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PROSPECTS OF USING THE "GREEN ECONOMY" IN AZERBALJAN

Abstract. The article examines data on the prospective directions of the development of the "green economy" of Azerbaijan, the implementation of the national strategy for the use of alternative, renewable energy sources.

The modern economy and society as a whole face a significant number of problems that form a system of challenges for further progressive development. One of these challenges is caused by the formation in recent decades of systemic contradictions between the processes of economic, social and environmental development.

The process of globalization, rapid economic development, population growth due to increased demand for natural resources, developing countries have limited access to modern technologies, climate change and other factors in environmental problems caused by humanity have become more concerned. Environmental protection summaries in market economies experiencing long-term sustainable environmental development in a country's economy is of great importance in ensuring the creation of economic mechanisms. International experience shows that the current stage of economic development, environmental regulation, both methods should be interconnected. The economic mechanisms of literature and the measures used in the enterprise have an impact on economic activity, good or bad, depending on the corresponding positive or negative incentives to create labeled residues.

At the same time, the development of the green economy is still very sluggish and uneven, despite the presence of a public demand for its outstripping growth, and certain areas of "green growth", even supported by state policy measures, are poorly interconnected and are developing unsystematically. Thus, in modern conditions, the problem of scientific elaboration of approaches to the development and implementation of the state policy of regulating the green economy in the context of sustainable development, as well as their implementation in the practice of functioning of public administration bodies, is very acute.

Keywords: green economy, sustainable development, energy, energy efficiency, renewable energy sources.

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ПЕРСПЕКТИВИ ВИКОРИСТАННЯ «ЗЕЛЕНОЇ ЕКОНОМІКИ» В АЗЕРБАЙДЖАНІ

Анотація. У статті розглядаються дані про перспективні напрямки розвитку "зеленої економіки" Азербайджану, реалізації Національної стратегії з використання альтернативних, відновлюваних джерел енергії.

Сучасна економіка і суспільство в цілому стикаються зі значною кількістю проблем, які формують систему викликів для подальшого поступального розвитку. Одна з таких проблем викликана формуванням в останні десятиліття системних протиріч між процесами економічного, соціального та екологічного розвитку.

Процес глобалізації, стрімкий економічний розвиток, зростання населення через збільшений попит на природні ресурси, країни, що розвиваються мають обмежений доступ до сучасних технологій, зміна клімату та інші фактори екологічних проблем, викликаних людством, стали викликати все більшу заклопотаність. Резюме з охорони навколишнього середовища в країнах з ринковою економікою довгостроковий сталий екологічний розвиток економіки країни має велике значення для забезпечення створення економічних механізмів. Міжнародний досвід показує, що на сучасному етапі економічного розвитку, екологічного регулювання обидва методи повинні бути Економічні механізми, описані літературі, взаємопов'язані. В використовуються на підприємстві, впливають на економічну діяльність, хороше або погане, в залежності від відповідних позитивних або негативних стимулів для створення мічених залишків.

У той же час розвиток "зеленої" економіки як і раніше йде дуже мляво і нерівномірно, незважаючи на наявність суспільного попиту на її випереджаюче зростання, а окремі напрямки "зеленого зростання", навіть підтримувані заходами державної політики, слабо взаємопов'язані і розвиваються безсистемно. Таким чином, в сучасних умовах проблема наукового опрацювання підходів до розробки та реалізації державної політики регулювання зеленої економіки в контексті сталого розвитку, а також їх впровадження в практику функціонування органів державного управління стоїть дуже гостро.

Ключові слова: зелена економіка, сталий розвиток, енергетика, енергоефективність, відновлювані джерела енергії.

Introduction. The term "green economy" was first used by leading environmental experts in a report prepared for the UK government in 1989. The United Nations Environment Programme (UNEP) defines the term "green economy" as an economy that ensures people's well-being and social justice, as well as dramatically reduces environmental risks. The Organization for Economic Cooperation and Development (OECD) and the international organizations of UNEP have defined "green growth" or "green economy" as a concept denoting the production and consumption of goods and services that ensure environmental safety, as well as investments in green development [4,18]. The green economy can also be defined as a concept of a new economy or as a fundamental addition of human and natural factors to the fundamentals of classical economics.

The theory of green economy is based on 3 axioms:

- it is impossible to infinitely increase the area of impact in a limited phase;
- in conditions of limited resources, it is impossible to meet the infinitely growing demands;

- on the surface of the Earth, everything is mutual.

The green Economy aims to support reforms that encourage investment in nature conservation in all sectors of the economy and politics. The increase in income and employment is due to investments by governments and individuals in reducing carbon emissions and pollution, improving energy and resource efficiency, and preventing the loss of biodiversity and eco-system services. A green economy is an economy that is part of the natural environment and depends on it. The concept of a green economy includes postmodernism, resource-oriented economics, ecological economics, ecological economics, green politics, etc., which exist in economics and philosophy. includes ideas from many fields.

In response to this, in order to make more rational use of natural resources, as well as environmental protection, first of all, the concept of "green technologies" was proposed in developed countries, which includes products, equipment and systems that meet the following criteria: - minimization of environmental degradation; - release of greenhouse gases in small volumes into the air or not releasing them at all; - providing a healthy and improved environment for all forms of life; - saving energy and; - calendar of renewable energy sources.

The main essence of the environmental policy of the Republic of Azerbaijan is the preservation of ecosystems in order to ensure the life of people in an ecologically clean environment, ensuring sustainable development with effective use of natural resources, minimal harmful effects on the environment, restoration and preservation of its original state.

In the field of environmental protection and rational use of natural resources created: diary in the field of sustainable development until 2030", "State Program of socio-economic development of the regions of the Republic of Azerbaijan for 2019-2023", "Action Plan to ensure effective use of water resources for 2020-2022", "State Program for geological study of the Earth's interior and rational use of the mineral resource base for 2020-2024" programs [1].

Analysis of modern foreign and domestic research and publications. Among domestic and foreign scientists, the most significant contribution to the theory of sustainable development, the relationship between economic and environmental problems, the promotion of the greening of economic activity, the specifics of the implementation of environmental policy, the effectiveness of the use of the natural resource potential of the country, the problems of the formation of an eco-oriented economy were made by T.A. Akimova, G. Atkinson, A.R. Akhmetshina, S. Baumgartner (S. Baumgärtner), G.H. Brundtland (G.H. Brundtland), O.P. Burmatova, V.I. Vernadsky, E.V. Girusov, G. Daily (G. Daily), J. Dixon (J. Dixon), O.K. Drever, I.V. Dubov, S.A. Dyatlov, V.M. Zakharov, R. Carpenter, N.P. Ketova, I. Kverner, V.P. Klavdienko, R. Costanza, D.L. Meadows, D.H. Meadows (Donella H. Meadows), Pakhomova, R.A. Peret, D. Pearce, N.A. Piskulova, O.V. Prokopenko, A.Yu. Reteyum, K.K. Richter, E.V. Ryumina, V.V. Sabadash, D.Yu. Savon, V.P. Samarina, G.V. Sdasyuk, L. Scura, M.V. Tereshina, R.K. Turner, A.S. Tulupov, A.D. Ursul, T.V. Uskova, G.A. Fomenko, J. Forrester, G.S. Feraru, V.V. Haskin, I.Y. Khovavko, R.B. Howarth, P. Hawken, E.A. Schwartz, A.V. Shevchuk, P. Sherman, O.S. Shimova, A. Endres, Ya.Ya. Yandyganov and other foreign scientists. Among the domestic researchers of the legal regulation of global environmental problems, Agaev Z.B., Aliyev G.A., Bagirov R.A., Gabibov I.A., Hajizade F., Nuriev J., Sultanly B.V., Teymurov T.K., Khalilova H.H. and others contributed to their solution.

The need to ensure sustainable ecological and economic development on the basis of Azerbaijan's transition to a "green" economy determines the relevance of the study and forms scientific interest in the development of greening of economic activity.

The purpose of the article is to form the concept of sustainable ecological and economic development at the state level and prospects for the introduction of a "green" economy in Azerbaijan.

Presentation of the main material of the study. In the scientific literature of recent years, considerable attention is paid to indicators of sustainable development, the analysis of international experience in solving problems of sustainability of the territory. At the same time, the issues of stimulating ecological and economic development at the regional level aimed at the

formation and development of a "green" economy remain insufficiently studied. The debatable nature and low degree of elaboration of the noted problem, as well as its high theoretical and practical significance.

Foreign experience should be used to introduce the ideas of the green economy into the practice of nature management in Azerbaijan.

Most experts are skeptical about the prospects of Azerbaijan's transition to a green economy due to the continued dependence of the country's economy on fossil fuels.

Today, the basis of national environmental management strategies is often the transition to a resource-efficient low-carbon economy [8], which does not cover all aspects of the transition to a green economy, but contributes to the search for new opportunities for the practical implementation of this concept.

The need to develop new ways of economic development has long been recognized by the world community. The importance of solving environmental problems for the progress of mankind is reflected in the global decisions adopted by all countries of the world.

Recently, with more frequent crises and aggravation of global problems than ever before, many States and international organizations have begun to look for a new, intensive model of advanced development. As such a cardinal model, a model of the "green economy" was proposed - an economic system that would reduce environmental risks and deficits, while increasing the welfare of society and increasing social guarantees.

At the UN Summit in September 2015 (Sustainable Development Goals), a program for sustainable economic development was adopted, one of the goals of which is related to ensuring the environmental sustainability of the economy for the world in 2016-2030. Important features of which should be "green" [18].

One of the strategic measures outlined in the program is the promotion of environmentally friendly activities in the production sector.

Indicators of sustainable development are described by Geert Van de Kerk and Arthur Manuel [13] as follows.

These indicators are used to evaluate and compare the "green" economy [6].

- - Human Development Index;
- - Environmental sustainability index;
- - Index of sustainable economic well-being;
- - Indicators of the Millennium Development Goals [12].

Traditionally, in countries where environmental protection is subordinated to economic growth, the use of the "green economy" plays an important role.

In this regard, the change in China's policy is characteristic. The five-year "green" plan, which came into force in March 2011, involves the introduction of a new system of environmental regulation aimed at reducing environmental pollution, promoting clean technologies, creating green taxation, within which the main tax burden will fall not on labor, but on consumed resources. A new system of market-based environmental payments for greenhouse gas emissions is being developed. Another important idea under discussion is the transition to a system based on the sustainable development index. In total, China plans to invest \$468 billion in the implementation of environmental protection programs for the coming decades [5,9,15].

All this means that in the coming decades, developed countries will have an economy with a new innovative and technological basis, the most important characteristic of which will be a minimal impact on the environment.

The World Business Council for Sustainable Development has been working for more than 10 years. According to his forecast, based on a study of the world's largest companies, sustainable development opens up business opportunities for market leaders in the coming decades, which are estimated at \$6.2 trillion. [2] This assessment primarily concerns companies that are conceptually and practically engaged in sustainable development. The International Monetary Fund (IMF) has stated the need to switch to a low-carbon growth model during the recovery of the global economy after the global crisis. In order to help finance this transition, the

IMF is developing proposals for the formation of a global "Green fund" capable of providing huge financial resources – up to \$ 100 billion a year for several years, necessary for countries to solve problems related to climate change. The global trend of the last decade has been the preparation by companies and corporations of comprehensive reports on sustainable development, the number of which is already 75% of the total number of reports [10].

In recent years, there has been a significant increase in the world gross domestic product by 4 times, such growth was largely achieved at the cost of depletion of natural capital and degradation of the ecosystem. This led to the realization of the need to develop a new type of economic development in the world, the development of a new "green" economic course.

This means new technologies with minimal impact on the environment, the so-called alternative green energy.

Consider the value of the green economy index in some countries (Table 1).

Table 1
The value of the Green Economy index (2005-2020)

N₂	Countries	Scores
1	Sweden	77,61
2	Norway	69,11
3	Finland	67,83
25	England	52,96
30	USA	51,53
40	Turkey	49,63
57	Azerbaijan	43,73
74	Russia	38,08
87	Ukraine	46,53

Source: www.dualcitizeninc.com

The International Green Economy Index [20,21] has been used since 2010 to track how countries are moving towards a green economy. The International Green Economy Index (GUI) is an analysis based on data on how 80 countries operate in the green economy. According to sources published in recent years, Azerbaijan ranks 57th out of 80 countries with 43.73 points on measures taken in connection with the transition to a "green" economy and performance assessment [7].

According to calculations, the annual wind energy potential of Azerbaijan is 800 MW (Table 2)

Table 2

Potential of renewable energy sources in the Republic of Azerbaijan						
Source	Realizable potential, MW.					
Small hydroelectric power plants	400					
Wind energy	800					
Solar energy	5000					
Bioenergy	1500					
Geothermal energy (heat only)	800					

Source: Compiled according to the data of the State Agency for Alternative and Renewable Energy Sources of Azerbaijan - a government agency under the Ministry of Industry and Energy of the Cabinet of Ministers [3].

Approximate calculations equate this figure to 2.4 billion kW of electric energy. Using such a powerful potential would save \$1 million. conventional fuel and would prevent the release of a large amount of waste into the atmosphere. As a result of long-term observations,

it was revealed that the necessary conditions of the country prevail in the Absheron Peninsula, the coastal strip and the northeastern islands of the Caspian Sea. The average speed of long-term winds is more than 6 m. per second, which is a disposing factor for the use of wind energy.

In the Ganja-Dashkesan zone and the Sharur-Julfa territory in the Nakhichevan Autonomous Republic, the average annual wind speed is 3-5 meters per second, there are favorable conditions for the use of medium-power wind turbines.

The following regions of the country are considered promising for the use of wind energy:

- 1. Baku, Sumgayit and the Absheron Peninsula with the islands closest to it.

 Due to the intense force of the wind, the energy potential is estimated at 1500 MW.
- 2. The Caspian Sea zone and the right bank of the Kura: the potential is estimated at 500 MW.

The territory of the Nakhichevan Autonomous Republic with separate zones of Zangezur inclusive. The potential is estimated at 70 MW.

Data on the long-term forecast of wind energy use in Azerbaijan are given in Table 3

Long-term forecast of wind energy use in the Republic of Azerbaijan

Table 3

O						
Year	2005	2010	2015	2020	2025	
Wind energy production, million kW. sec.	163	325	434	542	651	
Fuel oil savings, thousand tons	49	98	130	163	195	
Reduction of CO ₂ , thousand tons	150	300	400	500	600	

Source: The 1st National Climate Change Information

Hydropower is the main renewable source providing energy supplies in Azerbaijan. In 2010, hydropower supplied 18% of the electricity production. In total, Azerbaijan has operating hydropower capacities of 1,000 MW, and 62 MW of hydropower capacity is under construction.

The country's largest Mingechaur HPP with an installed capacity of 402 mW is built on the Kure River. In addition, three more hydroelectric power plants on the Kura with a capacity of over 100 mW are currently operating in Azerbaijan.

Azerbaijan's water resources include: the lower reaches of the Kura River with its numerous tributaries; the Araks River (a tributary of the Kura) flowing along the border and a group of small rivers flowing into the Caspian Sea. There is still some untapped hydropower potential in the country to date. Research in this area indicates the presence of a total technical hydropower potential of the rivers of Azerbaijan in 40 GWh. At the same time, based on the conclusions based on the conclusions of the review group, which was conducted in June 2012, the economically justified potential is less than 1 TWh., which can be realized by the construction of small channel-type hydroelectric power plants. This is equivalent to an installed capacity of 400 MW, according to Azernergy. Thus, hydropower resources are limited.

Hydroelectric power plants also play an important role for the national economy of the republic for the national economy of the republic for the regulation of flood waters, the production of clean electricity and the creation of new irrigation systems. The construction of 61 small hydroelectric power plants is planned in the near future. Small hydroelectric power plants are often located in populated areas far from power lines and substations of the unified energy system. In such conditions, small hydroelectric power plants provide satisfaction of local electricity needs and, accordingly, a number of other social problems.

Due to the growing demand for energy in Azerbaijan, the amount of CO₂ emitted into the atmosphere is increasing, and most of the carbon emitted into the atmosphere is emitted by the industrial sector [4].

Table 4

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	2012	2013	2014	2015	2016	2017	2018	2019
Carbon dioxide CO ₂	34,8	26,4	28,8	30,2	31,0	30,2	30,1	29,9
Nitric Oxide (N ₂ O)	0,4	3,3	3,1	3,1	3,1	3,2	3,2	3,2
Methane (CH ₄)	13,9	17,5	17,1	17,6	17,2	17,4	17,2	17
F-gases	0,8	1,0	0,9	0,9	1,0	1,0	0,9	0,8

Source: www.stat.gov.az [2]

What Azerbaijan needs to do to reduce its existing high carbon (CO₂) emissions to an acceptable level is to use its renewable energy potential to produce electricity, and as a result, Azerbaijan can achieve high energy security. The State Agency has implemented many major projects in our country related to the use of fuel-free technologies. During 2017, solar stations were commissioned in the Samukhsky district and Pirallakhi, and by 2020 it is planned to install 420 mW stations in the field of alternative energy in our country. The commissioning of such stations will contribute to the creation of new jobs. Currently, about 7.8% of the country's electricity is provided by renewable energy sources. It is expected that as a result of the use of solar and wind energy, this figure will increase by 20% by 2020. The strategic roadmap until 2020 is aimed at the construction of hybrid power plants in all regions and cities of the country [3].

On April 4, 2018, the Organization for Economic Development and Cooperation and the State Agency for Alternative and Renewable Energy Sources organized an international seminar on "Scaling up green investments and Financing in Azerbaijan". The topics presented at the event were "Financing Sustainable Energy", "Using the ESCO model (Energy Service Campaign) for green investments", "Transition to a low-carbon economy and climate change", as well as the use of alternative energy sources in agriculture by local participants. There were discussions about investments in the field of use.

In Azerbaijan, the creation of a legislative framework in this area and the use of fiscal instruments can both increase state revenues and accelerate the transition to a "green" economy. For developing countries, it will have a negative impact on the economy, but the government can take measures to prevent this [14].

Since its existence, wildlife has been constantly under the influence of inanimate nature, various processes, anomalous phenomena, and currently this flow continues. In our modern world, the role of wildlife is no less important -the forests that surround us provide a constant source of energy, meadows rich in diverse vegetation, plants are in the process of extinction, depletion, disappearance of rare plant species, we call man "reasonable man". According to statistics, almost every year thousands of hectares of forests and meadows rich in greenery are destroyed in the world, not to mention human "labor". The destruction of forests leads to salinization, leaching, landslides of soils, which are considered a fertile layer of soil, which leads to great destruction, catastrophes.

Today, in most countries of the world, various discussions are underway to eliminate problems arising from environmental imbalance. Now a natural phenomenon on one continent of the Earth should be considered as a problem not only of the countries of this continent, but also of the whole world, and it is necessary to jointly look for ways to overcome it. This should be understood not at all as an initiative of people to prevent possible consequences of natural phenomena, but as the absence of a way out of the situation. There are no more forests, meadows, and areas rich in flora in the world to lose them. Crossing the "red line" can lead to more serious disasters. Along with the development of the economy and the improvement of the socio-cultural level of the population in our country, the rational use of natural resources and the preservation of ecological balance are in the focus of the state's constant attention. In this regard,

a number of regulatory legal acts related to ecology, nature protection and rational use of natural resources have been adopted in recent years, important practical steps have been taken in the field of nature protection and improvement. A number of large water basins have been built, drainage systems have been built to clean the soil from salinization, a lot of greenery has been planted in Baku and its surroundings, strips of forest cover have been laid in the Caspian sands to strengthen the shores and prevent soil erosion, a number of nature reserves and sanctuaries have been created to preserve and develop flora and fauna.

But there are still serious problems in this area. As a result of deforestation, the already insignificant sanitary-hygienic and socio-ecological function of the forest cover in the country has significantly weakened, such as soil cover, dehydration, degreasing. Stocks of some valuable tree and shrub species are at risk of depletion. The irrational use of pastures has led to their rapid erosion over a vast area and the destruction of vegetation. On the other hand, natural phenomena occurring in the country in recent years have caused serious damage to the environment. Therefore, the protection of nature in the country, the implementation of urgent measures to reduce biodiversity and prevent environmental pollution are of great socio-economic importance.

Azerbaijan is a state with rich natural resources and developed industry. However, due to the fact that environmental problems accumulated over many years have not been solved in a timely manner, the environment of our country is heavily polluted. Currently, there are a number of environmental problems in our republic that require urgent solutions: pollution of water basins, including the Caspian Sea by commercial and industrial waters, damage caused due to changes in the level of the Caspian Sea, exceeding the maximum permissible concentrations of harmful gases in the atmospheric air, reduction of biodiversity, erosion and salinization of soils, utilization of industrial and household waste, etc [11,14].

International organizations and environmental problems at the international conference in Rio de Janeiro on the initiative of the United Nations in 1992, the further development of the world will primarily depend on how environmental problems will be solved. At this conference, the ways of solving environmental problems existing in the world were seriously considered and important decisions were made, including the concept of "sustainable development", which has become a program document of all international environmental organizations. In this concept, the Organization of Economic Development in unity with ecological balance, the priority of environmental protection, the solution of environmental problems, first of all, the improvement of the well-being of modern generations without limiting the possibilities of future generations are put forward to the fore. To achieve this, first of all, it is necessary to ensure an increase in economic efficiency and environmental protection [19].

The main goal of the environmental policy pursued in Azerbaijan is to preserve existing ecological systems, economic potential and ensure sustainable development through the effective use of natural resources to meet the needs of present and future generations. To do this, ways of using natural resources should be developed, and economic development should be based on the principles of sustainability. To ensure the environmental sustainability of development, it is necessary to eliminate serious environmental problems that arise in the course of economic activity, minimizing their negative impact on the environment [15]. Much attention is also paid to joining international agreements in the field of environmental protection. So, at present, the Republic of Azerbaijan has joined 20 conventions and signed the relevant protocols.

State programs the implementation of state programs and projects in order to identify ways to solve environmental problems and ensure ecological balance will make the environment healthier in the near future [11].

Conclusions. Today, Azerbaijan understands the importance of developing a "green economy", has been supporting the development of this sector in recent years and is striving to reduce the country's dependence on hydrocarbon resources. To this end, the Government will develop projects and policies in a number of key sectors, including energy, agriculture and transport. This activity has already yielded some positive results. At the same time, this work includes making proposals on general and sectoral measures to further facilitate the transition

ISSN 2409–0948 print 2022 ISSN 2415–3311 online № 1(25) that has already begun. It can be concluded that the modern environmental policy in Azerbaijan is based on the concept of sustainable development and is of a comprehensive nature, designed to manage environmental safety through state programs aimed at developing a "green economy".

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