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Green Finance and Environmental Aspects of Modern Tax Policy

Abstract
This article examines the theoretical and practical aspects of developing green finance and greening tax policy. It demonstrates the role of the state and the financial sector in shaping a sustainable economic model that combines economic growth with environmental protection. Key challenges in implementing environmental taxes and ways to improve them are highlighted. The study focuses on government fiscal regulation tools aimed at encouraging organizations to reduce their negative environmental impact. The aim of this study is to identify opportunities for tax incentives to green the economy and develop recommendations for the further development of relevant tax instruments. The research was conducted using general scientific methods, such as systems and situational analysis, generalization, synthesis, and logical and descriptive methods. Based on the results of the study, tax measures aimed at addressing pressing environmental issues were proposed for the financial and economic activities of organizations. Allowing free depreciation of equipment operated using best available technologies will provide an additional incentive for their implementation and reduce the negative impact of production processes. Reducing the VAT rate on recycled goods will lead to increased demand, the popularity of such products, and the development of a circular economy. Preferential taxation of income for green bondholders will contribute to the increased investment attractiveness of environmental projects. An assessment of the proposed solutions demonstrated the feasibility of their implementation and made it possible to identify sources of compensation for lost revenues in the budget system, including an expansion of the tax base due to positive economic effects, improved tax administration, the development of environmental payments and carbon regulation, and a reduction in the need for government spending on certain social items.

Keywords: greening business, tax regulation, tax instruments, environmental taxation, recycled materials.

Introduction

The concept of green finance includes a set of financial institutions, instruments and mechanisms aimed at supporting environmentally sustainable projects. These include green bonds, environmental investment funds, loans for the introduction of clean technologies, and tax and subsidy incentives to support the transition to a low-carbon economy. Green finance is based on the principles of environmental efficiency, inclusiveness and long-term sustainability. Environmentalization of tax policy represents the process of adapting the taxation system for the purpose of stimulating rational consumption and reducing the level of environmental pollution. The basic idea is that the tax system should perform not only a fiscal but also a regulatory function.

Theoretical and practical foundations of green finance and the role of the state in shaping the institutional environment for green finance development

Despite the obvious advantages of *ecologicalization* of the fiscal system, its implementation faces a number of challenges: the lack of a unified methodology for calculating rates, the low willingness of enterprises to transition to new technologies, social costs energy resources and administrative difficulties of control for accountability *(Sitnik A. A., 2022)*. These factors require a combination of tax measures with state business support tools.

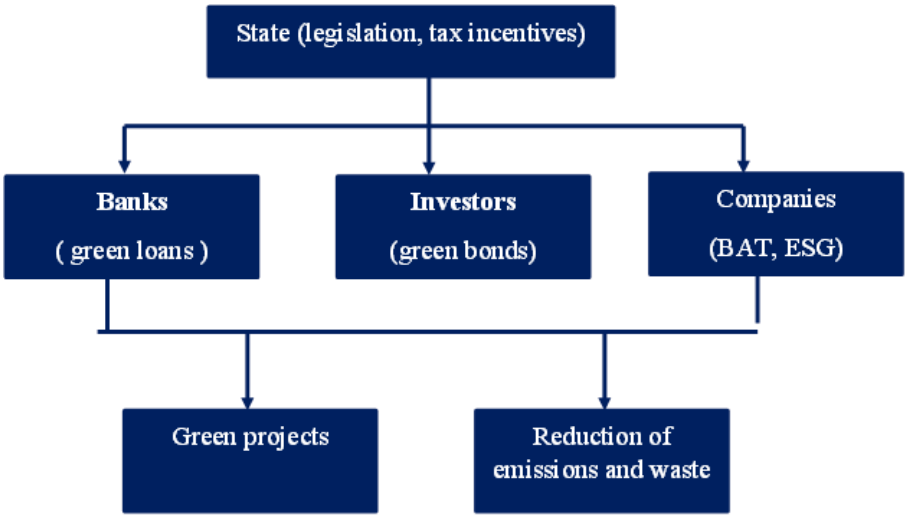

Diagram 1. Green finance ecosystem (scheme)
Source: *European Central Bank, (2020)*

The state plays a key role in shaping the institutional environment for green finance development. It should provide a regulatory framework, stimulate private investment, and develop environmental reporting and transparency of corporate practices. Commercial banks and investment funds, by implementing responsible finance principles, channel resources into environmentally significant industries. Currently, the legislation contains a number of taxes and other mandatory payments with an environmental component. According to the direction of impact, they are grouped into four groups:

- energy taxes and payments (excise taxes on motor and energy fuel, payment for electricity);
- transport taxes (excise taxes on gasoline, transport tax);
- pollution payments (payment for negative impact on the environment in the form of emissions of pollutants into the atmosphere, disposal of pollutants from water bodies environmental fee, disposal fee);
- resource taxes (tax on the extraction of mineral resources, tax on additional income from the extraction of hydrocarbon raw materials, payments for the use of nedras, fees for the use of wildlife and aquatic biological resources, water tax, water tax charges for the use of water resources, land tax).

Most of the listed payments are predominantly fiscal in nature and are essentially a fee for the use of natural resources. From the standpoint of regulating the environmentalization of businesses, third party payments represent the greatest interest, having the potential to affect the business activities of companies in terms of reducing waste and reducing environmental damage.

When calculating the fee for the negative impact on the environment, in addition to the rates differentiated by the types of pollutants and classes of waste, a number of coefficients are provided for the purposes of implementation of best available technologies. For example, during dewatering and subsequent placement of lower hazard classes of waste, reducing factors ranging from 0.33 to 0.67 are applied, and after the implementation of the best technologies accessible of pollutants within technological standards is nullified. In addition, the adverse environmental impact fee may be reduced

by the payer's costs of funding the mitigation measures included in the environmental measures plan environmental performance.

The ecological impact of food waste can be quantified using the following model:

$$GHG_{food} = Q_{waste} \times EF_{CH4}$$

Where:

- GHG_{food}– greenhouse gas emissions from food waste,
- Q_{waste}– quantity of food waste,
- EF_{CH4}– methane emission factor per unit of food waste.

Beyond regulatory and fiscal instruments, the efficiency of green investments can be evaluated using **mathematical models** that combine ecological and financial perspectives. The overall efficiency of a green project can be assessed as follows:

$$E = \frac{B_{eco} + B_{fin}}{C_{inv}}$$

Where:

- E– overall efficiency indicator of the green project,
- B_{eco}– ecological benefits, such as reductions in emissions and waste,
- B_{fin}– financial returns generated by the project,
- C_{inv}– total investment costs.

Ecological benefits measured in terms of carbon equivalent can be calculated as:

$$B_{eco} = \Delta CO_2 \times P_{CO_2}$$

Where:

- ΔCO_2– reduction in CO_2 emissions attributable to the project,
- P_{CO_2}– market or social price per ton of CO_2 emissions saved.

This integrated approach allows decision-makers to prioritize projects that deliver the greatest combined environmental and financial benefits relative to their costs. By combining regulatory, fiscal, and quantitative assessment methods, governments and enterprises can effectively channel resources toward sustainable, environmentally significant investments.

The environmental fee is paid by manufacturers and importers of goods which do not dispose of the waste generated from their use. The collection amount for each commodity group is calculated as the product of the mass or quantity at the disposal cost-based rate and the approved disposal standard. If an entity undertook to dispose of waste but did not meet the standards, it pays a fee on the difference between the established and actually achieved quantity of waste disposed of. The ecological impact of food waste can be quantified using the following model:

$$GHG_{food}=Q_{waste}\times\times EF_{CH4}$$

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- GHG_{food}– greenhouse gas emissions from food waste,
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According to the United Nations Environment Programme (UNEP), food waste contributes approximately 8–10% of global greenhouse gas emissions. This highlights the significant environmental impact of food losses throughout the supply chain (*UNEP, 2024*).

At the core of the regulatory capabilities of fiscal instruments are the weightiness of their size for payers and the constraint with the extent of damage inflicted on the environment. Non-negligible factors include the obligation to pay and the irrevocability of liability for evasion. Recommendations to improve the system of environmental payments to improve the effectiveness of their incentive function have been voiced in the scientific literature. Within the framework of the topic under consideration, it is necessary to emphasize the expediency of tax codification of environmental, environmental and disposal fees for their improvement and administration. Also significant are the proposed measures for the development of environmental collection, including increasing rates by

1.5-5 times and their differentiation depending on the technological properties of pre-packaging standards, 70-100% and excluding them from the calculation of the collection amount, perfecting the listing of groups of goods.

Modern environmental incentives in taxation of profits of organizations

It is possible to incentivize business environmentalization not only through specialized taxes and levies, but also through changing elements of other taxes. So, current legislation entitles taxpayers to accelerated depreciation of major technological equipment operated in case of application of best available technologies, and major means of higher energy efficiency high class energy efficiency.

Accounting for depreciation deductions at earlier periods enables a reduction in the tax base and amount of profit tax of organizations, which enhances the profitability of investments in such equipment. However, for large-scale technological reinvention of enterprises and encouragement of other environmental initiatives there are insufficient benefits existing at the moment. In order to more fully realize the regulatory potential of taxation, complementary tools are needed. One of the most important tools of environmental industrial policy are the best available technologies, the application of which aims at comprehensive prevention or minimization of negative impact on the environment. Technology is defined as the best available given the optimal combination of energy, environmental and economic performance. The experience of EU countries confirms the effectiveness of the best available technologies as an object of 'green' investment. Their introduction ensures a 'double win' – increasing farm efficiency and minimizing environmental damage.

Country	Types of Environmental Taxes	Green Subsidies	Carbon Pricing Mechanism	Outcomes
EU countries	CO_2 tax, energy tax, plastic tax	Renewable energy subsidies	ETS (EU Emissions Trading System)	Emissions decreased by 37% during 2005–2023
USA	Carbon fee, fuel tax	Federal credits for green technologies	Regional Trading Systems (RGGI)	Emissions in the RGGI region decreased by 50% between 2010–2023
Japan	Carbon tax, waste tax	Green innovation funds	J-Credit system	Energy efficiency increased by more than 15%

Table 1. Environmental Tax Practices in the European Union, USA, and Japan

Source. *The table was compiled by the author based on UNEP reports. (UNEP, 2021-2024)*

The wide list of industries that require technological upgrading and enterprise eco-friendliness for sustainable growth justifies the importance of public financial support for the introduction of the best available technologies. Considering the possibilities of tax instruments in this context it should be noted that among the investment benefits simultaneously beneficial to organizations and not too critical to the revenue base of state budgets is the amortication of the poly. (*Ilyakova, I. E. 2021)* By maneuvering the speed of write-off of the cost of fixed assets, taxpayers reduce tax liabilities in preferred periods at the expense of carrying costs over time.

An actionable incentive for companies to implement the best available technologies is represented by the introduction of free depreciation of equipment operated in case of their use. The right to write off cost for any approved period by the organization will help in corporate tax planning, one element of which is the optimal allocation of expenses for taxation purposes. As a result, the reduction in tax burden will accelerate the payback of investments in the best available technologies, which will become an additional argument in their favor when evaluating investment alternatives (Nuță et al., 2025) In considering the implications of free depreciation for budgets of the budgetary system, it is necessary to consider that the application of this allowance does not increase the total amount of written-off expenses, but merely transfers the moment of their recognition. Accordingly, the reduction in tax base and income tax receipts turns out to be temporary and is offset by the absence of depreciation deductions in subsequent periods. However, the state bears reluctance on providing depreciation benefits due to the non-uniform value of money in time. Moreover, since the best available technologies are characterized by economic efficiency of operation, application of resource-

and energy-saving methods, their implementation will have a positive impact not only on companies. Growth of endowment and profitability of production will lead to broadening of tax base and increase of tax receipts to state budgets. To the extent of widespread diffusion of technologies, in order to prevent significant falling revenues, it is permissible to set a limit with respect to expensive equipment,a minimum write-off period of 12 months-for example, 36 In doing so, it is advisable to differentiate limits on the cost of fixed assets, and also not to exceed the classifier-approved conventional useful lives per depreciation group.

4. **Reduced VAT rate on secondary raw materials and abolition of VAT refund on duty-free transfer of food products**.

A pressing problem of contemporary society remains the significant amount of food waste generated in the sphere of trade, public catering and households. Expired products are sent to landfills and landfills where they become a source of methane, ammonia and hydrogen sulfide emissions. According to estimates by the United Nations Environment Program (UNEP), about 8-10% of global greenhouse gas emissions are associated with unconsumed food products. Negative effects occur not only with environmental but also with socio-economic. An effective way to prevent irrational food consumption can become food sharing, for which the involvement of large retail chains is necessary to develop. At the moment, there are several barriers to transferring expired products for charitable purposes, and one of the significant ones is the current tax legislation. By purchasing a VAT-inclusive good from a manufacturer, the trading company takes tax towards the deduction and reduces the size of its tax liability. In case of further transfer of goods, non-profit organizations are required to reclaim VAT and pay to the budget in full. Thus, the additional tax burden on the seller amounts to up to 20% of the cost of production while the disposal of organic waste is circumvented significantly cheaper.

In order to eliminate this obstacle, it is advisable to cancel the obligation to refund the previously adopted VAT deduction for free transfer of food products, but at the same time to limit the amount of deduction and deduction of 1% of the amount organizations through which charity will be realized. Data restrictions will allow to prevent abuse of the norm and in addition are consistent with the terms of reduction of taxable gain on the value of property transferred to socially oriented non-profit organizations.

The sustainable development strategy of the country as one of the main vectors provides for a transition to a closed-loop economy, building among other things on the use of secondary resources and the recycling of products into. Production from secondary raw materials helps to alleviate the environmental and economic crisis, on the one hand, at the expense of saving resources and preventing environmental damage from the production of primary materials, and on the other hand, through rational recycling polluting the environment. Over the past decade, resource efficiency issues have attracted particular attention from G20 countries, many of which have undertaken the development and implementation of national strategies and roadmaps aimed at increasing resource productivity and productivity (Nuță et al., 2025)

Country	Overall Recycling Rate	Share of Waste-to-Product Conversion	Note
Germany	67%	35%	Leader in Europe
Netherlands	60%	40%	Circular economy model
Japan	50%	28%	“3R” strategy
USA	32%	15%	High regional differences

Table 2. International Indicators of Recycling

Source. *Eurostat (2023), “Recycling and Waste Statistics”, European Commission*

In working out the mechanisms of encouraging companies to a particular behavior pattern, it is necessary to consider the characteristic features of the economic system in which they function. Under conditions of free pricing and competition for consumer demand the advantage is gained by those

firms that manage to offer a commodity with an optimal price-quality ratio. It is the demand for output that breeds production expansion and refocusing on the most demanded goods by buyers. At the same time, a significant impact on price competitiveness is provided by indirect taxation in the form of VAT, as the tax increases the final cost of the product. Hence, by revising the elements of VAT, the state can contribute to increasing the profitability and sales volume of certain commodities.

Based on the above, it is submitted advisable to stimulate the demand for products manufactured using secondary raw materials by reducing the VAT rate to 15% upon its implementation. Simultaneously with the introduction of privileges it is necessary to approve the list of goods indicating the threshold share of secondary raw materials, according to which they fall into the privileged category. Given the non-uniform recycling capabilities of different types of materials, classification requires a differentiated approach and comprehensive analysis. For example, glass, paper and metal products are relatively simple to reuse, while recycling rates for textiles are significantly lower. In the future, as technology develops and the recyclable waste listing expands, the classifier of favored goods should be revised and the threshold values adjusted.

From the standpoint of revenue shaping state budgets, the most obvious consequence of the proposed benefit is a reduction in VAT receipts. This tax possesses great fiscal importance both for the state budget and in the tax revenue structure of the state as a whole. *(Freire-González, 2022)* Therefore, special attention should be given to not only environmental but also economic justification when introducing a reduced rate. In this connection, it can be noted that the popularity of the closed-loop production and consumption idea is due to the realization of the integrity of sustainable development and economic growth from environmental well-being. Circular economy focuses on overcoming the dependency of economic growth on negative environmental impact and natural resource depletion. Improving resource efficiency, reusing raw materials and involving products in recycling can bring economic benefits while addressing environmental challenges. So, the transition to a closed-loop economy can result, by various estimates, in increasing GDP by 12-15%.

To achieve the effectiveness of the tax benefit an important detailed development of the previously mentioned classifier of the benefited goods is presented with the involvement of competent technologists possessing information about the production processes and technologies to be accessed. Timely updating of commodity listing and threshold values of specific gravity of secondary raw materials will provide flexibility to the state in managing the exemption application process. In addition, regular assessment and analysis of receivables based on data in quarterly VAT tax returns is essential.

It should be noted that the preliminary collection, sorting and processing of waste is a necessary condition of its production. Some trading companies are already engaged in the collection of secondary raw materials on their own initiative, and the introduction of the proposed benefit will become an additional motivation for them. In the rest, success will depend on reforming the waste management system using measures of a non-tax nature.

Tax incentives for companies towards environmental investment and preferential income taxation from 'green' financing

As is known, the implementation of any investment project requires financial resources, and business environmentalization is no exception. Introducing high-tech and energy efficient equipment, equipping processing production, decarbonising and developing alternative energy all require significant investment. *(Appelbaum E.,2021)* Without proper funding, no 'green' project can be realized. Along with public funding, corporate and private investors play a significant role, for attracting which favorable financial market conditions are important.

Investor Profitability Model

Profitability of green bonds:

$$R=C+((P_s-P_b))/P_b -"Tax"$$

If the investment income is tax-exempt ("Tax"=0), the investor's real profitability:

$$R_"green" >R_"standard"$$

The global 'green' bond market began to take shape early and has been characterized by accelerated growth since the early days. In 2024 issuance volume reached a record $481.8 billion. USA, doubling the figure of the previous year. Government support for corporate 'green' bonds is widespread abroad. The range of instruments includes reimbursement of project verification costs, subsidized coupon rate, preferential taxation of investor income, provision of guarantees and a number of others.

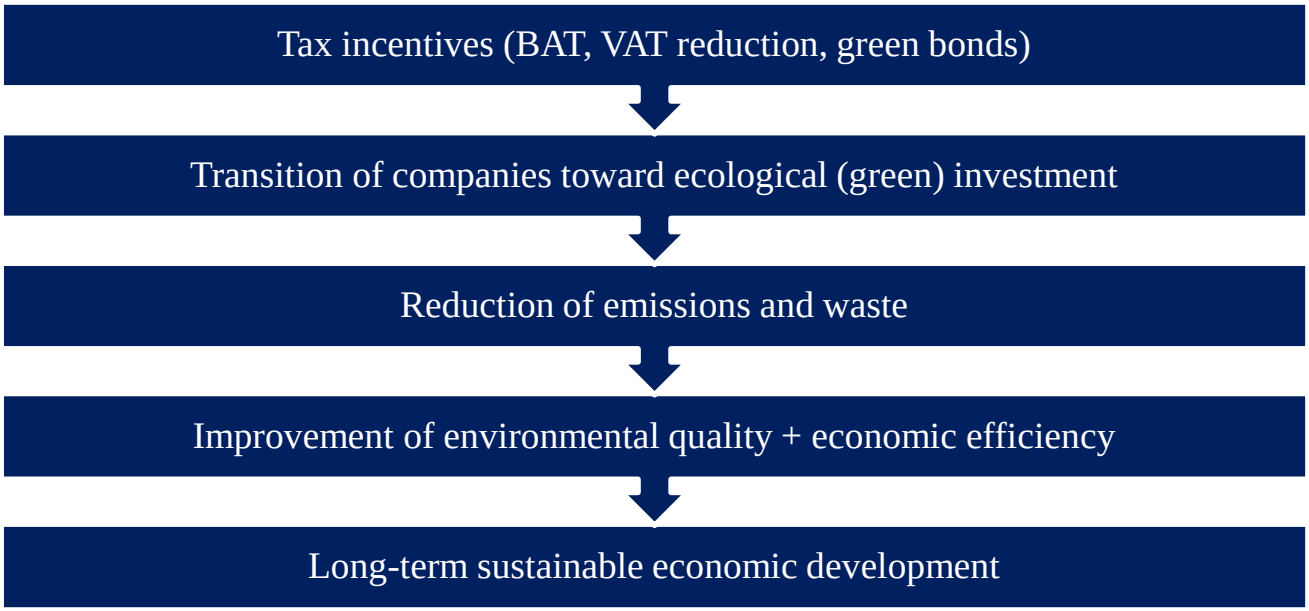

Diagram 2. Macroeconomic impact mechanism of green tax policy
Source. *Gregor Boehl (2024), Bank for International Settlements (BIS)*

Within the framework of tax incentives of companies towards environmental investment, the following measures are advisable in relation to bonds from the sustainable development sector falling into the segments and "green" projects areas of ecology:

- lower the corporate profits tax rate to 10% with respect to interest income;
- lower to 0% the corporate profits tax rate with respect to a financial result from the realization or other issuance of bonds provided they have been owned continuously by the taxpayer for at least 1 year.

Introduction of specified tax benefits will contribute to increasing the investment attractiveness of "green" bonds and will allow issuers to attract additional financial resources for the implementation of environmental projects, while investing with investors – effectively time to feel your contribution to protecting the environment. Moreover, data measures will aid the development of sustainable finance tools.

Conclusion

Modern tax policy is increasingly guided by the principles of sustainable development. Green finance is becoming an effective mechanism that ensures the alignment of society's economic and environmental interests. Forming a balanced green tax policy model will enhance the effectiveness of environmental measures and create prerequisites for long-term sustainable economic growth.

The conducted study allows us to conclude that there is a significant potential of the tax system in addressing pressing environmental issues. The state positions opportunities to incentivize companies to comply with the principles of environmental protection, "green" modernization of production processes and auxiliary activities. The proposals for amendments tax legislation, justified in this paper, are aimed at reducing environmental damage by achieving the following results:

– dissemination of the best available technologies;

– popularization of goods from secondary raw materials;
– attraction of investments in "green" projects;
– food waste reduction due to foodsharing development;
– replacement of paper documentation with electronic.

On the basis of qualitative and quantitative assessment of the proposed solutions, the feasibility of their implementation to ensure environmental transformation and sustainable development of the Russian economy was established. The replenishment of revenue budgets is facilitated by the expansion of the tax base due to the improvement of business processes, saving of resources and reduction of non-production costs of companies, as well as pre-brewing analysis of measures. Along with this, sources of additional receipts to budgets will be improved in accordance with the indicated recommendations the environmental payments system and the evolving emissions quotation mechanism. In addition, the expansion of foodsharing activities will create a basis for reducing public expenditure, and improving the overall environmental environment will improve the quality of life and health of the population, which will ultimately of environmental diseases.

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