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Problems and Prospects for the Transition to a Green Economy

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ABSTRACT
The article analyzes the impact on the environment and human health of the energy and metallurgical sectors, including the oil and gas industry and coal mines. Theoretical and practical scientific recommendations have been developed to improve energy efficiency and reduce environmental impact, in particular on the transition to alternative energy. A study was conducted and an assessment was made of the indicators of the green economy of the Republic of Uzbekistan based on the world experience of developed foreign countries. Missing data were recovered through extrapolation and other econometric methods. An analysis was carried out and scientifically based recommendations were developed for the high-quality and effective implementation of the Declaration of the UN Secretary-General Antonio Guterres on World Environment Day in 2019 and the Decree of the President of the Republic of Uzbekistan dated October 4, 2019 DP-4477 “On approval of the strategy for the transition of the Republic of Uzbekistan to a “green” "Economy for the period 2019-2030".

KEYWORDS: Uzbekistan, economy, climate change, environment, energy, coal industry, global warming.

Introduction. Today, people all over the world - from big cities to small villages - breathe polluted air. According to World Health Organization air quality guidelines, nine out of ten people worldwide are exposed to air pollutants. This is reducing life expectancy on our planet and harming our economy.

In 2018, the Republic of Uzbekistan ratified the “Paris Agreement” (Paris, December 12, 2015)[1] and in connection with its implementation, according to the contribution determined at the national level, to reduce greenhouse gas emissions per unit of GDP by 10% from the 2010 level adopted quantitative commitments until 2030. The lack of energy efficiency of the economy as part of the fulfillment of the obligations of the Paris Agreement, the lack of rational use of natural resources, the slowness of technological renewal, the

[1] On October 2, 2018, the Law of the Republic of Uzbekistan on the ratification of the Paris Agreement (Paris, December 12, 2015) No. LRU-491 was adopted by the Legislative Chamber on September 25, 2018 and approved by the Senate on September 27, 2018.

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introduction of innovative solutions for the development of a green economy, and the lack of active participation of small businesses hinder the achievement of priority goals for the sustainable development of the national economy[2].

Materials and methods of research. This article examines the scientific works of economists from Uzbekistan and foreign countries on sustainable development, ensuring a green economy and inclusive growth. "Declaration of the UN Secretary-General on the occasion of World Environment Day" 2019, as well as Resolution of the President of the Republic of Uzbekistan dated October 4, 2019 No. RP-4477 "On approval of the strategy for the transition to a green economy of the Republic of Uzbekistan in the period 2019-2030."

The study was conducted on the basis of the principles of a dialectical worldview. When studying the issue of reducing the impact on the environment while achieving the goals of the green economy, a systematic approach was used, considering economic events and processes as a whole. To draw conclusions from the data, methods of logical analysis, synthesis, generalization, induction and deduction, as well as Q-methodology were used.

Q methodology is a systematic statistical approach to qualitative analysis (Brown, 1993; Watts and Stenner, 2005) that explores subjective perspectives to identify existing archetypal perspectives on a controversial topic. It has been widely used to obtain expert opinion on various issues in the field of sustainable development. The method can be applied to practical issues such as project management (Gilbert Silvius et al., 2016), rural innovation (Hermans et al., 2012) and local understanding of cultural ecosystem services (Winkler and Nicholas, 2016). Additionally, examples of particular relevance to this study include the use of Q methodology in addressing debates about sustainable development (Barry and Propes, 1999), including controversial issues in ecosystem services research and policy development (Germelingmeier and Nicholas, 2017; Sandbrook et al 2013). Q methodology is considered "a powerful research method that clarifies research questions to which there are multiple, potentially complex and socially controversial answers (Watts and Stenner, 2005) and is therefore particularly suited to this study.

Literature review.

According to Russian researcher K. Berdenova, "Green" economy is a direction in economics that has emerged in the last twenty years, in which the economy is a dependent component of the natural environment in which it lives and is part of it[3] .

A group of Russian scientists led by Professor Sharofutdinov conducted research to calculate the inclusive growth index in the regions[4]. It analyzed health, environmental and ecology indicators and found that harmful gases released into the environment by energy workers, in particular oil and gas refineries in the region, have a direct negative impact on life expectancy, the availability of drinking water and pollution factors.

Additionally, a statement by UN Secretary-General António Guterres in 2019 on World Environment Day[5] calls on governments to tax sources of pollution; sent a message about ending fuel subsidies and stopping the construction of new coal power plants and said, "It's time to do the right thing. A green economy does not need a shadow economy," addressing the governments of UN member countries.

[2] Resolution of the President of the Republic of Uzbekistan dated October 4, 2019 No. RP-4477 "On approval of the strategy for the transition to a green economy of the Republic of Uzbekistan for the period 2019-2030."
[3] Berdenova K., Shtang V., Sintsov S.: "Green" economy as an engine of sustainable development / Scientific statistics in economics and economic sciences, 2012.
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[5] Statement by the UN Secretary-General on the occasion of World Environment Day 2019.

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According to Yu. Bulgakova, Candidate of Sciences at St. Petersburg State University, a "green" economy can be called comprehensive measures for the transition to a cost-effective and low-carbon economy, leading to an increase in the well-being of the population in the long term[6].

Information on the effectiveness of the green economy and its impact on making development more economically sustainable can be found on the EEA (European Environment Agency) website. It is noted that a green economy ensures the preservation of ecosystems, while ensuring an adequate level of meeting the country's needs for mobility, food, energy and capital goods[7].

According to Russian expert Bobilev, it is necessary to move away from the environmental debate and look at the problem from the point of view of a "traditional economist": what is missing from economic theory to take into account climate and environmental factors? How will climate change affect each country? I devoted my research to finding solutions to these issues using the example of Uzbekistan.

Main part.

Three pillars of sustainability guide international and national policies around the world: the circular economy, the green economy and the bioeconomy[8]. According to some scientists, including ours, the bioeconomy can be considered as part of the green economy. These concepts suggest different solutions for coordinating economic, environmental and social goals (Table 1).

Analysis and discussion of results.

In our opinion, economic reality is changing. Climate change continues, doesn't it - hundreds of billions of dollars and euros are being spent around the world on energy saving, in any case, new technologies are being created. Tens of billions of dollars and euros have already been committed to the low-carbon economy (increasing energy efficiency and reducing environmental impact) not only to combat climate change, but also as part of the transition to a new economy. And this encourages us to study the relationship between two factors: climate and crisis.

The European Union planned to reduce CO_2 emissions by 20%, increase energy efficiency by 20% and increase the share of renewable energy to 20% by 2022. The US government intends to reduce greenhouse gas emissions by 50% by 2050 and 80% by 2080[9].

Table 1. Stability analysis using Q methodology

Economic stability	(Circular Economy)	Increased economic well-being at the industrial level through recycled products and services; Recycled products - increased production efficiency as a result of the widespread use of plastic and metal products as raw materials in the production of "Recycled Products";
	(Green Economy)	Preserving and improving the ecosystem, improving economic well-being at the industry level through goods and services, and channeling financial flows and ensuring financial performance through investments in natural capital

[6] Y. Bulgakova, S. Nabok: Interdependence of the concepts of "green" economy, "green" growth and sustainable development / 2017, Issue No. 5(59) May 2017, Political sciences.
[7] European Environment Agency: Green economy [Electronic resource]. — URL:http://www.eea.europa.eu/themes/economy/intro(accessed: 12.03.2017).
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[9] Y. Litvinova, 2010 / From warming to technology / https://iq.hse.ru/news/177674414.html

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	(Bioeconomy)	Increased economic well-being through improved production of bioproducts using biotechnology and agroecological methods
Environmental stability	(Circular Economy)	Reducing dependence on resources and the environment by closing the flow of production and consumption of materials
	(Green Economy)	Increasing natural capital and associated ecosystem services through conservation, restoration and use of nature-based solutions
	(Bioeconomy)	Shifting dependence from non-renewable energy sources to renewable energy sources and reducing environmental impact through the development of bio-additives and the development of bio-additives using agro-ecological and technological approaches.
Social stability	(Circular Economy)	Development and transformation of territories by reducing waste and recycling industrial clusters
	(Green Economy)	Shared and equitable sharing of costs and benefits of ecosystem management; development of ecotourism and other types of businesses based on biodiversity;
	(Bioeconomy)	Regional development through raw material producers and bio-industrial clusters.

Note. The table was developed by the author.

As a result of the analysis, it turned out that carbon intensity in Uzbekistan is very high and amounts to 19.26, the average for developed countries is 0.5. This means that the index of economic organization due to air pollution in Uzbekistan is high. In the sources of foreign scientists this is called the “Shadow Economy”.

Air pollution kills about 7 million people every year and can cause long-term health problems such as asthma and mental retardation in children. According to the World Bank, air pollution costs society more than $5 trillion annually[10].

Table 2. Carbon intensity of countries

(GDP calculated based on kg CO_2 emissions / purchasing power parity)

Countries	Carbon intensity
Great Britain	0,3
Germany	0,4
Canada	0,6
Norway	0,3
France	0,2
USA	0,6
Finland	0,5
Sweden	0,2
Japan	0,4
European Union	0,3
Russia	1,2
Uzbekistan	19

Note: The table is compiled based on World Bank data, the indicator for Uzbekistan was determined as a result of the author’s calculations

[10] World Bank data https://data.worldbank.org/

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Formula for determining carbon intensity in Uzbekistan [11]

$$Carbon\ intensity\ of\ countries = \frac{Pollutants\ released\ into\ the\ atmosphere}{GDP\ calculated\ based\ on\ purchasing\ power\ parity} = 853500\ kg\ /443,2/100 = 19,26$$

From 2010 to 2018, the volume of emissions of pollutants into the atmosphere increased almost 1.3 times and amounted to 2.442 million tons in 2018. Of these, 65% or 1 million 560 thousand tons are accounted for by motor vehicles. In large cities, for example, in Tashkent, this figure is 80%[12].

Many atmospheric pollutants cause the air to warm. Black carbon is an example of this. Diesel engines, emissions and other polluted air are very harmful when inhaled. Reducing these pollutants not only improves health, but could reduce global warming by 0.5 degrees over the next few decades.

Through the efforts of the World Bank and the UN, within the framework of the Millennium Development Goals, the world invented appropriate indicators 15 years ago. From a macroeconomic point of view, the World Bank (WB) reflects environmental pollution and natural resource depletion through the Adjusted Net Savings indicator (Table 3). The biggest disadvantage is the depletion of natural capital. The World Bank believes that a country with depleted natural capital and insufficient investment in human and physical capital is developing unsustainably. Unfortunately, in Uzbekistan this indicator is not given in any sources, including information published by the State Statistics Committee.

Table 3. WB Net Adjusted Savings Indicators

s/n	Countries	Adjusted Net Accruals (%)
1	Japan	15,8
2	Germany	12,1
3	France	11,4
4	Great Britain	6,9
5	Canada	5,4
6	USA	4,1
7	Russia	13,8
8	Czech	14,7
9	Poland	7,8
10	Ukraine	4,1
11	China	36,1
12	India	20,6

The lower this indicator, the less pollution of the environment and natural resources in this country.

In 2015, our country adopted the Low-Carbon Development Strategy of the Republic of Uzbekistan[13]. According to it, by 2030 it is planned to increase the share of renewable energy sources (water, solar and wind energy) in the country's energy balance from 10% to 20%, coal from 5% to 15%, and the share of electricity from gas to reduce from 85% to 65%.

[11] The determination of carbon intensity in Uzbekistan is calculated based on information provided by the State Statistics Committee

[12] Alikhanov B., Chairman of the Executive Committee of the Central Council of the Ecological Party of Uzbekistan, Ensuring the purity of atmospheric air: problems and solutions / 10/11/2019

[13] Gazeta.uz, 2015/The power system capacity can increase by 30% due to renewable energy sources /https://www.gazeta.uz/uz/2015/10/16/tem/

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Countries tackling climate issues are creating a new, innovative, diversified, modernized model, and according to international forecasts, in 20-30 years the demand for gas and oil will sharply decrease. Energy and metallurgy are among the leading sectors of the economy of Uzbekistan. This is also called the high carbon economy or the shadow economy.

Conclusions and offers.

China and India are working to reduce their energy intensity, which has the same carbon intensity, and we need to develop ways to do the same. If we try to introduce the climate factor and ecology into the economy in theory and practice, then we should pay attention to the problem of ecosystem services, which has been discussed at the global level in the last 3-4 years. There are about 30 of them, and the whole world is trying to evaluate them, monetize them, and include them in the economic decision-making process. And to do this we must recognize a number of problems.

Firstly: According to economic theory, there is no such thing as mathematical value. Therefore, we need evaluation methods. In particular, it is necessary to track the Adjusted Net Savings (WB) indicators studied in the study, national carbon intensity indicators and other international indicators that indicate a green economy.

Secondly: the need to stimulate climate projects and entrepreneurs producing environmentally friendly products. No economist will invest in a project if it does not pay off in 8-10 years. In our country this corresponds to 2-3 years. Climate projects have been in development for decades. Will the private sector invest in this? Therefore, state support is necessary.

We need to attract foreign investors and foreign projects by spreading information about the prosperity of Uzbekistan, natural food, production of fruits and vegetables and a climate that is very suitable for their processing. It is necessary to develop benefits for them and provide government tax exemption certificates. Because, according to the UN, natural food in the world is currently consumed on average by only 60% of the planet's population. The remaining 40% of demand is covered by the production of artificial and chemical products. Using this, we have a suitable climate in Uzbekistan to provide not only our own population, but also the needs of the population of other countries with healthy food products.

Preventing air pollution is a double-edged opportunity by reducing the number of coal power plants and promoting less polluting industry, transport and local fuels, cleaning the air and reducing greenhouse gas emissions, not switching to coal instead of gas, but using renewable energy sources, especially solar energy creates the need for organization.

In the context of globalization and integration, it is necessary to include calculations of international indicators, especially indicators of the green economy, in the State Statistics Committee database.

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