

ОЦЕНКА ЭКОНОМИЧЕСКОЙ И ЭКОЛОГИЧЕСКОЙ ЭФФЕКТИВНОСТИ «ЗЕЛЕННЫХ» РАСХОДОВ В УПРАВЛЕНИИ ГОСУДАРСТВЕННЫМИ ФИНАНСАМИ: ПОДХОДЫ НА ОСНОВЕ МЕЖДУНАРОДНОЙ ПРАКТИКИ

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Аннотация. В данной статье анализируется значение «зеленых» расходов в управлении государственными финансами и оценивается их экономическая и экологическая эффективность на основе передового международного опыта. Исследуется опыт развитых стран в области зеленой экономики и зеленого бюджетирования, а также механизмы оценки воздействия бюджетных расходов на окружающую среду (метод «Климатической линзы», практика маркировки экологических расходов и другие). Оцениваются перспективы применения этих подходов в Узбекистане и разработаны рекомендации по внедрению зеленого бюджетирования, сокращению экологически вредных субсидий и созданию специализированных зеленых фондов.

Ключевые слова: государственный бюджет, зеленая экономика, зеленое бюджетирование, экологическая эффективность, изменение климата, экологические расходы, зеленые инвестиции, климатическая линза.

ASSESSMENT OF THE ECONOMIC AND ECOLOGICAL EFFICIENCY OF GREEN EXPENDITURES IN PUBLIC FINANCE MANAGEMENT: APPROACHES BASED ON INTERNATIONAL PRACTICE

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Abstract. This article analyzes the significance of “green” expenditures in public finance management and assesses their economic and ecological efficiency based on international best practices. The experiences of developed countries in the

fields of green economy and green budgeting, as well as mechanisms for evaluating the environmental impacts of budget expenditures (the "Climate Lens" method, ecological expenditure tagging practice, and others) are explored. Prospects for applying these approaches in Uzbekistan are evaluated, and recommendations have been developed for the implementation of green budgeting, reduction of environmentally harmful subsidies, and the establishment of dedicated green funds.

Keywords: public budget, green economy, green budgeting, ecological efficiency, climate change, ecological expenditures, green investments, climate lens.

Аннотация. В статье анализируется значимость «зелёных» расходов в управлении государственными финансами, а также оценивается их экономическая и экологическая эффективность на основе передового международного опыта. Рассмотрен опыт развитых стран в области зелёной экономики и зелёного бюджетирования, изучены механизмы оценки экологических последствий бюджетных расходов (метод «Климатическая призма», практика маркировки экологических расходов и другие). Оценены перспективы применения указанных подходов в Узбекистане, разработаны рекомендации по внедрению зелёного бюджетирования, сокращению экологически вредных субсидий и созданию специализированных зелёных фондов.

Ключевые слова: государственный бюджет, зелёная экономика, зелёное бюджетирование, экологическая эффективность, изменение климата, экологические расходы, зелёные инвестиции, климатическая призма.

Introduction. In the current global socio-economic context, problems such as climate change and environmental pollution are shaping new priority directions in public financial policy. Nowadays, the green economy has become one of the key strategic approaches to redirecting government expenditures [1]. The concept of green budgeting is internationally recognized as a critical direction of public finance reforms. Studies conducted by the OECD (Organisation for Economic Co-operation and Development) emphasize that green budgeting involves aligning budget policy with environmental and climate objectives, specifically assessing the environmental impact of each budget expenditure item and ensuring their compliance with national and international commitments [1]. Thus, it creates the opportunity to take into account climate change effects when planning public expenditures, contributing to the achievement of sustainable development goals. The global community's undertaking of certain commitments within the framework of the Paris Agreement (2015), as well

as the specific attention given to ecological issues within the United Nations Sustainable Development Goals, has necessitated a review of state budget allocations. Currently, numerous countries have initiated the process of redirecting state budget funds away from “brown” or environmentally harmful subsidies toward green priorities. For instance, the European Union's Green Deal initiative of 2019 proposed eliminating environmentally harmful subsidies from state expenditures and redirecting these resources toward green priorities.

In recent years, a strategy for transitioning to a "green" economy has been progressively forming at the level of state policy in Uzbekistan. In particular, the Presidential Decree of the Republic of Uzbekistan No. PD-4477 of October 4, 2019 approved the Strategy for Transitioning to a Green Economy for the period of 2019–2030. The main objective of this strategy is to ensure sustainability of economic development, reduce greenhouse gas emissions, and achieve climate and ecological stability. In the strategy, the main tasks identified include increasing the energy efficiency of the national economy, rational use of natural resources, as well as introducing "green" criteria in line with advanced international standards into the structure of state investments and expenditures. Furthermore, the strategy envisages the implementation of innovative "green" projects through public-private partnerships and cooperation with international financial institutions, establishment of a system for training and retraining personnel necessary for a "green" economy, and implementation of measures to mitigate the environmental crisis in the Aral Sea region. In addition, diversification of energy resource consumption, expansion of renewable energy usage, and introduction of energy- and resource-saving technologies in various sectors of the economy have been identified as primary directions. Implementation of these measures is aimed at ensuring long-term sustainable development in Uzbekistan, making it possible by 2030 to significantly reduce greenhouse gas emissions, increase the share of renewable energy resources utilization, and ensure ecological stability. There is an aspiration within public financial policy towards ensuring ecological priorities, and the institutional foundations for this are gradually being formed [2]. The present article aims to identify the importance of "green" expenditures in the state budget, assess their economic and ecological efficiency, and, based on advanced international experiences, develop proposals and recommendations for their introduction into the context of Uzbekistan.

Methods. In recent years, ensuring environmental priorities and the effective organization of "green" expenditures in public finance have become significant directions of financial policy in many countries. From this viewpoint, an analysis of advanced international practices is particularly important for the introduction and

development of such processes in Uzbekistan. To this end, a comparative analysis of the experiences of selected European (Germany and Sweden) and Asian (South Korea and China) countries was conducted. Throughout this analysis, statistical data, environmental investments in state budgets, and the mechanisms for financing them were studied. Specifically, it was observed that in the budgetary systems of these countries environmental objectives are clearly defined, and effective financial mechanisms (such as public-private partnerships, targeted financing, and tax incentives) have been established to support "green" investments. Such a comprehensive and systematic approach creates a vital scientific and practical foundation for developing environmentally prioritized public finance practices adapted to Uzbekistan's conditions.

The OECD theoretical model for green budgeting encompasses four main elements:

- strategic and fiscal planning;
- tools for creating an evidence base for budget decisions (for instance, expenditure tagging as "green" or "brown");
- accountability and transparency mechanisms;
- an enabling organizational environment that supports ecological priorities within the budgeting process.

On the basis of this Green Budgeting Reference Framework, the current situation in Uzbekistan was analytically assessed [3]. Additionally, indicators such as the ecological efficiency index of public budget expenditures and the share of environmental expenditures in Gross Domestic Product (GDP) were used methodologically, based on the research of M. Saidova (2021) [4]. Expert evaluation methods were applied during the analysis of data collected throughout the research to elucidate the essence of the issue. In doing so, scholarly conclusions of local and international specialists in this field, as well as results from dissertation studies (including references [2], [6], [8], [10]) were also taken into consideration.

Results. The results of the analysis indicate that the share of "green" expenditures within Uzbekistan's state budget remains low. Specifically, according to the data for 2023, approximately 1.3% of the republic's state budget expenditures were directed toward ecological and climate-related objectives, a figure lower than international norms [6]. For comparison, in developed countries this share is significantly higher; for instance, in 2022 Canada allocated 13.4% of its federal budget expenditures to such purposes [5]. Furthermore, within the framework of the "Green New Deal" program adopted in 2020, South Korea allocated substantial state budgetary resources toward green infrastructure, renewable energy, and environmental

innovations. Such financial mobilization facilitated a large-scale reconsideration of national budget priorities, demonstrating the country's firm commitment toward transitioning to a green economy. Additionally, countries such as Sweden and Germany have consistently dedicated significant portions of their public spending to combating climate change, investing in renewable energy sources, and environmental protection. Certain European countries (including France and Sweden) have introduced the practice of tagging state budget expenditures as "green" and "non-green," thus determining the environmental impact of each expenditure category and calculating indicators of environmental imbalance within overall budget policy. According to OECD data, by 2022, two-thirds of OECD member countries had implemented green budgeting mechanisms into their public finance processes [1]. This confirms that many states have begun to consider climate and environmental factors when making their budget decisions.

In Uzbekistan, the majority of existing "green" expenditures within the state budget are related to environmental protection measures (such as afforestation, combating desertification, waste management) and renewable energy projects financed through state investments. Although state-budget-funded investments in renewable energy have increased in recent years, their overall share within total expenditure remains relatively small. Within the structure of state budget expenditures, allocations for the development of environmentally friendly infrastructure, enhancement of energy efficiency, and special climate adaptation programs are limited. This situation, on one hand, results from limited budget resources and their prioritized allocation toward socio-economic projects. On the other hand, it can also be explained by the incomplete development of institutional mechanisms necessary for financing green expenditures.

Based on the comparative analysis above, it has been identified that there are several problems in the development of "green" directions in public finance management in Uzbekistan. *Firstly*, the formal concept and legal framework of "green budgeting" have not yet been fully developed in Uzbekistan. In other words, there is currently no mandatory obligation to assess the climate and environmental impacts of each expenditure item during the budgeting process. This complicates efforts to ensure environmental priorities within the overall structure of public expenditures. *Secondly*, within the budget classification system, "green" expenditures are not defined as a distinct category. For example, although there are budgetary items dedicated to environmental protection within the functional classification of Uzbekistan's budget, expenditures specifically related to climate adaptation or greenhouse gas emission reductions are not separately identified. *Thirdly*, there is an insufficient system of specialized regulatory and incentive funds or sources for financing green expenditures.

This can lead to certain bureaucratic barriers and interruptions in information exchange when integrating green priorities into the budget. For example, China's experience demonstrates that local green funds play a crucial role in budget diversification, thus alleviating the burden on the central budget [7]. Another identified issue during the analysis is the shortage of qualified personnel and data availability in this field. In other words, many budgetary organizations and implementers lack awareness regarding the methodology related to the "green budgeting" concept. The practice of preliminary assessment of environmental impacts before planning each investment project or type of expenditure has not yet been established. For example, in Canada, each new expenditure undergoes evaluation through a special methodology known as the "Climate Lens," and approval is granted only after the environmental impact is assessed [8]. Clearly, it would be advisable to develop personnel capacity and data infrastructure to introduce such mechanisms in our country as well. Based on the conducted analysis, the following concrete mechanisms and measures are proposed to increase the share of "green" expenditures within Uzbekistan's state budget and ensure their effectiveness:

Forming a legal and institutional basis: It is necessary to adopt the "Green Budgeting" concept and integrate its principles into the State Budget Code or relevant by-laws. This will establish a mandatory foundation to ensure environmental priorities at all levels of decision-making within the budgeting process.

Implementation of an expenditure tagging system: It is essential to introduce a mechanism for classifying each budget expenditure as "green," "neutral," or "harmful," based on its environmental and climate impacts during the budgeting stage. The OECD-developed tagging methodology can be employed for this purpose [3]. This allows assessment of ecological efficiency in various sectors such as education, healthcare, industry, and energy.

Reduction of environmentally harmful subsidies and benefits: It is necessary to gradually reduce the share of expenditures in the state budget that negatively impact the environment ("brown" subsidies and expenditures). For example, expenditures related to ineffective subsidizing of energy resources or inefficient use of natural resources should be reconsidered, redirecting the freed resources towards green projects. Simultaneously, offering tax and customs incentives to enterprises implementing environmentally friendly technologies and aiming to reduce greenhouse gas emissions can increase private sector interest in green investments.

Introduction of the Climate Lens method (climate impact assessment): Before approving any major investment project or state program, it would be beneficial to assess its impact on climate change through expert evaluations. Canada's practice of

applying the "Climate Lens" demonstrates that preliminary analysis of the environmental consequences of expenditures significantly improves decision-making effectiveness [8].

Establishment of specialized green funds and financing sources: A Green Investment Fund should be established at the national level, with annual state budget allocations exclusively directed towards green projects. Additionally, local environmental funds could be established within regional budgets to finance projects aimed at addressing local ecological issues. China's experience with local green funds has effectively supplemented budgetary resources and attracted private-sector funding [7].

Creation of indicators and monitoring systems: A clear system of criteria and indicators should be developed to evaluate the implementation of green expenditures. For instance, it is recommended to conduct annual monitoring using indicators such as contributions to reducing greenhouse gas emissions by sector, energy savings achieved, and biodiversity preservation impacts. Monitoring results would provide a basis for decision-making regarding budget reallocation in subsequent budget cycles.

Discussion. The results of the analysis confirm that expanding "green" expenditures in public finance is an important driver not only for achieving environmental sustainability but also for fostering long-term economic growth. Investments aimed at mitigating the negative impacts of climate change, protecting public health, and conserving natural resources through green expenditures create a solid foundation for future generations. Furthermore, green investments stimulate economic modernization and the adoption of innovative technologies, boosting demand for domestic production and research in renewable energy and energy efficiency sectors. This process leads to the creation of new jobs and an increase in the country's technological potential. Green expenditures also positively impact public health: improvements in environmental conditions can significantly reduce long-term healthcare costs and enhance labor productivity. Calculations suggest that redirecting budget resources toward renewable energy, energy-saving technologies, and waste recycling contributes additional value, positively influencing GDP growth. According to the World Bank, green budgeting represents a central component of public financial reforms, serving as a pivotal mechanism for financing sustainable development [9]. One of the significant challenges for Uzbekistan in expanding green expenditures is the limitation of financial resources and their competition with pressing socio-economic needs. Therefore, developing green financing instruments in collaboration with international financial institutions and the private sector is essential for attracting additional resources to the state budget. Organizations such as the World Bank and the

United Nations Development Programme (UNDP) support Uzbekistan by allocating concessional loans and grants for green investment projects. However, the scale of such funding remains relatively small compared to annual budgetary expenditures. Hence, it is crucial to fully utilize the potential of international mechanisms like the Green Climate Fund (GCF) of the United Nations. From this perspective, implementing green financing mechanisms aimed at attracting external financial resources, as proposed by Rashidova (2023), is particularly important [10]. Specifically, expanding the financial base for governmental "green" expenditures could be achieved through measures such as issuing international green bonds and providing tax incentives for private investment. Based on the discussions presented above, it should be emphasized that there are significant prospects for strengthening ecological priorities in Uzbekistan's public financial management, and systemic reforms drawing from international experience should be implemented in this regard. Primarily, expanding "green" expenditures can enhance the competitiveness of the national economy, foster the creation of new employment opportunities, and positively impact public welfare. Moreover, expenditures directed towards environmental protection can reduce the risk of future natural disasters, consequently decreasing the fiscal burden associated with emergency expenditures on the state budget.

Conclusion. Based on data and analytical results, it can be concluded that the role and importance of "green" expenditures in public financial management are steadily increasing. While, in the case of Uzbekistan, the share of state budget expenditures currently allocated toward environmental and climate directions is relatively small, significant potential exists for increasing this share. The proposals developed within the framework of this research and the analysis of international experience demonstrate that the introduction of green budgeting is an essential precondition for sustainable economic development and fulfillment of international commitments (e.g., achieving the targets set out in the Paris Agreement). As highlighted by World Bank experts, integrating climate and environmental considerations into the budgetary process constitutes a core direction of contemporary financial reforms [9]. Thus, Uzbekistan must also broadly adopt practices of evaluating the "climate impact" of budgeting. In conclusion, it must be underlined that expanding "green" expenditures and implementing "green budgeting" principles in Uzbekistan's public finance represent vital steps toward ensuring sustainable and environmentally secure development of the national economy. By implementing the recommended measures, the efficiency of public expenditures will be improved, international obligations will be met, and—most importantly—a clean and stable environment will be preserved for future generations.

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