

DOI: <https://doi.org/10.53486/dri2024.29>

UDC: 336.221.4:504.03(100+478)

FISCAL INSTRUMENTS TO SUPPORT SUSTAINABLE DEVELOPMENT AND ENCOURAGE ENVIRONMENTALLY FRIENDLY BUSINESS PRACTICES

Corina CHIRONACHI³⁰ PhD Student,

ORCID number: <https://orcid.org/0000-0002-8107-3425>

Abstract: *In this paper, the role of fiscal tools is analyzed through the lens of a transition to a sustainable economy and the support of ecological business practices. These changes force authorities to develop tax policies that consider the climate agenda and the interests of the state, businesses, and consumers.*

Therefore, by analyzing fiscal instruments meant for eco-technologies, it can be concluded that fiscal support measures guarantee the implementation of ecological technologies, ensuring benefits for the environment, businesses, and consumers.

Keywords: *green tax, subsidies, green technology, innovation.*

JEL: H23, O13

1. Introduction.

In recent years, at the European Union (EU) level, multiple legislative initiatives have been promoted for the green transition. The most important is the European Green Deal, which helps make the EU climate-neutral by 2050.

As part of the Association Agreement with the EU and as a candidate country for EU accession, the Republic of Moldova harmonizes its national legislation with that of the EU and adopts measures for sustainable development. Since December 2023, when the European Council recommended starting accession negotiations, supporting green and circular economy initiatives by stimulating investments, improving production and responsible consumption, rational resource use, energy efficiency in all sectors of the national economy, and digital evolution and innovation are becoming increasingly important. Thus, it becomes increasingly necessary to rethink support measures for green technology investments with the help of fiscal policy instruments.

This paper aims to structure fiscal policy tools used internationally to stimulate investments in ecological innovation and to adjust national fiscal policies in response to the global climate agenda. To achieve this goal, methods like synthesis, comparative, and logical analysis were conducted. This combination of methods enabled a more comprehensive assessment of the effectiveness and prospects of these tools.

³⁰corinachironachi@gmail.com, Academy of Economic Studies of Moldova, Republic of Moldova/ASEM Doctoral School

2. Literature review.

Literature sources highlight that implementing green taxes plays a primary role in transitioning to a sustainable economy. These tools can determine economic activities toward sustainability and have advantages and disadvantages (Mărgărit & Bran, 2011). At the same time, they are essential in internalizing environmental costs and applying the "polluter pays" principle (Panayotou, 1995).

The fiscal practices of other states can be benchmarks for improving the national tax system but also urge the states to harmonize their practices (Frâncu et al., 2021).

In the current economic context, sustainable business development includes environmental, social, and governance criteria, which are increasingly important (Todos, 2022). It is believed that by orienting incentives towards green and sustainable practices, innovation in production processes and green products will be encouraged. (World Bank, 2020). Economic instruments can stimulate technological innovation, influence consumption and production patterns, and generate funding for environmental initiatives (Panayotou, 1995). However, implementing common fiscal rules may encounter obstacles, especially from states reluctant to eliminate tax discrimination and evasion (Frâncu et al., 2021). These tools are vital to balancing economic growth with environmental protection and social responsibility.

3. Results and discussions.

To enable enterprises to face the competition, and to support the development of a sustainable economy, they must implement green innovations. The authorities have as a priority to encourage technological innovations, employing a set of public policy instruments aimed at optimizing the use of resources within the economy and reducing the negative impact of human activity on the environment. The choice and transformation of fiscal instruments depend on fiscal political objectives, socio-economic policy, environmental policy, and motivation, along with the particularities and principles of each state.

The analysis of the international practice of taxation identified the most commonly adopted measures adopted by the authorities at the national level regarding the greening of tax payments and the motivation for investments in ecological technologies (Mai et al., 2016; Cramton et al., 2017). At the same time, they were grouped into the following categories:

1. Incentives for investments in ecological technologies presuppose the application of measures and policies that ensure the development and implementation of technologies that rationally use natural resources, have low energy consumption, protect the environment, and are essential in the transition to a green and sustainable economy.

For example, the United States offers tax breaks in the form of tax exemptions and accelerated depreciation on company profit taxation. Based on the "Opportunity Zones" program as part of the Tax Cuts and Jobs Act, tax incentives for certain categories of businesses and investors have been established in certain regions since 2017. Thus, reducing the tax burden stimulates ESG investments in various fields, including environmental protection, social development, and corporate governance (KPMG, 2019).

To control environmental pollution, solid waste management, and the recycling of valuable materials, a tax-exempt bond financing program called the Pollution Control Tax-Exempt Bond Financing Program is applied in the United States. Thus, borrowers have an opportunity to reduce the cost of

financing eco-technologies because the interest rate for bonds is lower than that for bank loans. The California Pollution Control Financing Authority (CPCFA) finances environmental projects for wastewater treatment plants, waste-to-energy processing, and waste management through green bonds. These projects can be funded through tax-free bonds.

Local authorities can help small and medium-sized enterprises benefit from tax breaks in implementing green initiatives, such as green vehicles for companies that collect waste, waste oil recycling projects, and construction waste recycling projects. Annual tax incentives in the United States contribute to an increase in the number of projects in which investments are made, totaling approximately \$15 billion annually. This allowed the United States to become a leader in green technology. (Novikova, 2020)

Malaysia applies a set of green tax incentives for industrial enterprises and investors. The financing of green technologies is carried out within the Green Technologies Financing Scheme (GTFS 3.0) which is part of the Sustainable and Responsible Investments (SRI) support program and aims to stimulate the introduction of green technologies and reduce the tax rate, fiscal incentives for the introduction of electric cars, exemption from paying income tax and from paying the tax on green incomes Green Income Tax Exemption (GITE), subsidies for the introduction of ecological investments Green Investment Tax Allowance.

In the Republic of Moldova, green technologies are associated with those that, when used, cause no environmental harm or minimal environmental harm.

Outdated equipment and technologies harm productivity, financial performance, and the environment. Fiscal support measures for investments in green technologies allow businesses to offset negative externalities. These objectives include reducing the company's tax base by deducting research and development expenses from profit and depreciation expenses, exempting property taxes during certain periods in the case of the installation and commissioning of efficient high-energy installations, and subsidizing the payment of dividends on issued green bonds.

2. Fiscal credit for investments in technologies for renewable energy production, and energy projects for clean energy and biofuel production.

The tax credit is used internationally. In the United States, the investment tax credit (ITC) is used with other financial instruments, such as subsidized loans, discount cash rebates for installing renewable energy sources, and Solar Renewable Energy Certificates (SREC).

In the United States, the ITC is used for solar energy or a solar tax credit, which allows a reduction in taxes to be paid in the federal budget by deducting 30% of the cost of installing a solar panel system. From 2033, the ITC will be reduced to 26% and remain until 2035. The ITC is a direct fiscal instrument to stimulate consumers and can be considered an indirect fiscal instrument for the production of green technologies that contribute to an increase in demand. In 2015, the American Clean Energy Investment Act was adopted, which stipulates the conditions for granting tax credits for electricity production from renewable sources and clean energy projects. Thus, consumers of electricity from wind turbines installed in coastal waters can benefit from a 30% tax credit.

3. Special taxes (consisting of ecological and energy taxes) and subsidies In international practice, special taxes (environmental and energy taxes) and subsidies for investments in green technologies have begun to be widely used. The introduction of a carbon tax as an environmental tax is considered

justified as an additional source of financing for technologies that adapt to the consequences of climate change, reduce greenhouse gas emissions, and improve resource allocation.

Approaches to emissions taxation show the following differences from country to country:

a) *determining the type of tax (carbon tax, coal tax) and tax rate.* Most states levy a carbon (methane, greenhouse gas) tax on the carbon content of fossil fuels, which varies and increases gradually. For example, tax rates in Ireland, the Netherlands, and Norway will increase to 125 euros by 2030. In Japan, a carbon tax was introduced in 2012, in Singapore in 2019, and in Colombia in 2017, and it is charged per ton, which is \$3, \$4, and \$5 per ton. In India, a coal tax of \$6 per ton of coal mined or imported was introduced in 2010.

b) *the process for imposing taxes is according to the national, regional, or local budget level* Thus, in most states, a carbon tax is introduced at the national level: Great Britain, Germany, and Norway. On the other hand, no carbon tax is applied at the national level in the United States, Canada, Russia, and China. In the US, this tax is set individually by the states, and in Canada, it only applies in certain provinces.

c) *legal aspects, content, and order of modification of the tax elements.* This refers to the taxation subject, the tax base, the tax rates, the tax benefits, the tax period, the calculation procedure, and the payment term. d) *fiscal administration* refers to the body that administers the tax and the legal fiscal control procedure.

e) *the legal structure* and the relationship between fiscal law and land, civil, banking, financial law, etc. The carbon tax increases budget receipts and the expenditure of producers and consumers, reduces the tax base of business income, and, if collected in an ecological fund, increases the accessibility of resources for green growth.

The energy tax (fuel tax, electricity tax) is considered an environmental tax. For example, in Sweden, excise duties are levied on hydrocarbon oils, and fuel taxes of \$28 per ton have been levied since 1991. Such taxes are considered carbon taxes. Singapore charges carbon and fuel taxes on the transport sector.

Most governments when setting special taxes start from the idea that such taxes increase the cost and price of products and energy, which motivates businesses to invest in green technologies to reduce harmful substances. The mechanism for applying these indirect taxes (excise duties) is based on shifting the fiscal burden toward consumers who pay the excise duty included in the price by the producer (or the subject of the tax). In the case of increasing direct taxes (emission taxes), the company's profit margin decreases, which can affect producers and consumers by demotivating them. Countries have created special funds for environmental protection when carbon tax revenues accumulate. In India, the coal tax collects revenue from the National Clean Energy and Environment Fund and funds projects in the energy sector for renewable energy. (Singh, 2020) In Singapore, emission taxes are intended to finance projects to reduce emissions.

Most of the time, states do not provide financial assistance to support the implementation of green technologies from the revenues from special taxes. Subsidizing these innovative ecological projects is often done on a competitive basis. For example, in China, green investment loans and grants are given for the production of energy-efficient cars; in Indonesia, such subsidies are provided for the production of biodiesel, in Japan to create sustainable infrastructure, and in Singapore, temporary grants are given to households to offset part of the utility costs. (IMF, 2021).

4. Voluntary agreements between authorities and companies in the energy sector regarding preferential taxation for developing innovations.

Increased carbon taxes and consumer discontent in the industrial and energy sectors have led authorities to adopt specific measures. For example, voluntary agreements are made with manufacturers seeking to implement clean innovations and technologies. The collection of taxes reduces profit, and the development and implementation of divine ecological technologies are financially difficult. Thus, the government provides a tax incentive to reduce the tax burden on companies that agree to mitigate the negative consequences of the new emissions tax introduction that affect the prices of manufactured products and energy.

A package of tax measures was implemented in the UK, which included a Climate Change Levy (CCL) and a scheme of voluntary Climate Change Agreements (CCA) available to businesses in energy-intensive industries. This package is expected to reduce CO₂ emissions by up to 60% by 2050. The CCL came into force in 2001 and is the charge on a unit of energy and fuel (electricity, coal, natural gas, liquefied petroleum) sold to industrial and commercial customers. The CCL stimulates innovation to reduce carbon emissions. The CCL is also called an energy tax with differentiated rates. The CCL rates are set per kilowatt-hour (KWH) equivalent for each fuel type. Thus, CCL becomes a price incentive for energy conservation. Tax rates vary according to carbon emissions. Electricity produced from renewable sources is exempted from taxes. CCL, as an energy tax, harms large and energy-consuming industrial enterprises.

The CCA is a scheme of voluntary agreement between businesses and the government to mitigate the adverse effects of the CCL and maintain the competitiveness of these businesses. Energy-consuming enterprises enrolled in the CCA are eligible for up to 80% tax reductions if they promise to reduce carbon emissions or energy consumption (Martin et al. 2014)

5. A mix of fiscal incentives for investments in green technologies and tax incentives to discourage environmental pollution.

In international practice, different measures are used to discourage environmental pollution, such as different rates (coefficients) of taxes and fees, fines and penalties, and administrative and criminal liability of officials. However, these measures do not always produce the expected results. The introduction of eco-technologies involves additional business expenses that should be considered when forming a tax base. In some states, R&D expenses help to reduce the profit tax base. Modernization expenses, additional equipment purchases, or fixed assets are not part of R&D expenses and therefore will not be taken into the calculation for these tax incentive applications. incentives. Another incentive is the depreciation of fixed assets calculated over a fairly long period (5 years or more). Even if they reduce the tax base, these expenses may become insignificant. For enterprises, economic benefit reflects the increase in the rate of profit, and the level of financial benefit or its absence will be the key factor in the enterprise's decision to implement innovations. The solution lies in a reasonable combination of a tax incentive for investment in green technologies and a tax on environmental pollution.

According to the "polluter pays" principle of sustainable development, polluters must fully cover the damages caused by their actions or inactions on the environment, and the financial liability should be a multiple of the damage caused.

For an investor, the benefits of green technologies should be greater than the costs of covering environmental damage. When calculating corporate income taxes, spending on innovation and green technology investments must be considered. The profit margin of green technology companies is expected to increase. Therefore, the profit after taxation should rise, and the revenue from the sale of products obtained due to the application of ecological technologies should be greater than the cost of innovation, which should be considered when calculating taxes. It is necessary to review tax incentives, fines ought to be increased, and multiply the damage caused to the environment and the state budget.

Thus, fiscal incentives and penalties, together with financial support and credit measures (state financial assistance, competitive grants, reduced interest on loans) can contribute to solving the problems of introducing green technologies.

6. Fiscal administration and measures to combat evasion through environmental taxes and the illegal application of preferential taxation in cases of green technologies.

Most states show an interest in improving environmental conditions and reducing emissions.

Many countries with high greenhouse gas emissions, such as China, Brazil, Indonesia, and India, are characterized by high levels of tax evasion, and new carbon taxes do not help to reduce tax evasion. In this regard, tax administration transformation is necessary. Measures to counter environmental tax evasion, illegal application of preferential taxes for innovation activities, and investments in green technologies increase budget revenues. The development of ecological tax administration must be based on the "polluter pays" principle by digitizing the interaction between tax authorities and taxpayers, forming trusting relationships between citizens and the authorities.

As a young state, the Republic of Moldova faces a series of problems related to the environment, due to the economic activity of the state that did not take into account its ecological impact.

Therefore, numerous strategies, policies, and measures have recently been adopted to contribute to economic greening. In the Republic of Moldova, enterprises can implement green technologies through the SME Greening Program and grant-based state aid. The EU, within the Eastern Partnership, assists in the form of grants within the EU4Environment program. With the adoption of the Program for the promotion of the green and circular economy in the Republic of Moldova for the period 2024-2028, it is desirable to review and adapt fiscal instruments, so that they contribute to environmental pollution, and to simulate enterprises to adopt the latest friendly production technologies in the environment, but also to get more profit.

4. Conclusions.

Fiscal policy instruments used to stimulate investments in eco-innovation are systematized according to several criteria. There may be special tax incentives for producers (reduced tax rates, tax deductions) and consumers (investment tax credit for green technologies purchase). Another category of fiscal incentives aims at green technologies implementation in certain sectors of the economy toward technologies for reducing carbon emissions, the production of renewable energy sources, energy efficiency, waste, and garbage processing technologies.

To stimulate investments in eco-technologies, the following actions are possible: the introduction of the carbon tax as a source for financing ecological technologies, the application of a mix of fiscal incentives for investments in green technologies and taxes to discourage environmental pollution, and

the establishment of voluntary agreements between authorities and producers related to the implementation of eco-technologies in exchange for fiscal advantages.

In general, the green technological development of enterprises does not imply radical changes in the fiscal policy of the states; individual approaches are needed to stimulate investments in green technologies at the level of each state.

Bibliographical references.

1. Mărgărit, S., Bran, N.C. (2011). Relevance of economic instruments used in sustainable development process. *Annals of the University of Petroșani: Economics*, 11, 155-166. Retrieved from [https://www.upet.ro/annals/economics/pdf/2011/part3/Margarit\(Stanescu\)-Bran\(Stan\).pdf](https://www.upet.ro/annals/economics/pdf/2011/part3/Margarit(Stanescu)-Bran(Stan).pdf)
2. Panayotou, T. (1995). Economic instruments for environmental management and sustainable development. Retrieved from https://www.cbd.int/doc/nbsap/finance/Panayotou1994EconInstEnvMgSusDev_199EcInsEnvMgSusDev.pdf
3. Frâncu, L.G., Buzoianu, O.A., Oancea Negescu, M.D., Troacă, V.A., & Gombos, C.C. (2021). The Importance of Fiscality for Economic Development. Case study – Republic of Moldova. *Proceedings of the International Conference on Business Excellence*, 15, 425 - 433. Retrieved from <https://intapi.sciendo.com/pdf/10.2478/picbe-2021-0039>
4. TODOS, I. (2022). Dezvoltarea sustenabilă a afacerii din perspectiva integrării criteriilor de mediu, social și de guvernare. In: *Economica*, nr. 4(122), pp. 7-15. ISSN 1810-9136. DOI: <https://doi.org/10.53486/econ.2022.122.007>
5. KPMG. (2019). Opportunity Zones. Unlock new opportunities. Transform communities. Realize benefits. Make an impact. Retrieved from <https://assets.kpmg.com/content/dam/kpmg/us/pdf/2019/09/opportunity-zones.pdf#page=9.05>
6. Novikova E.V. (2020). Green Economy and Green Law: Global Trends. *Environmental Law*, 3.
7. Mai, F., Keen, M. et al. (2016). After Paris: Fiscal, Macroeconomic, and Financial Implications of Climate Change. IMF Staff Discussion Note. 16/01, Washington, DC: International Monetary Fund. Retrieved from <https://www.imf.org/external/pubs/ft/sdn/2016/sdn1601.pdf#page=13.67>
8. Martin, R., de Preux, L. B. et al. (2014). The impact of a carbon tax on manufacturing: Evidence from microdata // *Journal of Public Economics*. Vol. 117. P. 1–14. Retrieved from <http://dx.doi.org/10.1016/j.jpubeco.2014.04.016>.
9. Cramton, P., MacKay, D.J., et al. (2017) *Global Carbon Pricing: The Path to Climate Cooperation*. Cambridge, MA: MIT Press. Retrieved from [Global Carbon Pricing: The Path to Climate Cooperation: Edited by: Peter Cramton, David JC MacKay, Axel Ockenfels, Steven Stoft: Free Download, Borrow, and Streaming: Internet Archive](https://www.mitpress.mit.edu/books/9780262084444)
10. Singh, K. (2020). India’s Coal Tax Is Key to Stabilizing Its Energy Transition / Center for Strategic and International Studies. Retrieved from <https://www.csis.org/analysis/indias-coal-tax-key-stabilizing-its-energy-transition>
11. IMF, (2021). Fiscal Policies to Address Climate Change in Asia and the Pacific. Asia and Pacific department. Fiscal affairs department. No. 2021/007. 124 p. Retrieved from <https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2021/03/24/Fiscal-Policies-to-Address-Climate-Change-in-Asia-and-the-Pacific-Opportunities-and-49896>