

Uzbekistan's Transition Strategy to a "Green" Economy and Its Significance

By

Mukhammadjon Butaboev

1 DSc, Professor, Fergana Polytechnic Institute, Fergana, Republic of Uzbekistan

Shoxista Akhunova

2 PhD, Docent, Fergana Polytechnic Institute, Fergana, Republic of Uzbekistan

Email: sh.axunova@ferpi.uz

Abstract

The article describes the need, nature and goals of Uzbekistan's transition to a "green" economy in 2019-2030. In our country, many types of natural resources (natural gas, oil and coal) will be used up within 15-20 years. The limit of water resources is 53.5 billion cubic meters, while according to environmental experts this figure should be 68 billion cubic meters. Otherwise, the area of wheat, cotton, rice and another agricultural land will have to be reduced. In addition, global warming leads to the evaporation of water and creates water shortages. Relevant issues are the transition from thermal energy to renewable energy sources, normalization of CO₂ emissions and reduction of carbon-dependent enterprises, rational use of land, protection of the environment and preservation of biodiversity. The concept of transition to the green economy is of particular importance for each country, depending on the level of socio-economic development of the country.

Keywords: "Green economy, renewable energy, carbon dioxide, green investments, environment, biodiversity, green transportation, green energy, green taxation, green business, green strategy.

Introduction

Since the beginning of the 21st century, world scientists have been talking a lot about the "green economy", writing that economic growth is increasingly dependent on environmental factors.

The first scientific research on the formation of a "green economy" began in the 1970s, and in 1972, 26 principles for the conservation and development of the environment were developed at an international conference on environmental problems in Stockholm. Although the term "green economy" was first used in 1989, its meaning is still interpreted differently [1].

The implementation of the EU program to increase greenhouse gas emissions by 20%, energy efficiency by 20%, increase renewable energy by 20% and reduce CO₂ emissions by 20% by 2020 has caused a radical change in the European economy. On May 18, 2021 a study by Yale University in the United States ranked countries' Environmental Performance Index (EPI) based on 32 criteria (drinking water quality, annual CO₂ emissions, biodiversity, sustainability, waste management and climate change adaptation, ecological infrastructure, afforestation etc.) were studied as follows:

Denmark 82.5, Luxembourg 82.3, Switzerland 81.5, UK 80.3, France 80.0, Austria 79.6, Sweden 78.7, Norway 77.7, Germany 77.2, Spain 74.3, Netherlands 75.3, Belgium 73.5, Ireland 72.8, Iceland 72.3, Slovenia 72.0, Czech Republic 72.0 Italy 71.0, Malta 70.7, Greece 69.3, Slovakia 68.3, Portugal 67.0, Israel 65.8, Estonia 65.3, Cyprus 64.8, Romania 64.7,

Hungary 63.7, Croatia 63.3, Lithuania 62.8, Latvia 61.6, Poland 60.9, Japan 75.1, Australia 74.9, New Zealand 71.3, South Korea 66.5, Seychelles 58.2, Singapore 58.1, Taiwan 57.2, have the cleanest climate, beautiful nature and environment and biodiversity (sun, sand, water), they are called heaven on earth [2].

Analysis of the literature on the topic

Foreign scientists V. Richter, K. Malyshkov, A. Rishalova, Pakhamov N.V., Piskulov and Uzbek scientists Vakhobov A.V., Makhmudov N.M. spoke about the world experience of the transition to a "green" economy, the principles and mechanisms of the transition to a "green" economy, and they engaged in and covered the general trends in the development of the "green" economy [3,4,5,6].

1. By 2050, the world's population will reach 9 billion people.
2. There will be global climate change.
3. Prices for energy resources, raw materials, and food products will rise by 40-50% and various crises will occur.
4. The environment will be polluted, deforestation will reach 11 million hectares per year, ecosystems will degrade, biodiversity will decrease, and natural soil fertility will decrease.
5. there will be environmental refugees.
6. The volume of drinking water will be reduced by 60-70%.
7. By 2030, 47% of the world's population will suffer from a lack of drinking water.
8. The earth will be "buried" in toxic waste.

The economic, environmental and financial crises that have taken place have brought the world economy to a standstill. Since the only criterion of the traditional economy was money, the environmental factor in this economy was the abandonment of the land. Because man dominated nature and greedily used natural resources for commercial purposes. As a result, market relations in society collapsed. An inefficient state policy was pursued, and the infrastructure did not work. There were problems of unemployment and poverty. Deforestation in many countries (especially pine, cedar and spruce, cutting down from 10 to 13 million trees a year) disrupts the ecological balance (according to a UN report, 2.4 million people die annually from air pollution), which costs the world 7 trillion dollars in losses. 35% of these economic losses are attributable to 3,000 large energy companies [4,5,6].

Taking into account the three components of the "green economy": social, natural (environmental), and economic (food, clothing and services), it provides for the needs of a society that is constantly growing in conditions of limited economic resources, radical structural changes in the economy of developed, developing countries and countries with economies in transition. In the "green economy", nature and man are considered interrelated and integral factors [7,8,9].

Man is a part of nature, and he cannot live by himself. Currently, due to environmental diseases, infertility develops (even in healthy parents, but without children), environmental pollution, high levels of waste, radioactive substances, electromagnetic radiation, and some food additives cause a mutagenic state in a person (malignant tumour). Reduced immunity in people as a result of permanent residence in multi-store buildings, poor quality of drinking water, air pollution, noise pollution, and deterioration of living conditions affect the way of

life.

Methodology

The concept of a "green economy", according to international organizations UNEP and UNESCO allows for improving the economy, reducing toxic waste, preventing pollution of water bodies, transferring cars to liquefied gas, and biofuels, using solar and wind energy to ensure sustainable growth of national income and welfare. Uzbekistan's transition to a "green economy" is becoming a vital necessity. Because many types of our natural resources will be exhausted within 15-20 years (natural gas, coal). Even today, oil reserves (Uzbekistan consumes 1.3 million tons of gasoline per year) are exhausted. The limit of water resources is 53.5 billion cubic meters, which, according to experts, should be 68 billion cubic meters. Otherwise, the area under wheat and cotton will have to be reduced. The era requires the efficient use of land, water and energy resources.

Biofuel production under the South Korean project, construction of ENVION OIL GENERATOR mini factories from plastic products, production of 3-5 barrels of oil per ton of plastic, which is 2-3 times cheaper than purchasing oil products from Russia and Kazakhstan. Today in Uzbekistan, 50 out of every 100 families have a car, so it is advisable to convert cars to biofuel. To burn one ton of gasoline, a car emits 600 kg of carbon monoxide, 40 kg of oxidizing nitrogen and 100 kg of various toxic carbon into the atmosphere and absorbs 4 tons of oxygen from the atmosphere during the year. Previously (2000-2004) economic growth in society was stable, but emissions of carbon monoxide CO_2 and greenhouse gases into the atmosphere also increased, since in most cases economic growth occurs due to unlimited consumption of natural resources. In the green economy model, economic growth occurs without negative environmental impacts. However, the green economy supports the environment, the rational use of natural resources, the reduction of greenhouse gas emissions, the conservation of biodiversity and investment in the industry. Thus, increasing the energy efficiency of the production of the "green" economy (reducing energy costs in the cost of each product), the use of renewable energy sources is to achieve the neutralization of greenhouse gases, toxic gases CO_2 .

In Germany, the waste processing company HAMOS receives 500 litres of fuel from plastic bags, and bottles (i. e. from 1.5 tons of waste) [8,9,10].

The theory of the "green economy" is based on the following three components.

1. In a limited natural environment, the scale of the economy and development cannot expand indefinitely.
2. In a situation where resources are limited, constantly growing unlimited needs cannot be satisfied, so the selection method is used.
3. All conditions and systems on Earth (including the natural and economic environment) are interconnected. The main reason for the spread of the "green economy" theory today is the global economic crisis and current global environmental problems and the need to address the needs of the "green economy".

We know that at every stage of economic development, the environment, and nature is a key element of the economy, but the "green" economy cannot be the basis for sustainable development.

The perfectly balanced relationship between nature and the economy is evident in the green economy model. The green economy has developed in recent years and has evolved into an economic and social system. The main objective of the "green economy" is to change the processes of production and consumption following environmental standards. In the business environment, the concept of a "green economy" is given great attention, and financial funds, large capitalists, businessmen, and in some countries even ordinary citizens (for example, Scandinavia, Singapore) have become supporters of the "green economy". For example, while the income tax in the programs was reduced to 30 per cent in five years, in Norway, in the Netherlands, the annual profit from exporting solar energy to neighbouring countries was 20 per cent of income. Japan, South Korea and Singapore are leaders in the development of a green economy [11,12,13].

The Japanese corporation Panasonic has built 1,000 smart homes near Tokyo. It is noteworthy that none of these houses emits carbon dioxide CO_2 into the atmosphere. That is, the energy consumed in the city is obtained from solar panels. As leaders in the green economy in the US, Google and Apple have built 400,000 hectares of sustainably managed gardens in China.

France has stopped issuing oil and gas licenses and has said it will stop generating electricity from coal by 2022. In the process of transition to a "green" economy, the potential and efficiency of natural, physical and human capital (meaning input effects) will sharply increase. For example, the importance of forestry in nature will increase, land productivity in agriculture will increase, physical and mental human capital will develop, diseases will decrease and health will improve (the environment will improve, and the amount of toxic waste will decrease).

"Green" investments in housing and communal services, transport, energy, and healthcare are actively going on. Society is switching to alternative energy sources. Green investment in infrastructure will accelerate, the supply of clean drinking water will improve, coal and natural gas will be replaced by biofuels, new green jobs will be created, and additional income will increase. At the same time, South Korea introduced a unified green payment card by investing \$60 billion in the Green Network at a rate of 3% of GDP. The consumption of eco-, bio-products and services is encouraged. In the US, the consumption of alternative energy has grown by 65%. The use of oil in the Japanese economy fell by 40%.

In 2017-2021, Uzbekistan invested \$1.9 billion in projects in this area. \$1.1 billion was planned and implemented for the construction of solar photovoltaic stations with a total capacity of 500 MW, and \$700 million for the construction of 8 HPPs and 13 small HPPs. According to studies, energy consumption per 1 square meter in the world is 120-150 kWh per year. Uzbekistan consumes 390 kWh of energy in the same area [12.13.14.15].

It should be noted that each country creates its own "green" economy based on its economic, natural and labour resources since there is no universal model of the "green" economy. The role of the "green" economy in the modernization of the economy of Uzbekistan and the development of innovative industries can be highly appreciated. We can say that Uzbekistan has great potential for the transition to a "green" economy, rich in natural resources, organization of environmentally friendly production, as well as an unlimited source of solar energy.

The total potential of solar energy in the country is 50,973 million tons of oil equivalent, and the total potential of wind energy is estimated at 2.2 million tons of oil equivalent.

It is known that in recent years systematic work has been carried out in our country to develop green energy, in particular, the construction of solar and wind power plants. In this direction, over the past 3 years, 10 contracts for the construction of solar and wind power plants have been signed.

It should be noted that in August 2021, the first solar photovoltaic installation with a capacity of 100 MW was put into operation in the Karmana district of the Navoi region.

At the same time, in the 1st quarter of this year, it is planned to launch the second large solar photovoltaic plant with a capacity of 100 MW in the Nurabad district of the Samarkand region.

In 2022, a lot of work is being done in the field of renewable energy sources. In particular, it is planned to sign project agreements for the construction of 8 solar photovoltaic power plants with a total capacity of 1900 MW in Bukhara, Namangan, Khorezm, Kashkadarya, Ferghana and other regions, as well as wind power plants with a total capacity of 1700 MW in the Republic of Karakalpakstan.

At the same time, in 2023, 4 solar photovoltaic power plants with a total capacity of 1,097 MW in Samarkand, Jizzakh, Navoi and Surkhandarya regions and in the Republic of Karakalpakstan, Bukhara (Gijduvan and Peshku) and Navoi regions, 4 wind power plants with a total capacity of 1,600 MW will begin to generate "green" energy. In recent years, solar photovoltaic installations with a total capacity of 3.0 kW were installed at "UzSungwoo" LLC, 8.0 kW at Kokand JSC and Baghdad Grain Products, 8 solar water-heating collectors with a capacity of 0.056 Gcal at the Northern-Sukh underground gas storage facility in Rishtan area were launched [15,16,17,18].

The average intensity of sunlight falling on the earth's surface is 2 kW/m² in European countries and 6 kW/m² in tropical and Asian countries. The production of solar energy is 75 times more expensive than the production of conventional energy. Data on the fluxes of solar radiation and incoming energy is compiled by the solar cadaster.

On average, 300-320 days in Uzbekistan are sunny. The average temperature is +42 °C, and the length of the day is 16 hours. Uzbekistan has enough resources for the transition to a "green economy". The abundance of sunny days and the diversity of biological plants create a material base for the production of alternative bioproducts. Legumes and cereals (rapeseed, soybean, corn, sunflower, tow grass) are a source of biofuel production, and biofuel does not contain sulfur and benzene, the level of ethanol is 58. Here, nature itself provides raw materials, these plants do not require excessive labour, and in addition, they provide glycerin and sodium sulfate. Forests are also a bio-resource. Solid and liquid biofuels can be obtained from their waste. Biofuel is a substitute energy source, mainly obtained from biological raw materials (in the form of liquid, solid and gaseous fuels that do not emit smoke, do not poison the environment, and burn completely). Thus, it is possible to arrange the extraction of fuel resources (biomethanol, bioethanol, biodiesel, biogas and hydrogen) from biological plants, forests, and animal and poultry waste.

To date, several projects for the construction of thermal power plants have been launched in Uzbekistan. In particular: contracts were signed with the Emirati company Masdar for the construction of a wind power plant with a capacity of 500 MW worth \$600 million in the Tomdinsky district of the Navoi region. When this plant reaches full capacity in 2024, it will generate 1.8 billion kWh of electricity annually and save 546 million cubic meters of

natural gas in a year. ACWA Power from Saudi Arabia has signed an agreement to build 2 thermal power plants with a capacity of 1000 MW worth 1.3 billion US dollars in the Gijduvan and Peshku districts of the Bukhara region, which, when commissioned in 2023, will supply 3.6 billion kWh of electricity will be provided annually, which will save 1.1 billion cubic meters of natural gas per year. In the Beruni and Karaozak regions of the Republic of Karakalpakstan, a tender was held jointly with the European Bank for Reconstruction and Development for the construction of a 100 MW wind farm worth \$110 million. ACWA Power won the tender with a tariff offer of 2.57 US cents per kWh of electricity. When this station is operational in 2023, it will generate 350 million kWh of electricity per year and save 106 million cubic meters of natural gas per year. Studies show that the Ministry of Energy is ahead of the plans outlined in the wind energy development concept. As a result, by 2030 the total capacity of thermal power plants in the country should reach 5,000 MW. Most of them are planned to be built in the Republic of Karakalpakstan [18,19,20].

At present, the use of electricity is very expensive. We use 3-4 times more than other countries. 23% of energy is lost during its transmission to consumers, and 20% of gas resources are lost from natural gas. The transmission line is 80% outdated and does not meet demand. According to experts from the Republican Center for Economic Research, and institutes of alternative energy sources, 700,000 new jobs will be created based on the use of solar and wind energy, as well as the use of solar power plants. It is said that it is possible to produce tons of biofuels and 400,000 tons of artificial biofuels.

Brazil was one of the first countries to widely use biofuels. It produces 60 billion litres of biofuels and 18.5 billion litres of biodiesel per year. In 2020, Brazil converted 80% of urban transport to biofuels. Biofuel producers are exempt from tax payments. One of the first in Brazil opened "green" universities.

In the 13th Five-Year Plan (2016-2020), the Chinese government invested the most in the development of the green economy. For this reason, the 13th Five-Year Plan was called the Green Five-Year Plan. 2 thousand enterprises that do not meet environmental requirements were closed. Solar energy factories have been exempted from taxes.

Currently, the agricultural sector consumes 70% of the world's drinking water and 13% of waste (greenhouse gas emissions). Due to the use of modern production technologies, the ameliorative state of arable land is deteriorating, the land is becoming saline and dry, and biological plants are flooded with weeds and insects. As a result, between 5 and 10 million rural people are being poisoned by the environment. Every year 80-100 thousand people die, and 80% of various diseases are caused by drinking water. According to the World Bank analysis, due to the demographic growth of the Central Asian region, 90 million people (30% of the population) will face water shortages in 2050 [21,22].

The US government spends \$300 billion a year to improve agriculture, use more natural resources in crop care, and use water more wisely. As a result, the natural fertility of the soil has increased, new agricultural practices have been applied and cotton, wheat, corn, legumes and crop yields increased by 10-13%, and the quality of drinking water improved.

If we estimate the weight of the green economy in the world, then today the "green economy" in the United States provides one trillion dollars of environmentally friendly products and services. This is 5% of the US GDP and employment is 4 million people, in Japan - 4% and 2 million people, respectively, and in the EU countries - 3% - 5 million people. Germany has stopped coal mining and is leading the way in exporting environmentally friendly

products and services. The share of the green economy in the UK's GDP (\$250 billion) is 9-10 per cent, and in exports - 6 per cent [23,24].

In 2014, a solar roof was installed in London.

According to experts from the International Energy Agency in the United States, 2.5% of the world's gross domestic product (GDP) is enough to send them to the transition to a "green economy", and the effectiveness of the "green economy" has become the main factor in reducing poverty in the world and increasing the welfare of the people.

Currently, 49% of the world's population lives in cities and consumes 65-75% of energy. 75-80% of waste is released into the environment. In many cases, it causes diseases, the atmosphere is poisoned when waste is burned, the composition of the land deteriorates during their burial, water sources, rivers and lakes are polluted, and according to the books (conclusions of UNEP international organization experts), as a result, 15-25% of world GDP is lost. From the point of view of the transition of the world economy to a system of "green economy", in terms of using only electricity, the expected economic efficiency as a result of the transition from conventional light bulbs to LED is 2 trillion dollars, the volume of waste emissions into the environment will be reduced by 11 Giga/ton, consumed oil resources will be saved by 1 billion barrels, and the existing high-cost power plants produced will be closed. The technologies used in the economy of Uzbekistan are uneconomical and generate a lot of waste. For example, 110 million tons of carbon dioxide CO_2 are emitted into the atmosphere every year, as a result of which \$4.5 billion is lost in the export of natural gas. A wind turbine with a capacity of 500 kW (million kWh/year) avoids the release of toxic substances into the atmosphere compared to a thermal power plant (thermal power plant). That is, it prevents the emission of 750-1250 tons of CO_2 , 8 tons of sulfur dioxide, 6 tons of dust and 70 tons of ash into the atmosphere. To date (in Tashkent), 8 clusters for the collection, processing and production of solid household waste products have been put into operation, and a plant for processing household waste with a capacity of 146,000 tons per year and 400 tons per day has been put into operation. A waste processing plant with a capacity of 78,000 tons per year has been built in Karakalpakstan. A plant for the processing of 200 tons of waste per day was put into operation in the city of Navoi. In addition, 186 landfills operate in Uzbekistan, where 34 million tons of waste are buried. Under current conditions, one farmer feeds 10-13 people in Uzbekistan, while in Sweden, Finland and South Korea, countries that have switched to a green economy, one farmer feed 50-60 people [25,26].

It should be said that the leading role in the development of renewable energy sources still belongs to the governments of developed countries. Thus, at the beginning of 2016, 173 countries set goals for the development of renewable energy sources, and 146 countries implemented policies to support this sector.

Today, Germany is a leader in the production of energy from environmentally friendly sources in Europe. The German government has invested heavily in renewable energy in the aftermath of the Fukushima-1 nuclear accident in Japan. Chancellor Angela Merkel's cabinet later decided to phase out all 17 nuclear power plants in Germany by 2022. It was also assumed that renewable energy would reduce the country's dependence on energy imports and help fight monopolies in this sector of the economy. In 2014, wind, solar, biomass and hydropower provided 26.2 per cent of all electricity generated in Germany, surpassing traditional industry leader lignite for the first time with a share of 25.4 per cent. According to some experts, by 2030 the country can completely switch to renewable energy sources, moving away from all

types of energy fuels, as well as nuclear energy sources. By 2025, Germany plans to achieve 147.4 gigawatts of electricity generation from renewable energy sources such as solar, wind and water.

The United States, Canada and Mexico also want to accelerate the development of green energy - by 2025 they plan to receive half of all energy in North America from renewable sources. They currently account for 37 per cent of energy production in the US, Canada and Mexico.

In January of this year, Ireland set a record for clean energy production. Local wind turbines generated 2.8 thousand MW of electricity in a few hours. This volume will be enough to provide electricity to 1.2 million households.

Thus, analysts of the International Agency for Renewable Energy Sources (RES) believe that doubling its share in the global energy balance will lead to an increase in world GDP by 0.6-1.1% by 2030 and will also lead to the creation of 24 million jobs in this sector. This positive impact on GDP is due to increased investment in countries such as Australia, Brazil, Germany and South Africa. These investments are having a “ripple” effect on the global economy: the development of renewable energy sources affects the production of energy equipment, as well as the supply of services. Market development means that the production of equipment for renewable energy facilities will increase, while sales of traditional fuels will gradually decline. Some developing countries have significantly increased their exports of renewable energy equipment in recent years. For example, by 2016, China had supplied solar panels totalling over \$10 billion.

Today, countries such as Hungary, Finland, the Czech Republic, Slovakia and Bulgaria are forced to choose between expensive renewable energy sources and clean coal generation.

Results and discussion

Compared to the situation ten years ago, the development of technologies today can significantly reduce the cost of building renewable energy facilities. For example, according to Bloomberg New Energy Finance (BNEF), at the beginning of 2009, the average price of industrial windmills was \$1.94 million per megawatt, and then in 2018, this price dropped to \$1.03 million. At the same time, traditional energy facilities are morally obsolete: according to a study by the International Energy Agency, by 2045, almost a third of the world's production capacities will end their service life, and these capacities will need to be closed by other volumes.

In addition, (BNEF) reports that the electricity demand will grow by 62% by 2050 due to the rapid development of technology. This means that energy production should triple by this year. At the same time, in most countries of the world, switching to solar and wind energy is the most cost-effective option. According to preliminary data, to meet the demand for electricity in 2050, about 13.3 trillion dollars of investment will be required, of which 5.3 trillion will be for solar energy and 4.2 trillion for wind energy.

According to the same forecasts, by 2050 the share of coal in the world will decrease from the current 37 per cent to 12 per cent, and the use of oil as a fuel will be reduced to a minimum. Wind and solar power production will increase by 7-48 per cent, while hydropower, natural gas and nuclear power will remain at about the same level.

According to the IEA and the World Bank, more than 1.1 billion people in the world live without access to electricity - that's 14% of the world's population. In addition, 2.6 billion people still have to build fires for cooking and heating. According to preliminary estimates, officially by 2030, 1 billion people will still have access to electricity, and 2.5 billion people will continue to stick to biofuels.

Environmental protection is the main motive behind the use of renewable energy sources. While the extraction and use of hydrocarbon raw materials lead to a large number of undesirable consequences for the environment (for example, deforestation), renewable energy equipment does not emit negative emissions into the atmosphere. Wind and solar are among the cleanest and most sustainable renewable energy sources. The term "renewable" indicates that such energy sources are energy sources that are not depleted, unlike oil wells and natural gas fields. This makes them a worthy alternative to fossil fuels.

One of the most serious environmental threats of the 21st century is carbon dioxide, that is, the sum of all greenhouse gas emissions created as a result of human activities. In the 20th century, industrial oil production had a significant impact on living standards and fundamentally changed the world economy. At the same time, it caused a sharp deterioration in the state of the environment. Nature is a self-reproducing, regulating system, it reproduces depleted natural resources and constantly maintains the ecological balance, neutralizing pollutants and toxic substances emitted and released into it. Today's nature has lost this property, various crises occur in it, and environmental restrictions are imposed on sustainable economic development. Carbon pollution is causing an alarming increase in the frequency of natural disasters around the planet and irreversible changes in the balance of our climate that will directly affect, among other things, human health (i. e., incurable diseases such as "cancer"). Reducing the carbon footprint has risen to the level of public policy in the world's most advanced countries. To this end, energy-efficient production is encouraged and environmental programs are adopted, the philosophy of consumption is significantly changing.

According to the American Wind Energy Association, in 2018, electricity generated by wind turbines prevented about 200 million tons of CO_2 emissions from being released into the atmosphere: an average of 43 million cars emit the same amount of carbon dioxide per year. The use of such devices does not mean the use of water, and therefore reduces the use of water resources.

US wind power is the fastest-growing renewable energy industry in the country. From January to December 2020, wind power generated 337.5 terawatt/hours or 8.42 per cent of all electricity generated in the United States. In 2019, wind power surpassed hydropower as the largest source of renewable energy produced in the United States. As of January 2021, the total installed wind power capacity in the US was 122,478 MW, the third largest after China and the European Union.

World experience shows that the "green economy" stimulates regional development, the achievement of social stability, and the increase in economic potential through the creation of new jobs in the sectors of the "green economy". "Green economy" mainly contributes to economic development and ensures the growth of the gross domestic product, increase in the country's income, employment of the population, and reduction of unemployment in the country. At the same time, the transition to a green economy will reduce the risk of global threats such as climate change, loss of minerals and water scarcity. But if we look at global development, we will find its universality, that is when the world civilization has gained

strength and reached the peak of its power, if all countries of the world do not choose an environmentally oriented model of economic development, the entire planet will gradually decline in the context of globalization, and it is possible to conclude the risk of complete extinction.

Conclusion

The current situation in the energy sector of the Republic of Uzbekistan is somewhat difficult, the installed capacity in the document is 12 GW, but in practice, it is 10 GW, and the economy of the republic needs 15-20 GW of capacity.

First of all, it is necessary to prevent the loss of electricity from the producer to the consumer. For example, losses in non-CIS countries are 5 per cent, and in Uzbekistan - 20 per cent.

In conclusion, investments in wind, water and solar energy in Uzbekistan will lead to the ability to produce 6 times more electricity than our needs in Uzbekistan. Availability of opportunities to meet the need for financing the "green economy". In response to the rapid growth and growing focus of the capital market on a green economy, the development of market levers such as carbon finance and microfinance, and the economic downturn of recent years, the funds provide an opportunity for large-scale financing of green economic reforms aimed at a global green economy. " development. But these flows are much less than investment needs. Therefore, in the short term, it will be necessary to create a favourable investment environment for private investment while increasing the flow of investment in the green economy. When financing investment projects for the private sector, it is effective to use political, financial and tax levers that serve to support the "green economy" by the state.

Issues included in the green economy strategy of Uzbekistan:

1. wide use of alternative energy sources in the economic and social spheres.
2. increase of energy efficiency of housing and communal facilities.
3. assistance in the development of organic products in agriculture.
4. launching the production of products and biogas from waste.
5. fully meet the needs of the population in clean drinking water (due to the increase in sewerage).

Over the past five years, 10 trillion soums, or 5 times more funds than in previous years, have been allocated to improve the water supply of the population of Uzbekistan, and 6.5 million people have been provided with clean drinking water. In the next five years, 40 trillion soums will be spent, and the provision of the population with water will be increased to 90%.

1. formation and development of "green" transport.
2. support for "green" businesses, tax exemption for "green" companies.
3. manufacture and sale of ecological "green" plastic cards.
4. transition to the principle of ecological management of socio-economic processes.
5. implementation of the "green" tax system.

In the development of the "green" economy on a global scale, attention to factors related to human health is increasing. It is expected that in the coming years countries (Sweden, Singapore, South Korea, Denmark, Switzerland, etc.) will achieve economic efficiency and environmental balance ("win-win policy" in "green" financing of economic and social

networks). This is a process of ecological balance, reduction of toxic emissions, achievement of carbon neutrality, rational use of natural resources, and transition to low-waste production. To achieve this goal, economic and environmental policies are combined.

Thus, the main problem of effective implementation of the concept of "green economy" is to attract additional investment in the development of "green" technologies, energy and resource saving, alternative energy, popularization of "green" business, and "green" entrepreneurship. The complexity of the scientific substantiation of the relevance of the transition to a "green" economy, and the high level of uncertainty in predicting environmental problems make it difficult to understand, a simple explanation of this concept. For example, there is no global agreement to reduce the duration and level of greenhouse gas emissions of CO₂ into the atmosphere. The amount of greenhouse gas emissions into the atmosphere is increasing. The concept of transition to a "green" economy is of particular importance for each country and depends on the level of socio-economic development of the country.

Acknowledgements

The authors acknowledge the immense help received from the scholars whose articles are cited and included in references to this manuscript. The authors are also grateful to the authors/ editors/publishers of all those articles, journals and books from where the literature for this article has been reviewed and discussed.

The authors report no conflicts of interest.

The Source of funding is nil.

References

- Barbier, E. B. (2017). Blueprint for a Green Economy David Pearce, Anil Markandya and. In *The Top 50 Sustainability Books* (pp. 70-76). Routledge.
- Trushkina, N. (2022). Green economy in the conditions of modern challenges: conceptual frameworks. *International Science Journal of Management, Economics & Finance*, 1(1).
- Galindo-Martín, M. A., Castaño-Martínez, M. S., & Méndez-Picazo, M. T. (2020). The relationship between green innovation, social entrepreneurship, and sustainable development. *Sustainability*, 12(11), 4467.
- Pulatovich, E. M., & Sabitxanovna, N. D. (2022). Uzbekistan's strategy for transition to a green economy and its formation. *American Journal of Interdisciplinary Research and Development*, 8, 144-151.
- Denissova, O., Kozlova, M., Rakhimberdinova, M., Varavin, Y., & Ordabayeva, M. (2018). International experience in the development of the green economy. *Journal of Environmental Management & Tourism*, 9(3 (27)), 564-575.
- Iskakov, B. M., Pyagay, A. A., & Rakhimbekova, A. T. (2021). Global experience of transition to a "green" economy. *Проблемы агрорынга*, (2), 62-69.
- Newton, A. C., & Cantarello, E. (2014). An introduction to the green economy. *Earthscan, Abingdon, UK*.
- Mealy, P., & Teytelboym, A. (2020). Economic complexity and the green economy. *Research Policy*, 103948.
- Rennard, J. P. (Ed.). (2006). *Handbook of research on nature-inspired computing for economics and management*. IGI Global.
- Jacobs, M. (1993). *The green economy: Environment, sustainable development and the politics*
- Res Militaris*, vol.13, n°1, Winter-Spring 2023

- of the future*. UBC press.
- Ciociu, C. N. (2011). Integrating digital economy and green economy: opportunities for sustainable development. *Theoretical and Empirical Researches in Urban Management*, 6(1), 33-43.
- Sulich, A. (2020). The green economy development factors. *Vision*, 6861-6869.
- Georgeson, L., Maslin, M., & Poessinouw, M. (2017). The global green economy: a review of concepts, definitions, measurement methodologies and their interactions. *Geo: Geography and Environment*, 4(1), e00036.
- Axunova, S. N. (2021). Innovative technologies in the digital economy. *Theoretical & Applied Science*, (1), 290-292.
- Barbier, E. B. (2016). Building the green economy. *Canadian Public Policy*, 42(s1), S1-S9.
- Axunova, S. N. (2021). Small business in the digital economy and its security. *Theoretical & Applied Science*, (1), 347-349.
- Schmitz, H., & Lema, R. (2015). The global green economy. *The Triple Challenge for Europe, 1st edn. Oxford University Press: Oxford, UK*, 119-142.
- Akxunova, S. N. (2022). Environmental issues in Uzbekistan and mechanisms for its solution. *Theoretical & applied science Учредители: Теоретическая и прикладная наука*, (2), 480-483.
- Nomanzhanovna, A. S. (2016). The main directions of cooperation of large and small businesses in industries of Fergana region. *Проблемы современной науки и образования*, (2 (44)), 110-113.
- Parakhina, L. V., Popovicheva, N. E., & Bazarnova, O. A. (2018). Digital transformation of economic systems, producing international business investment activity. *Central Russian Journal of Social Sciences*, 13(2), 142-160.
- Kunduzova, K. I. (2020). The problems of accounting of liabilities in insurance organizations and its improvement. *Academicia: An International Multidisciplinary Research Journal*, 10(12), 312-318.
- Jumakulov, Z., & Kunduzova, Q. I. (2021). Financial Independence in the Higher Education System of the Republic of Uzbekistan: Results and Conclusions. *Middle European Scientific Bulletin*, 19, 236-241.
- Hakimova, S., Habijonov, S., & Hojaev, A. (2018). Statistical prognosis of the production of fruits and vegetables grown by farmers in the Fergana region. *Bulletin of Science and Practice*.
- Nusratovich, S. K., & Shermatov, X. (2022). Economic development in Uzbekistan, transition to a digital and green economy. *Eurasian Journal of Law, Finance and Applied Sciences*, 2(2), 274-278.
- Niyozova, I. (2021). The Transition to the Green Economy and the Importance of Strategy. *Центр научных публикаций (buxdu.uz)*, 8(8).
- Abduvakil, A. (2022, October). Tendencies of Green Economy development. Case of Uzbekistan. In *International Conference on Multidimensional Research and Innovative Technological Analyses* (pp. 41-44).
- Yogesh Hole et al 2019 J. Phys.: Conf. Ser. 1362 012121