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DEVELOPMENT OF GREEN FINANCE IN UZBEKISTAN

Nargiza Nuriddinovna Rakhmatullayeva
Tashkent Institute of Management and Economics
Senior Lecturer of the "General Economic Sciences" Department
Phone: +998 97 754 00 82

Abstract

The purpose of the work is to assess the current state of "green" financing in the Republic of Uzbekistan and develop proposals to stimulate its further development. The methodological basis of the study was the use of modern economic and mathematical methods: cluster analysis, regression model construction. This allowed us to obtain results that have both a certain scientific novelty and practical significance. The evolution of scientists' views on the concept of sustainable development and the formation of a "green" economy is considered. The current state of "green" financing in the Republic of Uzbekistan for 2000-2018 is analyzed. Clustering of the subjects of the Republic of Uzbekistan was carried out according to the level of environmental investments and current costs for environmental protection, which made it possible to identify regions that are leaders and outsiders of these processes, as well as to establish the fact of a high level of regional differentiation in financing "green" projects. The regression model constructed by the authors allowed us to prove that with an increase in investments in fixed assets aimed at environmental protection and rational use of natural resources by 1 million soums, the GDP of the Republic of Uzbekistan will increase by 0.1 billion soums. With an increase in the current costs of organizations for environmental protection by 1 million soums. The level of GDP of the Republic of Uzbekistan will increase by 0.3 billion soums. The article concludes that in order to stimulate the development of "green" financing in the Republic of Uzbekistan, it is necessary to implement a set of measures providing for the formation of an appropriate regulatory framework; the development and use of new tools for financing "green" projects; the creation of a specialized banking institution.

Keywords: "green" financing, "green" finance, "green" economy, environmental investments, Republic of Uzbekistan.

Introduction

In recent decades, the world community has been actively discussing a model of economic growth based on the development, on the one hand, of its fundamental foundations (technological progress and modernization of production, human capital, infrastructure, macroeconomic stabilization), and on the other — on the initiation of growth due to the "green" component. In the context of the rapid scientific and technological development of the world economy, the anthropogenic burden on the environment has significantly increased, resulting

in the depletion of natural resources, degradation of ecosystems, and a decrease in the share of the regenerative capacity of the biosphere.

It is worth noting that since the mid-1980s, the level of consumption of natural capital by mankind (its ecological footprint) began to exceed the productive capacity of the Earth and its ability to assimilate [1]. Currently, the total ecological footprint of mankind (demand) exceeds the bio-power (supply) of the planet by 50%. According to the calculations of the analytical center “Global Footprint Network”, the bio-intensity of our planet in 2018 was 1.7 hectares per person. The Republic of Uzbekistan is among the ten countries with both the largest reserves of bio-intensity (possessing 7.9% of all reserves) and the largest values of the ecological footprint (4.0%).

In recent years, an increasing number of countries have defined the concept of a "green" economy and the transition to "green" economic growth as a strategic model for the development of national economies (OECD countries, Japan, South Korea, etc.). The Republic of Uzbekistan did not stand aside, where in 2017 the Strategy of Environmental Safety of the Republic of Uzbekistan was adopted for the period up to 2025, which serves as a confirmation of the course towards the trajectory of "green" economic growth. At the same time, achieving sustainable economic growth on a "green" basis, i.e. without damage to the environment and depletion of natural resources, it is impossible without the formation of an effective system of "green" financing.

Interest in the problem of sustainable development in the context of global climate change and environmental degradation has led to the formation of a new paradigm in the scientific community — the "green" economy. Given the variety of approaches to this issue, it seems advisable to highlight those that reveal aspects of the interaction between economic growth and the environment.

Exploring the factors of economic growth, the 2018 Nobel Prize in Economics laureate W. Nordhaus recognized back in the 1970s that the state of the global climate and the environment has a direct impact on ensuring continuous economic development. In his proposed "integrated assessment model", he actually combined models of economic growth and climate change [2]. The essence of the U model. The idea of Nordhaus is that the total amount of use of natural resources corresponds to a certain amount of greenhouse gas emissions, which affect the average air temperature. In turn, the air temperature determines the multiplier corresponding to environmental damage. As a result, the total productivity of production factors decreases due to environmental damage, which ultimately worsens the well-being of the population, suppresses economic growth and the development of human capital.

Methodology

It is worth noting that W. Nordhaus's views on the relationship between economic development and the state of the environment are not new to the scientific community. The issues of climate change and negative anthropogenic impact on the environment in the 1960s and 1970s were developed by supporters of the School of Environmental Economics (X. Daly, D.M. Alier, P. Hay, R. Constanza, etc.). Representatives of this school, considering the economy as an integral part of the ecosystem, believed that in order to solve environmental problems, it is necessary

to limit the pace of economic growth by imposing taxes on the use of natural resources, i.e. "ecological" taxation.

In the following years, the ideas of an environmentally oriented economy developed rapidly. In particular, in 1987, the report of the International Commission on Environment and Development "Our Common Future" noted that ensuring equal coexistence of society and the world around it, in which achieving environmental safety will be an integral part of sustainable development, is a priority goal of the world economy. The definition of "sustainable development" was interpreted in it as "development that contributes to meeting the needs of the current generation without reducing the ability of future generations to meet their needs."

In 1992, the UN held a conference on the environment and adopted the document "Agenda for the 21st Century", which presents the fundamental principles of sustainable development. The World Summit on Sustainable Development (RIO +10), held in 2002, consolidated the approach according to which sustainable development is considered as balanced development in economic, social and environmental aspects. The participants of the World Summit approved an action plan for the protection of the Earth's ecology. The next UN Conference on Sustainable Development (RIO+20), held in 2012, outlined the accents of the transition to a sustainable development model based on the formation of a "green" economy.

The well-known German politician and publicist R. Fuchs notes in his research that a "green revolution" is necessary, since humanity has reached the stage when the costs of economic growth leading to the depletion of natural resources significantly exceed the effect of welfare growth.

It is worth noting that for the first time the term "green economy" appeared in the publication "Fundamentals of the Green Economy" in 1989, prepared by scientists from the London Center for Environmental Economics. This document presented the economic rationale for the concept of sustainable economic growth.

Currently, both in foreign and domestic literature, the formation of a "green" economy model is considered as a dominant trend in the development of national socio-economic systems [6-7]. The analysis of publications devoted to the problems of ensuring sustainable development and greening of economic activity, the implementation of the concept of "green" economic growth, allows us to identify the following distinctive features of the "green" economy:

a) low carbon and hydrocarbon emissions;
b) prevention of degradation of ecosystem services and biodiversity;
c) conservation and increase of natural resources;
d) resource conservation and energy efficiency;
e) improving the standard of living of the population, increasing the income of the population.

Building a "green" economy is impossible without forming an effective system of "green" financing [12-18]. Note that there is no generally accepted definition of the term "green finance" in the modern economic literature. In a general sense, this term refers to the solution of environmental problems and resource management [19]. Currently, the definition of "green finance" is most often used, meaning funds allocated to finance environmental projects [20-22]. "Green" finance is the basis of the concept of "green" (low-carbon) economic growth, since they provide a link between financial institutions, environmental protection measures and economic growth.

O.V. Bogacheva and O.V. Smorodinov "green" finance includes financial services provided to economic entities for the implementation of economic activities to improve the environment, mitigation of the effects of global climate change and more efficient use of resources. "Green" finance includes various branches of the financial sector and financial products.

Table 1 Dynamics of green financing in the Republic of Uzbekistan for 2000–2018

Year	Investments in fixed assets aimed at environmental protection and rational use of natural resources, million sum	Share of investments in fixed assets aimed at environmental protection and rational use of natural resources in the total investment, %	Current environmental expenditures, million sum
2000	22338,6	1,92	76235,6
2001	27710,0	1,84	76832
2002	25270,1	1,43	89365
2003	35407,0	1,62	110705
2004	41167,6	1,44	126560
2005	58738,0	1,63	142655
2006	68188,0	1,44	133330
2007	76884,0	1,14	148157
2008	102388,0	1,16	183905
2009	81914,0	1,03	183655
2010	89093,9	0,97	193463
2011	95662,0	0,86	222599
2012	116543,0	0,92	239170
2013	123807,0	0,92	254377
2014	158636,0	1,14	269839
2015	151788,0	1,09	290890
2016	139677,1	0,95	306534
2017	154042,3	0,96	320947
2018	157651,0	0,89	345464,1

According to foreign scientists, "green" finance is a market-based investment or loan programs that take into account the impact on the environment when assessing risks or use environmental incentives to make business decisions.

Thus, based on the analysis of the existing economic literature, it can be concluded that "green" finance is considered in three main aspects:

1) a set of different ways of financing technological processes and projects in the field of greening economic activity;

2) a set of financial institutions (banks, insurance companies, etc.) engaged in financing environmental programs and projects;

3) financial products and services (loans, bonds, etc.) with an environmental component.

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Development of "green" financing

Today, the most important imperative for the sustainable development of the Uzbek economy is the formation of a "green" economy and a system of "green" financing. However, according to the data of the State State Statistics Service of the Republic of Uzbekistan, the current level of "green" investments in our country is only 0.9% of the total investment in fixed assets and is insufficient for "green" development (Table 1). In addition, in the last twenty years (2000-2018), there has been a decrease the share of "green" investments in the total volume of investments in fixed assets increased by 2 times. But at the same time, there is a tendency for Uzbek companies to increase their spending on environmental protection by more than 4.5 times.

It is worth noting that the territorial distribution of "green" financing in our country is uneven. The cluster analysis of the regions of the Republic of Uzbekistan by the level of environmental investments allowed us to identify five clusters.

The leading regions (the first cluster) of "green" investments are also pursuing an active policy in the field under study and has a significant level of investments in fixed assets aimed at environmental protection and rational use of natural resources. The regions of the third and fourth clusters are at the initial stage of forming a green financing mechanism. However, the general situation in the Republic of Uzbekistan in the field under study is reflected by the regions of the largest, fifth cluster. The regions included in this cluster are outsiders of "green" financing. It should also be noted that there is a significant gap between the leading and outsider regions: if the share of "leaders" in the total volume of environmental investments is about 25%, then the share of "laggards" is only 1%.

Table 3 **Average values of investments in fixed assets aimed at environmental protection and rational use of natural resources and current environmental expenditures for the allocated clusters, million sum**

Year	Indicator value by clusters				
	I	II	III	IV	V
2000	1618,9	1100,7	263,6	294,3	65,3
2005	5222,2	1239,6	976,1	1024,0	171,8
2011	6107,9	2012,4	1302,1	2275,2	403,1
2015	9643,3	8382,3	2003,9	2357,9	392,3
2017	14666,8	3927,4	6538,1	2184,9	390,0

Matching correlation coefficient matrix

Indicator	*X1*	*X2*	*Y*
X1	1,00	0,966	0,569
X2	0,466	1,00	0,993
Y	0,969	0,993	1,00

The average values of the level of "green" investments for the selected clusters are presented in Table 3.

The result of clustering of the regions of the Republic of Uzbekistan according to the level of current costs for environmental protection was the division of the population into three clusters. The average values of the indicator of the level of companies' expenditures on environmental protection for the selected clusters are presented.

As noted above, in the context of the implementation of the concept of a "green" economy, "green" financing is one of the sources of ensuring sustainable economic growth. In this regard, the authors of the article calculated a regression model of the relationship between the level of "green" financing and the pace of economic development in the country based on empirical data for 2000-2018. The volume of GDP (Y) was taken as an effective indicator, and the following indicators (factors) were determined as independent variables: X1 — investments in fixed assets aimed at environmental protection and rational use of natural resources; X2 — expenses of organizations for environmental protection.

In order to assess the interdependence of these indicators, paired correlation coefficients were calculated

The constructed matrix of paired correlation coefficients allows us to conclude that the strongest relationship exists between the level of GDP of the Republic of Uzbekistan (Y) and current environmental protection costs (X2) – ryx2 = = 0.993.

The resulting regression equation has the following form:

$$Y = -22769,6 + 0,1x_1 + 0,3x_2.$$

The reliability and accuracy of the model is indicated by the coefficient of determination, which indicates that 63.3% of the variation in the effective feature (Y) is due to the influence of factors included in the model (X).

The absolute size of the influence of independent variables on the final performance indicator is reflected by the coefficients of the multiple regression equation. In our case, with an increase in investments in fixed assets aimed at environmental protection and rational use of natural resources by 1 million soums, the GDP of the Republic of Uzbekistan will increase by 0.1 billion soums; with an increase in the current costs of organizations for environmental protection by 1 million soums. The level of GDP of the Republic of Uzbekistan will increase by 0.3 billion soums.

Conclusion

The transition to "green" economic growth and the formation of a "green" economy are a global trend in the development of socio-economic systems. An important condition for sustainable economic growth in a "green" economy is the availability of a "green" financing mechanism in order to mobilize the necessary financial resources for the implementation of "greening" and "decarbonization" of the national economy. In our opinion, the implementation of a set of measures is necessary to stimulate the development of "green" financing in the Republic of Uzbekistan:

• Development of a regulatory framework governing the implementation of "green" financing;
• development of a roadmap for the development of "green" financing;

• formation of a market for "green" bonds in order to finance environmental projects: environmentally friendly transport; renewable energy sources; management of water and forest resources; reduction of carbon emissions and environmental pollution; waste disposal and recycling; low-carbon production. In December 2018, the company carried out the first issue of "green" bonds in the amount of 1.1 billion soums, with a maturity until 2031, for the construction of a landfill for the disposal, neutralization and treatment of municipal solid waste;
• creation of a specialized banking institution, the main activity of which will be lending to projects related to the implementation of environmental protection measures;
• Government support for environmental initiatives of private business through both direct budget financing (budget allocations; state guarantees; budget loans; subsidizing part of the costs of investors on loans) and the provision of tax incentives and preferences (including to investors and issuers of "green" bonds).

In conclusion, we note that the mechanism of "green" financing in the Republic of Uzbekistan is at the initial stage of its formation. Today, the level of "green" investments in our country is insufficient to ensure sustainable "green" development. The territorial distribution of environmental investments across the regions of the Republic of Uzbekistan is characterized by unevenness. For the further development of "green" financing in the Republic of Uzbekistan, it is necessary to: form an appropriate regulatory framework; development and active use of new tools for financing "green" projects; creation of a specialized banking institution.

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