

GREEN ECONOMY: DIRECTIONS AND PROSPECTS

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Abstract. The article considers the concept of "green economy" as one of the strategic directions of economic development in Azerbaijan Republic. The concept of transition to a "green economy" is researched and the main problems of the global ecosystem are analyzed. The main factors of the possibility and limitations of the "green economy" in the world are listed. The experience of the countries leading the "green economy" is considered. It is noted that in modern conditions, the development of a "green economy" will significantly reduce harmful emissions to the planet, and responsibility for pollution is shared between countries. The main directions of the "green economy" are identified, such as green energy, green transport, green technologies, green tourism, green agriculture. A more detailed analysis of the effectiveness of the development of the "green economy" in Azerbaijan is made. It is established that the reduction of public investment in environmentally harmful industries and the increase in tax rates for harm to nature will draw the attention of businesses to clean technologies. Based on the research, the prospects of the "green economy" in Azerbaijan are summarized and the corresponding conclusions are made.

Keywords: green economy, efficiency, ecology, resources, investments

YAŞIL İQTİSADİYYAT: İSTİQAMƏTLƏR VƏ PERSPEKTİVLƏR

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Xülasə. Məqalədə Azərbaycan Respublikasında iqtisadi inkişafın strateji istiqamətlərindən biri kimi “yaşıl iqtisadiyyat” konsepsiyasına baxılmışdır. “Yaşıl iqtisadiyyat”a keçid konsepsiyası araşdırılmış və global ekosistemin əsas problemləri təhlil edilmişdir. Dünyada “yaşıl iqtisadiyyat”ın imkanlarının və məhdudiyyətlərinin əsas amilləri göstərilir. “Yaşıl iqtisadiyyat”da lider olan ölkələrin təcrübəsi nəzərdən keçirilir. Qeyd olunub ki, müasir şəraitdə “yaşıl iqtisadiyyat”ın inkişafı planetə atılan zərərli emissiyaları əhəmiyyətli dərəcədə azaldacaq və çirklənməyə görə məsuliyyət ölkələr arasında bölüşdürülür. Yaşıl enerji, yaşıl nəqliyyat, yaşıl texnologiyalar, yaşıl turizm və yaşıl kənd təsərrüfatı kimi “yaşıl iqtisadiyyat”ın əsas sahələri müəyyən edilmişdir. Azərbaycanda “yaşıl iqtisadiyyat”ın inkişafının səmərəliliyinin daha ətraflı təhlili aparılmışdır. Müəyyən edilib ki, ekoloji cəhətdən zərərli sənayelərə dövlət investisiyalarının azaldılması və ətraf mühitə dəyən ziyana görə vergi dərəcələrinin artırılması biznesin diqqətini təmiz texnologiyalara yönəltməsinə gətirib çıxardacaq. Aparılmış tədqiqatlar əsasında Azərbaycanda “yaşıl iqtisadiyyat”ın perspektivləri ümumiləşdirilir və müvafiq nəticələr verilir.

Açar sözlər: yaşıl iqtisadiyyat, səmərəlilik, ekologiya, resurslar, investisiyalar

Introduction. In modern conditions, traditional production is becoming sustainable. Enterprises are introducing certification of healthy and environmentally friendly buildings, and people are demanding more environmentally friendly goods and services. The modern economic structure is being transformed towards environmental sustainability and increased resource efficiency, the ability to withstand environmental challenges and risks, as well as a wider and more reasonable use of environmentally friendly technologies and innovations. Greening implies a compromise between economic, environmental and social goals.

A clean, innovative and resource-efficient "green economy" takes into account the value of the environment, natural resources, the quality of sources of financial growth, and also develops such key elements as efficiency, stimulation, transformation, sustainability and inclusiveness. The

introduction of sustainable production implies the analysis and elimination of factors leading to deterioration of the environment and quality of life. The delayed economic consequences of environmental degradation and depletion of natural resources are considered, and the economic benefits of rational use of natural resources are determined to reduce future costs of reclamation and restoration of biological diversity lost due to extensive development.

The methodological basis of the research was the works of domestic and foreign economists on various aspects of assessing the state of the green economy, materials from specialized journals, and periodicals. The article used general scientific research methods: comparative and factor analysis, systems approach.

The essence of green economy. In modern conditions, the development of economies of states based on environmental degradation and depletion of natural resources cannot be sustainable. Therefore, many countries are actively searching for new models of economic development related to environmental factors: green economy, green growth economy, bioeconomy, low-carbon economy, blue economy, brown economy, and others. The listed new economic models can be considered different types of green economy.

According to the UN Environment Programme, a green economy "improves human well-being and ensures social justice, while significantly reducing environmental risks and degradation." Key features of a green economy include: efficient use of natural resources; conservation and enhancement of natural capital; reduction of pollution; prevention of biodiversity loss; low carbon emissions. Based on the above, we note that the goal of a "green" economy is to balance unstable ecological and socioeconomic systems for the survival of human civilization. At the same time, international studies of this issue, if summarized, offer the following set of factors of opportunities and limitations of the transition to a green economy. Factors of possible transition to a green economy include: growth of population incomes and creation of additional jobs; environmental protection; development of new technologies; real resources for investment. Factors limiting the transition to a green economy include: the problem of choosing between economic and environmental gains; aggravation of the geopolitical struggle for resources; open markets and fierce competition leads to an increase in the extraction of natural resources.

Based on the analysis of the factors of opportunities and limitations of the transition to a green economy, we believe that it is most appropriate to rely on the experience of countries that have succeeded in forming a green economy. The governments of the member countries of the Organization for Economic Cooperation and Development and key partner countries of this organization have developed and are implementing hundreds of special measures to stimulate the development of a green economy. At the same time, in today's conditions, it is advisable to evaluate global, regional and national initiatives to develop a green economy in the context of a green recovery. The 2020 Green Stimulus Index report, prepared by the British consulting company Vivid Economics, assessed the efforts of 23 major economies on the effectiveness of stimulus packages adopted to support nature and the climate. In this rating, the best marks were received by measures taken by the EU within the framework of the European Green Deal, as well as Germany and South Korea. [12]

Analysis of the state of the green economy in Azerbaijan For a long time, the development of Azerbaijan, as well as most countries in the world, was focused on achieving economic growth, mainly due to the intensive and irrational use of natural resources. The depletion of natural capital due to active exploitation was aggravated and thus did not allow the country's ecosystem to recover. In recent years, it has become obvious that further movement along the path of economic growth, without due consideration of environmental and social factors, poses threats to both current and future generations. In Azerbaijan, the understanding of the "green" economy is defined as an economy that leads to an increase in human well-being and strengthening social justice while significantly reducing risks to the environment, preserving and increasing natural capital, effectively using resources and stimulating the preservation of the country's natural ecosystems. In a green economy, income and employment growth is achieved through public and private investment aimed at reducing carbon emissions and pollution, creating green jobs accessible to women and men, creating a healthy and

supportive environment for the population, and increasing the efficiency of energy, resource and ecosystem services use. [2]

The Conference of the Parties to the UN Framework Convention on Climate Change COP29, which took place in 2024 in Azerbaijan, is a logical continuation of the country's transition strategy to a green economy. In accordance with this mission, by the Order of the President of the Republic of Azerbaijan İlham Aliyev, 2024 was declared the "Year of Solidarity for a Green World" in Azerbaijan. [7,8]

One of the most ambitious "green" initiatives of Azerbaijan is the declaration of the Karabakh and Eastern Zangezur regions as "green zones". These regions are being rebuilt taking into account the principles of sustainable development and a "green" economy. It is planned to create zero-carbon zones in the liberated territories by 2050. For Azerbaijan, the transition to a green economy is an urgent need, since the country's socio-economic development is largely based on the consumption of natural resources. Intensive use of natural resources certainly makes a significant contribution to economic growth in the short term, but it is important to understand that in the long term it will lead to significant negative consequences: widespread poverty and deterioration of public health due to polluted air and poor quality drinking water, lack of food and energy.

Currently, there are alarming trends in Azerbaijan. CO₂ emissions from the energy production and consumption sector account for 80.9% of global anthropogenic greenhouse gas emissions. The largest amount of greenhouse gases are emitted by the energy supply sector, which includes all processes of energy production, conversion, storage, transmission and distribution, except for those that use secondary energy to provide energy services in end-use sectors.

Table 1. Increase in greenhouse gas emissions by sector (in million tonnes of CO₂ equivalent)

	2010	2015	2019	2020	2021	2022
Energy	41,0	47,4	49,0	49,8	53,4	54,3
Industry	2,1	3,4	3,3	3,2	3,3	4,1
Agriculture	7,2	8,7	8,0	9,0	7,6	8,1
Land use, land conversion and forestry	-5,4	-7,1	-7,5	-8,5	-7,7	-8,9
Waste	2,3	0,9	1,4	1,4	1,5	1,5
Excluding land use, land conversion and forestry, total	52,6	60,4	61,5	62,4	65,8	68,0
Including land use, land conversion and forestry, total	47,2	53,3	54,1	53,9	58,1	59,1
Carbon dioxide (CO ₂) emissions per unit of value added, kg/USA	0,6	0,6	0,6	0,6	0,6	0,6

*The symbol “-” indicates the absorption of gases that create a thermal effect.

As can be seen from the data in Table 1, it is shown that in 2022, 80.9% of the gases emitted into the atmosphere were from the energy sector, 12% from agriculture, 6.11% from industry and 2.24% from waste. Studies have shown that in Azerbaijan, the transition to a green economy will be carried out in the following “green” directions: green industry, green energy, green tourism, green agriculture, green transport, green city, green waste recycling, green education [11]

Green energy. The main fuel and energy resources in Azerbaijan are oil, gas, electricity, hot water and fuels and lubricants. However, forecasts by leading energy agencies note the growing electrification of energy as one of the main trends in the development of the global energy system, along with the rapid deployment of clean energy technologies and their reduction in cost. [3,5] Considering that the main components of sustainable "green" energy are energy security, environmental protection and energy for quality life, the goal in the energy sector by 2030 will be to

reduce the energy intensity of GDP while simultaneously increasing access of citizens and economic entities to reliable and modern energy supplies. Thus, Azerbaijan aims to reduce greenhouse gas emissions by 35 percent by 2030 and by 40 percent by 2050 compared to 1990.

Azerbaijan is one of the countries with high potential for renewable energy. According to the Ministry of Energy, the technical potential of renewable energy in the country is 135 GW onshore and 157 GW offshore. The economic potential of renewable energy is 27 GW, including wind energy - 3 thousand MW, solar energy - 23 thousand MW, bioenergy potential - 380 MW. The potential of mountain rivers is estimated at 520 MW. [4] The establishment of a "green" energy zone in Nakhchivan once again underlines Azerbaijan's commitment to sustainability, which is expected to strengthen partnerships with major international partners such as BP, Masdar, ACWA Power and Fortescue Future Industries.

Taking into account the above obstacles and barriers, the achievement of the goal set in the energy sector will be ensured by solving the following tasks:

- 1) improving the system for assessing and monitoring the state of the energy sector;
- 2) improving energy policy;
- 3) increasing the transparency of the fuel and energy sector and ensuring the breakeven point of energy companies;
- 4) increasing the efficiency of energy consumption;
- 5) increasing the share of renewable energy sources in the total volume of final energy consumption;
- 6) raising public awareness of energy conservation and renewable energy sources

Green agriculture. In Azerbaijan, agriculture is one of the priority areas of the real sector of the country's economy. It is represented by multidisciplinary agricultural production: crop production, livestock farming, water management, plant protection and quarantine, mechanization, veterinary medicine, land use, food and processing industries. In recent years, there has been some increase in the total area of land used in agriculture. From 2015 to 2023, the area of sown land suitable for agriculture increased from 1897.5 hectares to 2037.4 hectares. The involvement of new lands in agricultural circulation and a significant increase in the area of cultivated land, first of all, contradicts the requirements of protecting biological diversity. This situation also increases the risk of increasing greenhouse gas emissions into the atmosphere, which can disrupt the established order of ecosystem services. The need to preserve biodiversity on lands is considered a key motivator for sustainable development. [9]

Achieving sustainable resource management in agriculture and developing resource-saving, organic and climate-resilient agriculture that contributes to increased productivity in the sector is planned through the implementation of the following tasks:

- 1) achieving sustainable land and water resource management in the agricultural sector through proper planning;
- 2) developing the organic agriculture market;
- 3) improving the regulatory framework governing the development of "green" agricultural production;
- 4) financing "green" agriculture;
- 5) increasing capacity by informing and training rural producers in "green" agriculture methods;
- 6) adapting to climate change and mitigating its negative consequences.

Green industry. According to the UN program, the process of "green" industrialization includes increasing the efficiency of resource use, compliance with environmental standards and the maximum possible use of renewable energy sources. In order to identify potential solutions for "green" industrialization, it is necessary to analyze the industrial environmental situation in Azerbaijan. In 2022, 3 million 984.1 thousand tons of waste were generated in Azerbaijan, which is 5.4% more than in the previous year. Of this, 66.7% was municipal solid waste, and 33.3% was industrial waste. Of the 2 million 658.3 thousand tons of municipal solid waste generated last year, 21.2% was used to generate energy. As a result of the production activities of enterprises in 2022, 337.1 thousand tons of hazardous waste were generated, and their share in the total waste was 8.5%. According to the data, 63.1% of waste was generated at mining enterprises, most of which were

located in Baku. Last year, 55 thousand tons of hazardous waste were completely neutralized, including waste from previous years.

To achieve this goal, it is proposed to solve the following tasks:

- 1) identify the potential for the implementation of measures for the efficient use of resources in energy- and water-intensive industrial sectors;
- 2) improve industrial management in the field of environmental protection and strengthen industrial symbiosis in free economic zones;
- 3) implement measures for resource efficiency and cleaner production through the creation of a National Cleaner Production Center;
- 4) improve regulation in the field of environmental protection for industry.

Green transport. The main source of air pollution in the cities of Baku, Ganja and Sumgait is the transport sector. From the point of view of sustainable development, the transport sector affects the standard of living of the population through factors such as air quality, time spent in traffic jams, fuel prices, public transport fares, public transport speed and comfort. Emissions of pollutants into the atmospheric air from fuel consumed by motor vehicles in the country in 2023 amounted to 820.8 thousand tons, of which carbon monoxide 556.3 thousand tons, nitrogen oxides 104.2 thousand tons, hydrocarbons 144.9 thousand tons. The average annual concentration of carbon dioxide in the city of Baku was 2000 mcg/m³, in Ganja 1500 mcg /m³, in Sumgait 1300 mcg /m³.

Taking into account the above problems and barriers, the achievement of the set goal will be ensured by solving the following tasks:

- 1) increasing the share of public transport on low-carbon fuel and electricity in the cities of Baku and Sumgait;
- 2) improving the public transport management system in the cities of Baku and Sumgait;
- 3) creating electric charging infrastructure in the city of Baku;
- 4) developing and implementing administrative and economic instruments to create basic conditions for stimulating demand for electric vehicles in the cities of Baku and Sumgait.

Green tourism. The importance of the tourism industry is also noted in the global objectives of the Sustainable Development Goals, which highlight the need to ensure the development and implementation of strategies to encourage sustainable tourism, which contributes to job creation, development of local culture and production of local products. Azerbaijan has high tourism potential and a number of favorable conditions for the successful development of the tourism sector. However, against the background of record dynamics of world tourism, tourism development in Azerbaijan remains at an average level. The Tourism Marketing Development Strategy for 2024-2026 focuses on four areas: nature and adventure, cultural tourism, medical tourism and business tourism. The set goal in the field of tourism will be achieved by solving the following tasks:

- 1) ensuring the development of the legal and institutional environment for the transition to sustainable tourism;
- 2) development and implementation of tools, mechanisms for stimulating and supporting the transition to sustainable tourism;
- 3) stimulating the development of sustainable tourism in the regions through zoning, branding of regions, increasing the potential and developing small infrastructure.

"Green" cities. Azerbaijan is divided into 63 districts, 79 cities and 1 autonomous republic - the Nakhchivan Autonomous Republic. The capital is Baku, a large industrial center, transport hub and seaport. The main cities are Ganja, Sumgait, Mingachevir, Nakhchivan. Population - 10180.8 thousand people (01.01.2024).

At present, it is necessary to start with the definition, revision of the territory's resources, with the analysis and assessment of the potential of cities, taking into account the social, economic and environmental aspects of development, including the analysis of urban development strategies. Thus, it is necessary to consistently solve the following priority tasks: To achieve this goal, the following tasks will be solved:

- 1) creation of a regulatory, legal and institutional framework for the development of green cities;
- 2) creation of a city management system, taking into account the principles of "green" cities;

- 3) development of engineering, technical and communication infrastructure (networks and roads) of cities, ensuring safety, environmental sustainability and a socially inclusive environment;
- 4) information and training.

Municipal waste management. Given the diversity of waste and the need to use different approaches to solving problems with various waste, depending on their origin, hazard class, and condition, the implementation of this Program provides for a solution to the problems of municipal waste management. This will create the necessary prerequisites that will affect the reduction of waste generation volumes by 2030, attract the necessary investments, and develop the waste recycling sector in the country. According to statistics, in 2023, 4,086.1 thousand tons of waste were generated in the country, of which 66.6% were municipal solid waste, and 33.4% were various types of waste generated as a result of the industrial activities of enterprises. In 2023, out of 2,719.6 thousand tons of municipal solid waste, 79.4% were taken to landfills for disposal, 19.5% were used to generate energy, and 1.1% were sold within the country. The use of household waste generated 223 million kW of electricity, which is 8.6% more than in 2022. [7, 9]

Taking into account the set goal and existing problems, the state policy in the field of municipal waste management will be aimed at solving the following tasks:

- 1) introduction into the regulatory framework of the norm on the use of separate collection of municipal waste, facilitating the involvement of secondary material resources in economic circulation;
- 2) introduction into the regulatory framework of modern economic mechanisms for waste management;
- 3) ensuring proper state control and supervision at all stages of waste management;
- 4) raising the level of awareness, environmental education and interest of the population in the field of separate collection and minimization of waste generation.

Green Finance. A number of countries around the world are implementing various types of sustainable finance programs, given that this type of financing is one of the fundamental ones for ensuring sustainable development. The green finance market is a rapidly growing and promising segment of the global financial market. Thus, according to Spherical Insights, the global green finance market was valued at \$4.18 trillion in 2023, and is projected to grow to \$28.71 trillion by 2033. The government of Azerbaijan is looking to benefit from this growing sector, while significant investments are needed to achieve the country's carbon emission reduction goals. According to the World Bank, Azerbaijan will need \$40 billion by 2060 to achieve a significant reduction in emissions, with 40 percent of the financing expected to come from the private sector, especially the banking segment. Azerbaijan is not only focused on obtaining international green financing, but is also working to create a domestic framework to stimulate green investments.

As banks make up the majority of Azerbaijan's financial sector, the new criteria will ensure that they play a crucial role in the country's green transition. As part of a broader push for green finance, Azerbaijan's banking sector has already demonstrated strong support for environmentally friendly initiatives. This is evident in sectors such as transport, where new electric buses have been introduced to Baku, and agriculture, where innovations such as drip irrigation systems supported by bank financing are helping to address water shortages. The Central Bank has also approved a financial sector regulatory framework that places an emphasis on green finance, a significant step in advancing the country's green agenda. Some of the most common and effective green fiscal instruments in the world are green taxes (fuel and carbon taxes), environmental charges, tax incentives and government subsidies for green industries and service providers.

It is obvious that the transition to the principles of a "green" economy will affect the interests of different segments of the population: businesses, city dwellers, farmers. However, without the introduction of "green" fiscal instruments, development in other areas of the "green" economy is impossible. The fiscal instruments that Azerbaijan chooses must be adapted to specific national characteristics. They must be developed taking into account the specific problems, history, political context, environmental challenges and the fiscal environment that the republic faces. Within the

framework of the introduction of "green" fiscal instruments, it is proposed to solve the following tasks:

- 1) the introduction of "green" taxes;
- 2) increasing the efficiency of environmental payments;
- 3) reforming environmentally harmful subsidies;
- 4) the introduction of "green" state subsidies.

Human capital development. Human development and availability of qualified personnel are key conditions for the transition to a "green" economy and implementation of sustainable development principles in Azerbaijan. It is high human potential and awareness of the population that will allow successfully implementing all sectoral and national development programs. In order to increase the level of knowledge and potential of civil servants in the implementation of the principles of a "green" economy and sustainable development, the following tasks have been identified: 1) increasing the potential of civil servants and municipal employees on "green" economy issues; 2) increasing the potential of universities to provide modern knowledge in the field of "green" economy and conduct scientific research; 3) raising awareness of the business community about the benefits of a "green" economy and the population on sustainable development and climate change.

Conclusions. In modern conditions, the increasing risks and threats of depletion of natural resources and environmental pollution emphasize the need and relevance of the development of a "green" economy in Azerbaijan. The country needs to change its state policy towards stimulating: energy efficiency and energy conservation, energy production from renewable sources, improving the efficiency of water and land management in urban and rural areas, an ecosystem approach to adapting to climate change, monitoring and accounting of ecosystem services. Ultimately, all transformations should be aimed at a positive impact on the quality of human life and the environment.

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