (Luxembourg) to 9.98% (Greece). Therefore, when compared to Ukrainian realities, it is evident that the level of environmental taxation in Ukraine is significantly lower than in European Union countries.

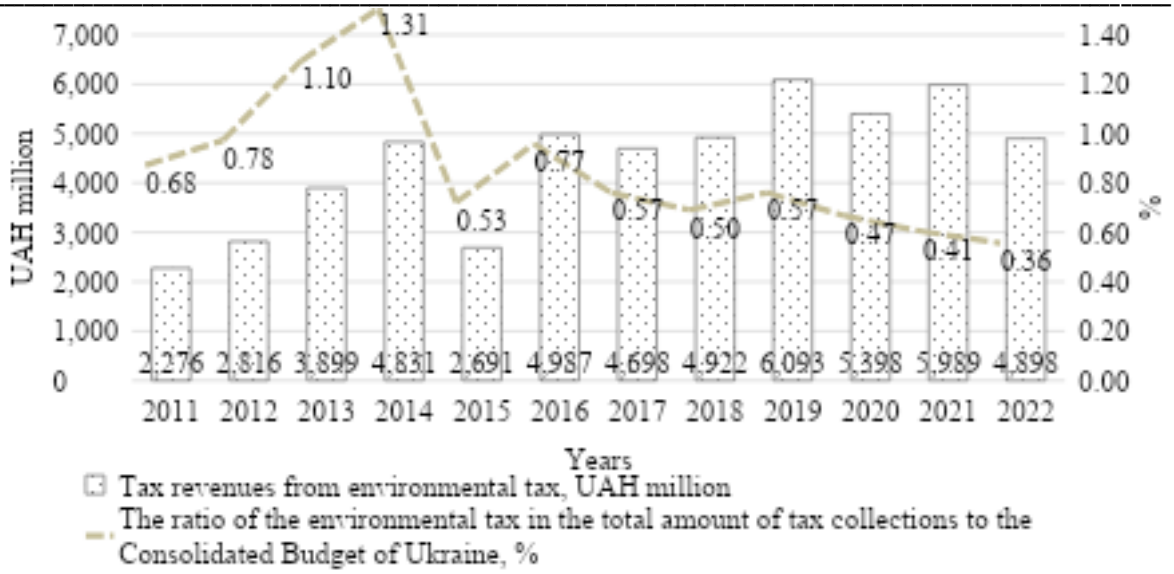

Figure 3 – **Dynamics of payments in the field of environmental taxation in Ukraine**

Source: built by the authors on the basis [12, 14].

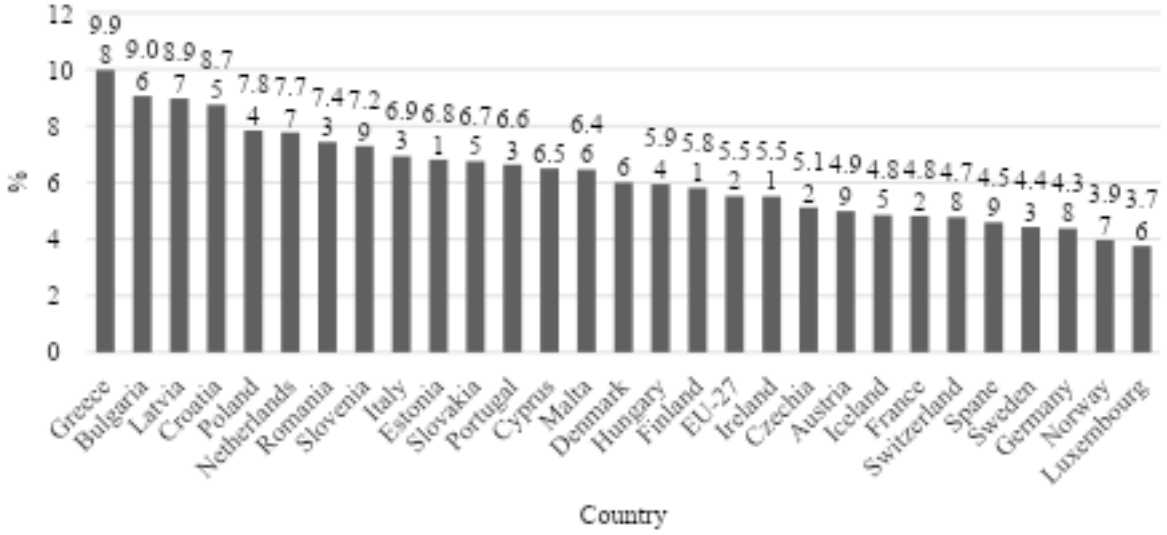

Figure 4 – **The ratio of environmental taxes in the structure of total tax payments in 2021, %**

Source: built by the authors on the basis [23].

The main problems in the field of environmental taxation in Ukraine should be highlighted:

First, the concept of environmental tax is imperfect in terms of the ineffective implementation of environmental protection and the promotion of a rapid transition to a sustainable, low-carbon economy. Second, there is non-compliance with European Union regulations. According to the Association Agreement, Ukraine must harmonize its legislation with the Directive on Energy Taxes and Electricity Taxes, which establishes minimum rates for environmental taxes on energy carriers. Thus, expanding the tax base with an environmental tax is a mandatory step for Ukraine on its path to European Union membership.

Second, there is an insufficient level of control over payment discipline and compliance with environmental standards in the process of paying the environmental tax.

The lack of incentives for the "green" reorganization of economic entities is another issue. An analysis of the best international practices revealed that using compensation and incentive mechanisms is important for transitioning business entities to environmentally "friendly" practices. Thus, countries should not limit themselves to deterrent instruments, but rather add stimulating instruments such as grants, discounts, and subsidies.

The inefficient distribution and use of environmental tax revenues is another issue.

The structure of taxes in the field of ecology differs between countries in the European Union and national structures. Environmental policy instruments include general and mixed instruments, such as taxes and ecological reforms; trade permits and quotas; fees, tariffs, payments, and pricing policies; and business entity liability schemes. As noted, reforming environmental consciousness among the population and enterprises to increase awareness of the importance of environmental initiatives is possible only through economic levers of influence by the state, supported by normative regulation and administrative support.

In the countries of the European Union, taxes in the field of ecology form tax revenues for local and state budgets. A small portion (up to 5.5%) is allocated to the general budget fund of the European Union as a contribution. Energy taxes (more than 75% of revenues) and vehicle taxes are the most significant taxes in the field of ecology in EU countries. This is because the carbon tax in the EU is classified as an energy tax rather than a pollution tax. Additionally, the trading of emission quotas, which grant permission to emit carbon dioxide into the atmosphere for certain industries, currently generates tax revenue only for the budgets of member states. It should also be noted that the European Commission has proposed allocating a quarter of the income to the general European Union budget.

Studies on the impact of environmental taxes on economic development mostly do not confirm a direct impact on macroeconomic indicators. Therefore, the environmental impact of ecological taxes is usually evaluated in terms of offsetting negative environmental impacts, while their impact on employment, economic growth, and investment indicators is secondary.

An increase in ecological tax rates is not a prerequisite for minimizing negative environmental impact; however, accumulated environmental tax funds must be used effectively and rationally to integrate and implement environmental protection and security policies.

Based on the identified problems in the field of environmental taxation in Ukraine, recommendations aimed at increasing the effectiveness of environmental taxation as a basis for stimulating sustainable development were formed:

1. Improvement of the concept of environmental tax in terms of improvement of the concept of environmental tax on CO2 emissions and modernization of other categories of environmental tax is needed. Thus, we propose to transform the existing system of environmental tax on carbon dioxide emissions, replacing it with an indirect environmental tax on energy carriers with mandatory consideration of CO2 content (natural gas, thermal coal, fuel oil, etc.). This proposal will add up to the grow in the efficiency of the environmental tax by simplifying the administration of the tax, minimizing the facts of tax evasion and the corresponding increase in tax revenues to the Consolidated Budget of Ukraine. According to the international practice of the countries of the European Union, a direct impact on CO2 emissions can be obtained through the implementation of a comprehensive emissions trading system. It is advisable to introduce taxation of energy carriers in the transport sector thanks to the inclusion of the tax on CO2 emissions in the excise tax on fuel, as well as the introduction of additional taxes on transport. Considering the directions of modernization of other categories of environmental tax, we note that the question of the expediency of increasing environmental tax rates for individual objects remains open. However, this proposal requires additional thorough research and forecasting of tax payments, taking into account the implementation of special technological solutions aimed at reducing the amount of pollution and the corresponding negative impact on various subjects.

2. Adjusting the mechanism that directs tax revenues from environmental taxation is essential. Currently, 45% of these revenues are directed to the general fund of the state budget, meaning these funds do not have a specific purpose. This practice does not align with that of developed countries. In addition, constant adjustments of the proportions of the distribution of tax payments from the environmental tax between budgets of different levels and special and general funds significantly complicate the formation of a consistent and coherent policy in the field of environmental taxation and the implementation of long-term programs in the field of environmental protection. Therefore, it is advisable to adjust the ratio of environmental tax revenues directed to special local budget funds, thereby contributing to the environmental protection function of the environmental tax.

3. Increasing the efficiency with which tax revenues from environmental taxes are used is a logical next step in adjusting the mechanism for allocating these revenues. This approach is based on increasing the transparency of how these revenues are used. First, the system of controlling the use of funds must be improved. Second, activities belonging to environmental protection measures must be monitored. This recommendation is justified by the need to minimize spending budget funds on initiatives that do not directly address environmental protection issues.

4. Strengthening comprehensive control over compliance with standards aims to achieve this. It may include increasing fines for violations of nature protection legislation, differentiating environmental tax rates when exceeding approved emission norms, expanding environmental diagnostics, and taking inflation or price indicators into account when calculating environmental tax liabilities.

5. A system of stimulating measures is anticipated to gradually transition to a carbon-free economy. International experience in EU countries demonstrates the effectiveness of such measures, which may include financial instruments that promote the use of

"sustainable" technologies and tax incentives for businesses that demonstrate ecological transformation.

Conclusions. In conditions of significant increases in harmful substance emissions and environmental pollution, environmental taxation can encourage companies to implement clean technologies and efficient resource use. Therefore, it is the basis for stimulating sustainable development. Under martial law in Ukraine, environmental protection has become an extremely urgent issue due to explosions, fires, and the destruction of industrial facilities; the release of dangerous chemicals and pollutants into the air, soil, and water sources; and more. In these conditions, environmental taxation is an important tool for preserving natural resources and ensuring the planet's viability for future generations.

The conceptual foundations of environmental taxation as a means of promoting sustainable development were examined, and it was demonstrated that, in the context of international practices, the implementation of an environmental tax in Ukraine is unique. The distribution of environmental tax objects in Ukraine, classified by the physical nature of the taxed entity into five categories, and the updated legislative norms in environmental taxation introduced in 2022 were analyzed. It was emphasized that changes to environmental tax legislation are mainly aimed at increasing rates to minimize harmful effects, preserve the environment, and encourage pollution reduction. However, at the moment, environmental taxes do not perform stimulating or compensatory functions, and the business community often perceives tax increases as an additional fiscal burden.

The state of environmental taxation in Ukraine, which is intended to stimulate sustainable development, was analyzed. It was found that, from 2011 to 2022, the ratio of environmental taxes to total tax payments to the Consolidated Budget of Ukraine did not exceed 1.4%. Additionally, this ratio has a tendency to decrease. When compared to EU countries, it was found that environmental taxes effectively perform both compensatory and fiscal functions, forming up to 10% of tax revenues in most European countries. The main problems in the field of environmental taxation in Ukraine are summarized below: ineffective implementation of environmental protection functions; noncompliance with European Union norms; insufficient control over payment discipline and environmental standard compliance; insufficient mechanisms to stimulate business entities to adopt environmentally friendly practices; and an ineffective mechanism to distribute and use environmental tax revenues.

The proposals to increase the effectiveness of environmental taxation as a means of stimulating sustainable development are substantiated. The main proposals are as follows:

1) replacing the current system of environmental taxation on carbon dioxide emissions with indirect environmental taxation of energy carriers, taking into account CO_2 content. This will simplify tax administration, minimize tax evasion, and increase tax revenues for the Consolidated Budget of Ukraine.

2) adjusting the distribution of tax revenues from environmental taxation among different budgets and special and general funds. This will create a consistent and coherent environmental tax policy and enable the implementation of long-term environmental protection programs.

It should be noted that the above proposals outline the main directions of the long-term reform of environmental taxation in Ukraine. Developing more detailed recommendations requires an in-depth analysis. In this analysis, we must consider and thoroughly analyze not only certain aspects of environmental taxation but also global environmental protection policy. Currently, such an analysis cannot be fully carried out since hostilities cause negative and unpredictable consequences for the environment.

References:

1. Ahmad, M., Satrovic, E. (2023). How do fiscal policy, technological innovation, and economic openness expedite environmental sustainability? *Gondwana Research,* 124, 143–164. DOI: 10.1016/j.gr.2023.07.006.
2. Umar, F., Bilal, H. S., Muhammad, N. S. and Seemab, G. (2023). Assessing the environmental impacts of environmental tax rate and corporate statutory tax rate: Empirical evidence from industry-intensive economies. *Energy Reports,* 9, 6241-6250. DOI: 10.1016/j.egyr.2023.05.254.
3. Yasmeen, R., Zhang, X., Tao, R., & Shah, W. U. H. (2023). The impact of green technology, environmental tax and natural resources on energy efficiency and productivity: Perspective of OECD Rule of Law. *Energy Reports,* 9, 1308–1319. DOI: 10.1016/j.egyr.2022.12.067.
4. He, X., Jing, Q., & Chen, H. (2023). The impact of environmental tax laws on heavy-polluting enterprise ESG performance: A stakeholder behavior perspective. *Journal of Environmental Management*, 344, 118578. DOI: 10.1016/j.jenvman.2023.118578.
5. Yekimov, S., Prodius, O., Chelombitko, T., Poltorak, A., Sirenko, N., Dudnyk A., & Chernyak V. (2022). Reengineering of agricultural production based on digital technologies. *IOP Conference Series: Earth and Environmental Science*. Vol. 981(3), 032005. DOI: 10.1088/1755-1315/981/3/032005.
6. Hu, J., Chen, H., Dinis, F., & Xiang, G. (2023). Nexus among green finance, technological innovation, green fiscal policy and CO2 emissions: A conditional process analysis. *Ecological Indicators*, 154, 110706. DOI: 10.1016/j.ecolind.2023.110706.
7. Poltorak, A., & Volosyuk, Y. (2016). Tax risks estimation in the system of enterprises economic security. *Economic Annals-XXI*, 158(3-4(2)), 35–38. DOI: 10.21003/ea.V158-08.
8. Jia, Z., Lin, B., & Liu, X. (2023). Rethinking the equity and efficiency of carbon tax: A novel perspective. *Applied Energy*, 346, 121347.

DOI: 10.1016/j.apenergy.2023.121347.
9. Wei, X., Jiang, F., & Chen, Y. (2023). Who pays for environmental protection? The impact of green tax reform on labor share in China. *Energy Economics*, 125, 106862. DOI: 10.1016/j.eneco.2023.106862.
10. Xu, Y., Wen, S., & Tao, C.-Q. (2023). Impact of environmental tax on pollution control: A sustainable development perspective. *Economic Analysis and Policy*, 79, 89-106. DOI: 10.1016/j.eap.2023.06.006.
11. Wang, L., Ma, P., Song, Y., & Zhang, M. (2023). How does environmental tax affect enterprises' total factor productivity? Evidence from the reform of environmental fee-to-tax in China. *Journal of Cleaner Production*, 413, 137441. DOI: 10.1016/j.jclepro.2023.137441.
12. State Statistics Service of Ukraine. (2024). 2023 Statistical information http://www.ukrstat.gov.ua/
13. Verkhovna Rada of Ukraine (2010). Tax Code of Ukraine. Law No 2755-VIю https://zakon.rada.gov.ua/laws/card/2755-17.
14. Verkhovna Rada of Ukraine (2021). On making changes to the Tax Code of Ukraine and other legislative acts of Ukraine on ensuring the balance of budget revenues. Law No. 1914-IX. https://zakon.rada.gov.ua/laws/card/1914-20.
15. National Bank of Ukraine (2023) Macroeconomic indicators. https://bank.gov.ua/ua/statistic/macro-indicators#4.
16. Global Food Security Index. (2025). https://impact.economist.com/sustainability/project/food-security-index/
17. Wang, T., Umar, M., Li, M., & Shan, S. (2023). Green finance and clean taxes are the ways to curb carbon emissions: An OECD experience. *Energy Economics*, 124, 106842. DOI: 10.1016/j.eneco.2023.106842.
18. Oswald, Y., Millward-Hopkins, J., Steinberger, J. K., Owen, A., & Ivanova, D. (2023). Luxury-focused carbon taxation improves fairness of climate policy. *One Earth,* 6, 884-898. DOI: 10.1016/j.oneear.2023.05.027.
19. Ahmad, M., Alvarado, R., Yan, Q., Işık, C., & Jabeen, G. (2023). Is environmental sustainability transmissible? Transportation-based environmental taxation spillovers for sustainable development. *Environmental Science and Pollution Research*, 30(31), 77420-77435. DOI: 10.1007/s11356-023-27474-4.
20. Degirmenci, T., & Aydin, M. (2021).The effects of environmental taxes on environmental pollution and unemployment: A panel co-integration analysis on the validity of double dividend hypothesis for selected African countries. *International Journal of Finance & Economics,* 28(3), 2231-2238. DOI: 10.1002/ijfe.2505.
21. EU (2014). Association agreement between the European Union and its Member States, of the one part, and Ukraine, of the other part. http://publications.europa.eu/resource/cellar/4589a50c-e6e3-11e3-8cd4-01aa75ed71a1.0006.03/DOC_1.
22. EUR-Lex (2003). Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32003L0096.
23. Evrostat (2020). Environmental tax statistics. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental_tax_statistics#Environmental_taxes_in_the_EU.
24. Burkovska, A., Shebanina, O., Lunkina, T., and Burkovska, A. (2022). Socio-Psychological Determinants of Food Security in Ukraine: Causal Aspect. *Economic Studies,* 31(5), 145-162.