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TAX POLICY FOR SUSTAINABLE DEVELOPMENT: RECONCILING ENVIRONMENTAL EFFECTIVENESS AND SOCIAL EQUITY

ПОДАТКОВА ПОЛІТИКА СТАЛОГО РОЗВИТКУ: УЗГОДЖЕННЯ ЕКОЛОГІЧНОЇ ЕФЕКТИВНОСТІ ТА СОЦІАЛЬНОЇ СПРАВЕДЛИВОСТІ

Summary. The article examines the role of tax policy in achieving sustainable development goals with particular attention to ensuring consistency between environmental effectiveness and social equity. The aim of the study is to provide a comprehensive analysis of tax policy instruments within the framework of sustainable development. The results indicate that achieving sustainable development requires a coordinated approach to tax policy that combines environmental taxation, targeted redistribution, and effective social support measures. The study has scientific novelty and practical significance, as it applies different research methods to evaluate the interaction between environmental and social objectives in tax policy.
Keywords: tax policy; sustainable development; environmental taxation; ESG; carbon pricing; social equity; distributional effects; tax incentives; emission reduction.

Анотація. З'ясовано роль податкової політики у досягненні цілей сталого розвитку. Особлива увага приділяється забезпеченню узгодженості між екологічною ефективністю та соціальною справедливістю. Екологічне оподаткування, зокрема встановлення цін на викиди вуглецю, є ключовим інструментом зменшення викидів парникових газів завдяки інтерналізації екологічних зовнішніх ефектів та створенню економічних стимулів для зміни поведінки суб'єктів бізнесу. Проте його впровадження порушує важливі питання щодо розподільчих наслідків, ефективності податкової політики. Метою дослідження є комплексний аналіз інструментів податкової політики в межах сталого розвитку. Розглянуто механізми екологічного оподаткування, аналізуються розподільчі наслідки ціноутворення на викиди вуглецю, оцінюється ефективність альтернативних інструментів політики, включаючи податкові стимули та субсидії. Аналіз виконано на макро- та мікрорівнях для виявлення ключових компромісів у податковій політиці. Отримані результати доводять, що екологічні податки є ефективними для зменшення викидів, насамперед завдяки ціновим механізмам, які впливають на рішення щодо споживання та виробництва. Проте їхня ефективність варіюється між країнами. Водночас, екологічні податки часто мають регресивний ефект, непропорційно впливаючи на домогосподарства з низьким рівнем доходу. Механізми перерозподілу можуть пом'якшити такі ефекти, але й можуть частково нівелювати екологічні вигоди через збільшення споживання. Податкові стимули можуть підтримувати сталий розвиток та інвестиції на рівні підприємств, проте, вони часто не забезпечують стабільних макроекономічних вигод і можуть призвести до неефективного витрачання бюджетних ресурсів. Натомість екологічні податки забезпечують надійніший механізм для досягнення екологічних цілей, хоча й потребують допоміжних заходів, зокрема технологічних інновацій та державних інвестицій. Результати дослідження свідчать, що досягнення сталого розвитку вимагає узгодженого та інтегрованого підходу до податкової політики, що поєднує екологічне оподаткування, цільовий перерозподіл та дієві заходи соціальної підтримки. Представлена праця має наукову новизну та практичну цінність, оскільки ґрунтується на застосуванні різних методів наукового пошуку для комплексного аналізу інструментів податкової політики сталого розвитку, акцентуючи увагу на взаємодію між екологічними та соціальними цілями.
Ключові слова: податкова політика; сталий розвиток; екологічне оподаткування; ESG; ціноутворення на викиди вуглецю; соціальна справедливість; ефекти розподілу; податкові стимули; скорочення викидів.

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Problem statement. Sustainable development is a central objective of economic policy, requiring the simultaneous achievement of environmental protection, economic stability, and social equity. Among the available public policy instruments, taxation plays a particularly important role, as it can both influence the behavior of economic operators and generate government revenue to support broader development goals.

Environmental taxation is widely regarded as an effective tool for combating climate change, as it makes polluting the environment more costly. A growing body of empirical evidence shows that such taxes are associated with reductions in greenhouse gas emissions, particularly in high-income countries with strong institutional frameworks. At the same time, governments frequently rely on tax incentives and subsidies to stimulate investment, innovation, and the transition toward greener economic activities.

However, the effectiveness of tax policy in achieving sustainable development is not clear-cut. Its instruments differ not only in their impact on the environmental, but also terms of economic efficiency and their implications for income distribution. This presents a key challenge for tax policy: to develop a supportive tax system that achieves environmental goals without exacerbating social inequality.

One of the key issues highlighted in the scientific literature is the potential trade-off between environmental effectiveness and social equity. Environmental taxes, while effective in reducing emissions, often have regressive effects, disproportionately affecting low-income households due to their higher relative expenditure on energy and basic goods. This raises doubts about fairness and may have a negative impact on both the social acceptability and the political feasibility of such measures.

To address these concerns, governments frequently implement revenue recycling mechanisms, such as transfers or tax reductions. While these measures can mitigate inequality, they may also weaken environmental outcomes by increasing disposable income and consumption, thereby partially offsetting emission reductions. Consequently, the overall impact of tax policy depends not only on the choice of instrument, but also on its structure and how it interacts with the general economic conditions.

While incentives can improve firm-level outcomes (such as investment or environmental, social, and governance (ESG) performance), they often fail to deliver consistent macroeconomic benefits and may lead to significant fiscal costs, including revenue losses and inefficiencies. This further complicates the evaluation of tax policy within a sustainable development framework. Most studies focus on one dimension at a time: environmental effectiveness, economic performance, or social equity. Only a limited number of contributions explicitly examine the interaction between these dimensions. Moreover, much of the empirical evidence relies on associational methods, with limited attention to the integration of micro-level and macro-level perspectives.

Furthermore, there is a lack of coherence between academic publications on environmental taxation, income distribution analysis and the effectiveness of tax policy. This fragmentation makes it difficult to develop a comprehensive understanding of the role of tax policy in achieving sustainable development goals.

That is precisely why it is appropriate to focus on how different tax instruments operate in practice to reconcile environmental efficiency and social equality.

Analysis of the latest research and publications. Most researchers regard environmental taxation, particularly carbon pricing, as an effective instrument for addressing environmental externalities and reducing greenhouse gas emissions. Experts from the OECD [7] and the World Bank [14] note that carbon pricing systems are already widely implemented across countries; however, existing carbon price levels remain insufficient to achieve global climate targets. Researchers generally find that environmental taxes contribute to emission reductions, although the magnitude of this effect varies across countries and depends heavily on policy design. Similar conclusions are reached by D. Mehta and P. Prajapati [6], S. Ullah et al. [12], Y. Wolde-Rufael and E. Mulat-Weldemeskel [13] who associate environmental taxation and stricter environmental regulation with lower CO_2 emissions, although these relationships are primarily correlational in nature. At the same time, W. Ameer et al. [1], M. Dahmani [2], T. Degirmenci, and H. Yavuz [3] emphasize that the effectiveness of environmental taxes differs significantly across countries due to variations in institutional quality, energy sector structure, and tax policy design.

B. Shang [11] emphasizes that environmental taxation operates through multiple transmission channels, including consumption, income, health, and revenue recycling. According to the author, these channels shape the distributional effects of carbon pricing and influence the overall effectiveness of environmental policy. At the same time, M. Dahmani [2], A. Köppl and M. Schratzenstaller [5] argue that environmental taxes are insufficient as standalone instruments and should be complemented by innovation policies, technological development, and public investment to achieve long-term sustainability goals.

A central issue in the literature concerns the distributional effects of environmental taxation. Researchers consistently argue that carbon taxes tend to be regressive, disproportionately affecting low-income households. Using micro-level evidence from France, R. Semet [10] shows that although carbon pricing contributes to emission reductions, it places a higher relative burden on poorer households.

The author also demonstrates that redistribution mechanisms can mitigate these effects; however, by increasing household consumption, they may partially offset the environmental benefits of carbon taxation.

This balance between environmental and social objectives is shaped by multiple channels, including consumption effects, labor market adjustments, health impacts, and revenue recycling mechanisms. As a result, distributional outcomes depend heavily on tax policy design and institutional context. Political economy factors also play an important role. T.F. Hedegaard and K. Kongshoj [4] demonstrate that public support for carbon taxation increases when policies are perceived as fair, particularly when carbon tax reforms include progressive redistribution mechanisms that compensate low-income households.

F.Y. Sebele-Mpofu et al. [9] emphasize that although tax incentives are widely used to attract investment in developing countries, their effectiveness remains highly controversial. The authors highlight significant fiscal costs associated with such incentives, including revenue losses, tax base erosion, and administrative inefficiencies. They also argue that many incentives are redundant, as they often support investments that would have occurred even without preferential tax treatment.

Using macro-level evidence from developing economies, E. Okoth [8] finds limited support for the growth effects of tax incentives, as they often have insignificant or even negative impacts on economic growth. At the same time, the author demonstrates that subsidies tend to generate more consistent positive effects on investment and economic performance. The findings also suggest that tax incentives may influence the allocation of investment without increasing overall productivity.

At the same time, N. Zhu et al. [15] provide a more nuanced perspective at the micro level. The authors find that tax incentives can significantly improve corporate ESG performance by alleviating financing constraints and supporting sustainability-related investment. This divergence between micro- and macro-level findings highlights the complexity of evaluating tax policy effectiveness.

Overall, researchers increasingly call for an integrated approach to tax policy that simultaneously considers environmental effectiveness, distributional impacts, and policy efficiency. They find that environmental taxes can reduce emissions without significant negative effects on economic growth or employment; however, they also emphasize that the overall effectiveness of such measures depends critically on policy design, including tax levels, policy coverage, and the use of revenues. Researchers further argue that environmental taxation alone is insufficient and should be complemented by innovation policy, technological development, and public investment to support long-term sustainable development goals.

Previously unsolved parts of the overall problem. Scholars rely heavily on aggregate panel data and associational methods, which limit their ability to identify causal relationships. They also fail to sufficiently integrate environmental, economic, and social dimensions, as well as micro- and macro-level evidence. As a result, they provide fragmented insights rather than a comprehensive assessment of tax policy in the context of sustainable development. Overall, an analysis of various studies and publications suggests that environmental taxation is an effective but imperfect tool, subject to trade-offs relating to issues of fairness and the formulation of tax policy. While tax incentives may influence firm behavior, their aggregate effects remain uncertain and context-dependent.

The aim of this study is to propose a comprehensive approach to analyzing tax policy instruments for achieving sustainable development goals, with a focus on reconciling environmental efficiency with social justice. This objective is achieved through: examining the effectiveness of environmental taxation (emissions reduction); analyzing the distributional function of tax policy and the role of revenue recycling mechanisms; assessing the effectiveness of alternative instruments, including tax incentives and subsidies; and systematizing macro- and micro-level research data to highlight key trade-offs and challenges in tax policy design.

Summary of the main research material. The effectiveness of tax policy in reducing emissions depends not only on the level of taxation, but also on the specific instruments used and the mechanisms through which they operate. Environmental taxation should therefore be understood not as a single tax policy tool, but as a system of instruments that differ in structure, coverage, and economic impact. Understanding these differences is essential for evaluating their role in achieving sustainable development objectives.

The results of the analysis shows that environmental taxation reduces emissions through several key channels, including price effects, behavioral responses, and structural economic adjustments [7, 11]. Table 1 summarizes the main types of environmental taxation and explains how each instrument contributes to emission reduction.

Environmental taxes work primarily by changing relative prices. When emissions or energy use become more expensive, households and firms are incentivized to reduce consumption, switch to cleaner technologies, and invest in more efficient production processes. This mechanism is most direct in the case of carbon taxes, where each unit of pollution is explicitly priced. Empirical evidence confirms that such price-based instruments are associated with reductions in greenhouse gas emissions, particularly in developed economies [2]. In contrast, instruments such as energy taxes and transport taxes affect

Table 1 – The results of the comparative analysis of environmental taxation instruments and their impact on emissions

Type of environmental taxation instrument	Tax policy design and mechanism	Scope of application	Impact on emissions	Key advantages	Main limitations
Carbon tax	Direct price on CO_2 emissions per unit (e.g., per ton of CO_2)	Economy-wide or sector-specific (energy, industry)	Strong and direct reduction through price signal	Predictable price, simple administration, stable revenue generation	Regressive effects, political resistance, requires accurate pricing
Energy taxes	Taxes on energy products (fuel, electricity, gas) regardless of exact emissions	Broad coverage across households and firms	Moderate, indirect reduction via lower energy consumption	Easy implementation, wide tax base	Weak link to actual emissions, may distort energy markets
Emissions Trading System (ETS)	Cap-and-trade system with tradable emission permits	Large emitters (industry, power sector)	Strong, ensures total emission cap	Environmental certainty, cost efficiency, flexibility for firms	Price volatility, complex design, requires strong institutions
Transport-related taxes	Taxes on fuel use, vehicle ownership, or transport activity	Transport sector	Moderate reduction through behavioral change and efficiency improvements	Targets high-emission sector, relatively visible to users	Limited effect without alternatives (public transport, infrastructure)
Environmental tax incentives	Tax credits, exemptions, or reductions for environmentally friendly investments	Firms and investors	Indirect, depends on investment response	Supports innovation and green investment	High fiscal cost, uncertain effectiveness, weak macro-level impact

Source: compiled by the authors based on data from [5, 7, 11, 14]

emissions more indirectly by influencing overall energy demand and consumption patterns.

A more complex instrument is the emissions trading system (ETS), which sets a cap on total emissions and allows firms to trade emission permits. Unlike traditional taxes, ETS ensures that total emissions do not exceed a predefined level, making it one of the most effective tools for achieving environmental targets. However, its performance depends on market design, price stability, and institutional capacity, which may vary significantly across countries [3].

According to data from experts at the OECD [7], the share of greenhouse gas emissions covered by emissions trading systems reaches around 80–85% in countries such as Germany and Austria to around 50–60% in Korea, while in Poland it remains below 45%. In contrast, coverage is extremely limited in countries such as the United States (approximately 7%) and Japan (around 2%). These differences indicate that carbon pricing policies are implemented unevenly across countries, both in terms of sectoral coverage and tax policy design. As a result, the effectiveness of environmental taxation depends not only on the presence of such instruments, but also on their scope and consistency across sectors. This variation indicates that environmental taxation is implemented unevenly and helps explain differences in tax policy effectiveness. Countries with broader coverage and more consistent tax policy design tend to achieve stronger emission reductions, while limited coverage reduces the overall impact of taxation [13].

The observed heterogeneity is also linked to differences in economic structure and energy systems. For example, countries with a higher dependence on fossil fuels or energy-intensive industries face greater challenges in implementing effective carbon pricing. At the same time, institutional quality plays a critical role, as effective enforcement and tax policy credibility are necessary for achieving long-term environmental outcomes [1].

In addition to cross-country differences, the global development of carbon pricing remains uneven. Figure 1 shows that revenues from emissions trading systems and carbon taxes have increased significantly over time, indicating the growing adoption of these instruments worldwide. However, the overall scale of carbon pricing remains limited relative to global emissions, suggesting that current policies are insufficient to meet climate targets [14]. This assertion is consistent with international expert assessments, which emphasize the need to broaden the scope of coverage and raise the effective price of carbon emissions.

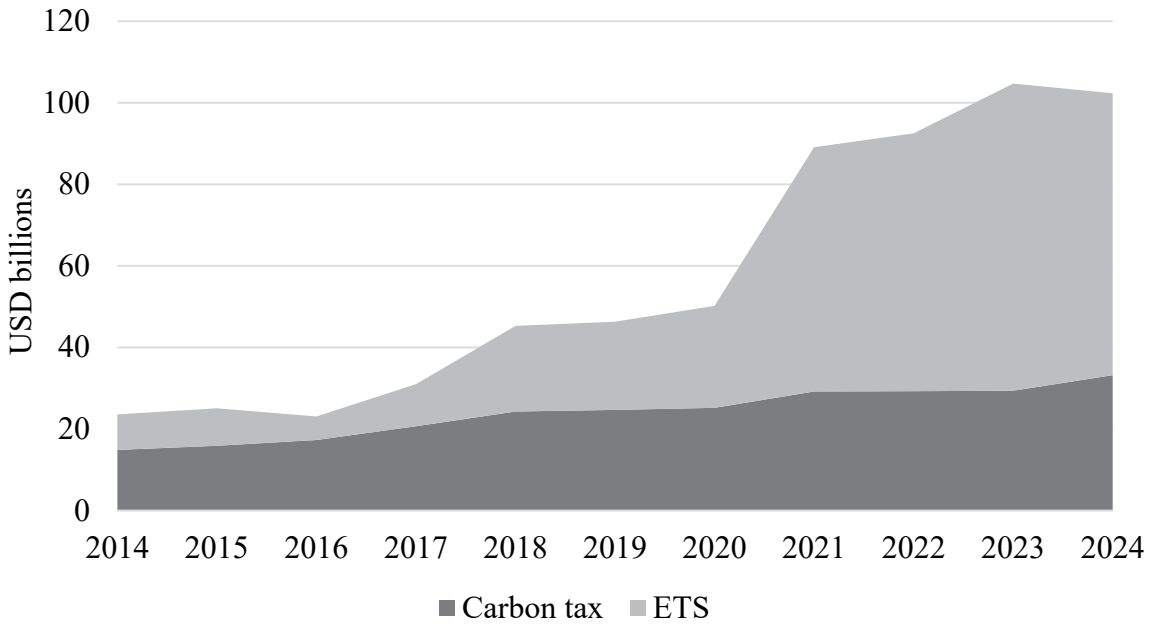

Figure 1 – Trends in global revenues from emissions trading systems and carbon taxes, 2014-2024

Source: compiled by the authors using data from [14]

A key result of the analysis is that environmental taxation is effective, but not sufficient on its own. Emission reductions depend not only on taxation, but also on complementary factors such as technological development, investment in clean energy, and institutional capacity. Empirical research by scientists show that environmental taxes are more effective when combined with innovation policies and public investment, which enhance the transition to low-carbon technologies [2, 5].

At the same time, environmental taxation creates important distributional effects. Higher energy prices disproportionately affect low-income households, making these policies socially sensitive. Micro-level evidence indicates that carbon pricing tends to be regressive, as lower-income groups spend a larger share of their income on energy-related goods. Governments therefore often implement redistribution mechanisms, such as transfers or tax reductions, to compensate affected groups.

However, such measures may reduce the overall environmental effect by increasing disposable income and consumption, creating a trade-off between equity and effectiveness [10]. This trade-off is further influenced by tax policy design, as targeted redistribution can mitigate inequality while preserving a significant share of emission reductions [11]. In addition, public acceptance of environmental taxation depends strongly on perceived fairness, with progressive policies generating higher levels of support [4].

This interaction between environmental and social objectives is reflected in Table 2, which provides a comparative assessment of tax policy instruments. Environmental taxes demonstrate the strongest environmental impact, but also generate distributional challenges. Redistribution mechanisms improve equity outcomes but may weaken environmental effectiveness. Tax incentives, in contrast, show mixed results. While firm-level evidence suggests that they can support sustainability investments [15], macro-level studies indicate limited impact on economic growth and significant fiscal costs [8, 9].

The comparison highlights that the effectiveness of tax policy depends not only on the choice of instrument, but also on its design and interaction with other policies. Instruments that directly price emissions are generally more effective, but require complementary measures to address distributional effects and ensure political feasibility.

Overall, the results indicate that environmental taxation is a key instrument for reducing emissions, but its effectiveness is conditional on institutional context, tax policy design, and the presence of complementary measures. A balanced approach combining taxation, redistribution, and investment policies is therefore necessary to achieve sustainable development objectives.

Conclusions. Environmental taxation is a central instrument for reducing greenhouse gas emissions, primarily through price-based mechanisms that influence consumption and production decisions. However, its effectiveness varies significantly across countries, reflecting differences in institutional capacity, economic structure, and tax policy design.

The results highlight the existence of a fundamental tension between environmental objectives and

Table 2 – Comparative effectiveness of tax policy instruments for sustainable development

Tax policy instruments	Environmental impact	Distributional impact	Economic efficiency	Fiscal implications	Overall assessment
Environmental taxes	Strong and direct reduction of emissions through price signals	Regressive (higher burden on low-income households)	High (cost-effective emission reduction)	Generates stable public revenue	Highly effective, but requires well-designed redistribution
Revenue recycling mechanisms	Mixed: may partially reduce environmental effectiveness	Improves equity, especially when targeted	Moderate (depends on design and targeting)	Redistributes tax revenues	Essential for balancing environmental and social objectives
Tax incentives	Indirect and generally weak impact on emissions	Neutral or uneven across groups	Low at macro level (limited aggregate impact)	Reduces tax revenues, potential fiscal cost	Context-dependent, often inefficient if poorly targeted
Subsidies for green investment	Positive, supports transition to cleaner technologies	Potentially progressive	Moderate (depends on targeting and efficiency)	Requires public expenditure	More predictable effects, but fiscally costly
ESG-related incentives	Indirect, mainly through firm-level improvements	Neutral	Moderate at micro level, uncertain at macro level	Reduces tax base or requires targeted support	Effective for firms, but limited system-wide impact

Source: compiled by the authors based on data from [2, 4, 8, 9, 10, 15]

distributional outcomes. While environmental taxes contribute to emission reductions, they tend to impose a disproportionate burden on low-income households. Redistribution mechanisms can mitigate these effects, but may also weaken environmental outcomes by increasing consumption. This confirms that the relationship between environmental effectiveness and social equity is not straightforward and depends critically on tax policy design.

The environmental taxation alone is insufficient to achieve long-term sustainability goals. Its effectiveness depends on complementary policies, including technological innovation, public investment, and institutional support. In addition, the comparison of tax policy instruments indicates that tax incentives, while useful at the firm level, often fail to produce consistent macroeconomic benefits and may involve significant fiscal costs.

Achieving sustainable development requires a balanced and integrated approach to tax policy. Environmental taxes should remain a core instrument, but must be combined with targeted redistribution mechanisms and broader tax policy measures to ensure both effectiveness and social acceptability.

This study contributes to the literature in several ways. First, it provides a structured comparison of environmental taxation instruments and their mechanisms of impact. Second, it integrates environmental effectiveness and distributional outcomes within a single analytical framework. Third, it highlights the divergence between micro-level and macro-level evidence, particularly in the case of tax incentives.

Despite these contributions, the study is subject to several limitations. The analysis is based primarily on existing empirical literature, much of which relies on associational methods with limited causal identification. Future research should therefore focus on developing more robust empirical approaches and exploring the interaction between environmental, economic, and social outcomes in a unified framework.

References:

1. Ameer W., Sibt e Ali M., Farooq F., Ayub B., & Waqas M. (2024). Renewable energy electricity, environmental taxes, and sustainable development: empirical evidence from E7 economies. *Environmental Science and Pollution Research*, no. 31, pp. 46178–46193. DOI: https://doi.org/10.1007/s11356-023-26930-5

2. Dahmani, M. (2024). Environmental quality and sustainability: exploring the role of environmental taxes, environment-related technologies, and R&D expenditure. *Environmental Economics and Policy Studies,* no. 26, pp. 449–477. DOI: https://doi.org/10.1007/s10018-023-00387-9

3. 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,* no. 299, 131466. DOI: https://doi.org/10.1016/j.energy.2024.131466

4. Hedegaard, T. F., & Kongshoj, K. (2026). How redistribution can make carbon taxes more acceptable to the public. *The Social Science Journal*, no. 63 (1), pp. 430-443. DOI: https://doi.org/10.1080/03623319.2024.2416774

5. Köppl, A., & Schratzenstaller, M. (2022). Carbon taxation: A review of the empirical literature. *Journal of Economic Surveys,* no. 37 (4), pp. 1353–1388. DOI: https://doi.org/10.1111/joes.12531

6. Mehta, D., & Prajapati, P. (2024). Asymmetric effect of environment tax and spending on CO2 emissions of European Union. *Environmental Science and Pollution Research*, no. 31, pp. 27416–27431. DOI: https://doi.org/10.1007/s11356-024-32990-y

7. OECD (2025). Effective Carbon Rates 2025. https://www.oecd.org/en/publications/effective-carbon-rates-2025_a5a5d71f-en.html

8. Okoth, E. (2023). Effects of Tax Incentives and Subsidies on Economic Growth in Developing Economies. *International Journal of Research and Innovation in Social Science,* no. 7. DOI: https://dx.doi.org/10.47772/IJRISS.2023.70744

9. Sebele-Mpofu, F. Y., Gomera, D., & Sibanda, B. (2022). Tax incentives: A panacea or problem to enhancing economic growth in developing countries. *Journal of Accounting, Finance and Auditing Studies,* no. 8/2, pp. 90-123. DOI: https://doi.org/10.32602/jafas.2022.012

10. Semet, R. (2024). Coordinating social equity and emissions: Challenges in carbon tax policy. *Energy Policy,* no. 185, 113954, DOI: https://doi.org/10.1016/j.enpol.2023.113954

11. Shang, B. (2023). The Poverty and Distributional Impacts of Carbon Pricing. *Review of Environmental Economics and Policy*, no. 17 (1). DOI: https://www.journals.uchicago.edu/doi/10.1086/723899

12. Ullah, S., Luo, R., & Adebayo, T. S. (2023). Dynamics between environmental taxes and ecological sustainability: Evidence from top-seven green economies by novel quantile approaches. *Sustainable Development*, no. 31, pp. 825–839. DOI: https://doi.org/10.1002/sd.2423

13. Wolde-Rufael, Y., & Mulat-Weldemeskel, E. (2023). Effectiveness of environmental taxes and environmental stringent policies on CO2 emissions: the European experience. *Environment, Development and Sustainability*, no. 25, pp. 5211–5239. DOI: https://doi.org/10.1007/s10668-022-02262-1

14. World Bank (2025). State and Trends of Carbon Pricing. https://www.worldbank.org/en/publication/state-and-trends-of-carbon-pricing

15. Zhu, N., Zhou, Y., Zhang, S., & Yan, J. (2023). Tax incentives and environmental, social, and governance performance: empirical evidence from China. *Environmental Science and Pollution Research,* no. 30, pp. 54899–54913. DOI: https://doi.org/10.1007/s11356-023-26112-3

Список використаних джерел:

1. Ameer W., Sibt e Ali M., Farooq F., Ayub B., Waqas M. Renewable energy electricity, environmental taxes, and sustainable development: empirical evidence from E7 economies. *Environmental Science and Pollution Research*. 2024. Vol. 31. P. 46178–46193. DOI: https://doi.org/10.1007/s11356-023-26930-5

2. Dahmani M. Environmental quality and sustainability: exploring the role of environmental taxes, environment-related technologies, and R&D expenditure. *Environmental Economics and Policy Studies*. 2024. Vol. 26. P. 449–477. DOI: https://doi.org/10.1007/s10018-023-00387-9

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

4. Hedegaard T. F., Kongshoj K. How redistribution can make carbon taxes more acceptable to the public. *The Social Science Journal*. 2026. Vol. 63. Issue 1. P. 430-443. DOI: https://doi.org/10.1080/03623319.2024.2416774

5. Köppl A., Schratzenstaller M. Carbon taxation: A review of the empirical literature. *Journal of Economic Surveys.* 2022. Vol. 37. Issue 4. P. 1353-1388. DOI: https://doi.org/10.1111/joes.12531

6. Mehta D., Prajapati P. Asymmetric effect of environment tax and spending on CO2 emissions of European Union. *Environmental Science and Pollution Research.* 2024. Vol. 31. P. 27416–27431. DOI: https://doi.org/10.1007/s11356-024-32990-y

7. OECD. Effective Carbon Rates 2025. URL: https://www.oecd.org/en/publications/effective-carbon-rates-2025_a5a5d71f-en.html (дата звернення: 24.04.2026).

8. Okoth E. Effects of Tax Incentives and Subsidies on Economic Growth in Developing Economies. *International Journal of Research and Innovation in Social Science.* 2023. Vol. VII. Issue VII. DOI: https://dx.doi.org/10.47772/IJRISS.2023.70744

9. Sebele-Mpofu F. Y., Gomera D., Sibanda B. Tax incentives: A panacea or problem to enhancing economic growth in developing countries. *Journal of Accounting, Finance and Auditing Studies.* 2022. Vol. 8/2. P. 90–123. DOI: https://doi.org/10.32602/jafas.2022.012

10. Semet R. Coordinating social equity and emissions: Challenges in carbon tax policy. *Energy Policy.* 2024. Vol. 185. 113954. DOI: https://doi.org/10.1016/j.enpol.2023.113954

11. Shang B. The Poverty and Distributional Impacts of Carbon Pricing. *Review of Environmental Economics and Policy.* 2023. Vol. 17. Number 1. DOI: https://www.journals.uchicago.edu/doi/10.1086/723899

12. Ullah S., Luo R., Adebayo T. S. Dynamics between environmental taxes and ecological sustainability: Evidence from top-seven green economies by novel quantile approaches. *Sustainable Development*. 2023. Vol. 31. P. 825–839. DOI: https://doi.org/10.1002/sd.2423

13. Wolde-Rufael Y., Mulat-Weldemeskel E. Effectiveness of environmental taxes and environmental stringent policies on CO2 emissions: the European experience. *Environment, Development and Sustainability.* 2023. Vol. 25. P. 5211–5239. DOI: https://doi.org/10.1007/s10668-022-02262-1

14. World Bank. State and Trends of Carbon Pricing 2025. URL: https://www.worldbank.org/en/publication/state-and-trends-of-carbon-pricing

15. Zhu N., Zhou Y., Zhang S., Yan J. Tax incentives and environmental, social, and governance performance: empirical evidence from China. *Environmental Science and Pollution Research.* 2023. Vol. 30. P. 54899–54913. DOI: https://doi.org/10.1007/s11356-023-26112-3

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