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SUSTAINABLE DEVELOPMENT AND "GREEN ECONOMY": ANALYSIS OF FACTORS AND SITUATION IN KYRGYZSTAN

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Abstract

The article discusses the essence and basic principles of the sustainable development and "green" economy. The authors have conducted analysis of the factors influencing sustainable development in Kyrgyzstan, and believe that the main factors holding back economic growth and human development in the country are geographical features and a volatility of the political situation. Since gaining its independence, Kyrgyzstan has been characterized by a low level of social well-being, increasing pressure on the environment from the productions, especially agricultural production, and population with a low level of environmental awareness. The authors revealed the correlation between the level of poverty and the deterioration of air quality in Bishkek, namely, the growing level of poverty in the capital city was accompanied by an increase of emissions polluting the air. The state is taking certain measures to reduce poverty and protect the environment. However, many principles of sustainable development and the "green" economy are not being observed across the nation. The article validates the urgent need for active promotion of the sustainable development and the "green economy" in Kyrgyzstan.

Keywords: *sustainable development; green economy; economic progress; economic growth; social progress; human development; atmospheric quality; soil pollution; vehicles; poverty; rural population; rural tourism.*

JEL Codes: R4, Q5, Q1, Z3, O13, H

Introduction

Global warming researcher Paul Crutzen noted that the invention of the steam engine in 1784 was the first step towards technological and economic progress for mankind. Since then, emissions of carbon dioxide and other substances polluting the atmosphere have increased from year to year (Füchs, 2020). Many countries, striving for

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technical, economic and social prosperity, have developed their industrial productions at a rapid pace. However, the traditional industrial production model has been closely linked to environmental degradation, characterized by heavy reliance on fossil fuels, high energy consumption, and the generation of pollutants (Sadiku & Madzova, 2024).

Nevertheless, today scientific and technological progress is assessed as a positive process. As a result of economic and social progress, mankind receives new types of food products, living conditions are improving while the Earth's population keeps growing. Population growth is accompanied by an expansion of human needs, accordingly, by an increase in the production of not only food products, but also many consumer goods made from materials that heavily pollute the environment, such as polymers. Until the 1940s, the annual production of artificial polymers in the world was measured in only tens of thousands of tons. By the mid-1970s, this volume had already reached 60 million tons, and by the beginning of 2022, the production of just one type of polymer - plastics - amounted to 380 million tons per year. The scientific and technological revolution of the mid-20th century significantly expanded the range of polymer products. Today, it is difficult to name an industry that does not use products made of polymeric materials, and even within the industrial sectors themselves, their use is becoming more intensive and widespread. According to Greenpeace estimates, the production of plastics and raw materials for them releases more than 170 chemicals into the air and water that are harmful to human health (Khudokormov, 2023).

Plastic has become a real test for the natural environment and the future of most countries in the world, including Kyrgyzstan. The production of plastic products causes enormous harm to the environment and, accordingly, to the health of the current generation of people and the well-being of future generations. But is scientific and technological progress to blame for this? In part, yes, but a more compelling reason lies in the unreasonable exploitation of natural resources in pursuit of profit and reckless human consumer behavior.

The purpose of this research is to substantiate the urgent need for active promotion of a "green economy". It also aims at analyzing and assessing the impact of some factors on the social and environmental aspects of sustainable development in Kyrgyzstan.

Dataset and methods

The methodological basis of the study was shaped by scientific works of foreign and domestic scientists, as well as the authors' own works. We have used some data delivered by one of the authors of the current article in the Final Report based on the cost and benefit analysis conducted within the framework of the project "Political actions for climate security in Central Asia", implemented by UNDP in Kyrgyzstan, Tajikistan and

Uzbekistan with the financial support of the Government of Great Britain. Among others, the authors used such research methods as scientific observation, scientific abstraction, and different types of analysis such as comparative, factorial, and cause-and-effect.

The statistical analysis allowed us to identify some trends in poverty change level and the impact of the population on various parts of the environment. Comparison of statistical data reflecting the changes in the poverty level in Bishkek city and the volume of emissions of substances polluting the atmosphere allowed us to reveal that there is a direct link between the poverty level and the level of air pollution: the higher the poverty level, the more polluted the atmosphere in the capital city of Kyrgyzstan.The relationship between these indicators is examined using annual data for 2013-2022.

The concept of assessing national poverty differs from international poverty assessments. The national poverty level cannot be compared across countries or with the poverty level of $1.90 per day (National Statistical Committee of the Kyrgyz Republic, 2022).

Sustainable development and "Green Economy": Essence, Principles and Factors.

"Green economy" is one of the directions of sustainable development, the basis of which rests on the responsible attitude of man to resources and to future generations. Issues of sustainable development have been actively discussed by the public and scientists since the 70s, because the development of production and the scientific as well as the technological progress have had a strong negative impact on the environment since the second half of the twentieth century. Since the 1940s, technical progress has advanced at a rapid pace and has been accompanied by a significant deterioration of the environment. Today, environmental issues have acquired a global character, which has become the reason for bringing the sustainable development issues to the forefront.

Sustainable Development Goals (SDGs) were adopted by the United Nations in 2015 as a universal call to action to eradicate poverty, protect the planet, and ensure that by 2030 all people live in peace and prosperity (United Nations Development Programme, 2024).

According to the definition formulated by Michael Jobs: Sustainable development is the development of societies in which the human condition improves while the environmental impact remains within the carrying capacity of the biosphere, so that the natural basis for the functioning of humanity is not destroyed. (Jacobs, 1999).

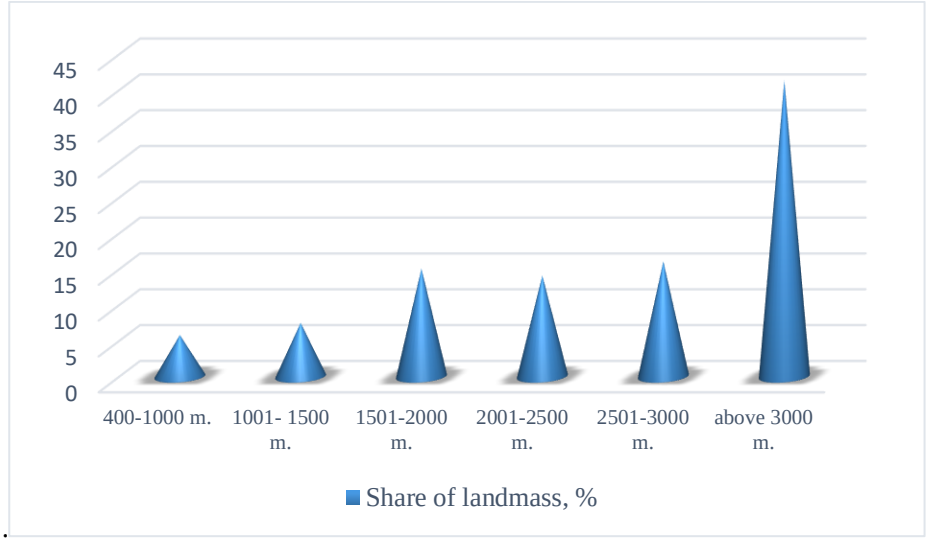
Sustainable development includes economic, social, and environmental components. The economic component involves achieving economic efficiency, that is, obtaining the greatest benefit at the lowest cost of all types of resources, especially

natural ones. Achieving economic well-being will contribute to human development and also expand the opportunities for the implementation of large-scale environmental programs.

The social component is implemented through social justice, which promotes a fair distribution of income. The path to social well-being liest in improving the quality of life of the population. High living standards of the population can reduce the anthropogenic load of the population on the environment, and also contribute to their involvement in activities to protect and improve the environment.

The environmental component means ensuring environmental safety through the protection and improvement of the environment, achieved through the implementation of environmental measures and programs that cannot be implemented without the participation of the population, business, and the state. Environmental well-being means providing production with resources, and a person with all the benefits necessary for life within the capabilities of the environment. Economic growth and economic progress are achieved in the "brown" economy through intensive use of natural resources without taking into consideration the interests of future generations. The market economy is based on economic egoism. Producers strive to obtain high income and maximize their profits at any cost without taking into account the impact of production activities on natural environment. In the context of sustainable development, economic growth and economic development, as well as human development in general, should be achieved based on the principles of careful attitude to nature. The scale of economic and human development in Kyrgyzstan is limited by the geographical features of the country: 30.2% of the territory of the country is located at altitudes above 2000 meters above the sea level (Fig. 1).

Figure no. 1 Proportion of the territory of the Kyrgyz Republic located at different altitudes above sea level, %



Source: United Nations Development Programme in Kyrgyzstan, 2002.

Figure 1 shows that most of the territory of the republic is located at an altitude of over 2000 meters above the sea level. At altitudes of over 1500 meters above the sea level, the comfort of living decreases, here it makes 45.3% of the territory occupied by the country's population, where the cold season lasts for around 6 months. The sharply continental climate and large differences in altitude increase the basic energy costs necessary to maintain a minimum acceptable standard of living (heating homes, warm clothing, increased costs for transportation, overcoming mountain obstacles, etc.) at least by 1,5 - 2 times compared to the plain land. It should be emphasized that 6.3% of the population of Kyrgyzstan live in the harsh conditions of the highlands. The average altitude of the republic is 2750 meters above sea level (UN Development Programme in Kyrgyzstan, 2002).

Economic growth is limited in Kyrgyzstan by the following factors: long distance from the World Ocean (from 1700 to 6530 km), discontinuity and fragmentation of the territory, associated with the mountainous landscape, remoteness of settlements from each other, and all these contribute to external and internal communication isolation, while increasing the transportation costs. The cost of 90% of transportation in the country falls on road transport, which is 60-70 times higher than the majority of world transportation, which comes mainly by sea routes. The internal transport isolation of the Kyrgyz Republic exists due to the fact that in the mountain systems, not only rivers run off from the center, but also roads. The centrifugal highways do not allow the creation of

a single economic space. In Western European countries, one square kilometer of territory produces 600 times more GDP than in Kyrgyzstan (Suyunbaev, 2005).

Due to its geographical location, the Kyrgyz Republic is a state prone to numerous natural disasters. As a result of emergency situations of various kinds in 2022, the republic suffered tremendous losses where 135 people died, 1,298 residential buildings and 54 road facilities were destroyed, 29 industrial and commercial facilities were ruined, and 5,6 thousand hectares of agricultural land were damaged. The economic cost of all types of emergency situations amounted to more than 4,6 billion Kyrgyz som (National Statistical Committee of the Kyrgyz Republic, 2023).

Another factor that complicates the path to sustainable development is the political instability in the country. During the period of independence, Kyrgyzstan has experienced three violent topplings of the corrupt government, locally called ‘revolutions’. One of the key reasons for social upheaval was the low standard of living of the majority of the population. The gravity of social injustice, corruption, the insatiable greed of the political elite for self-enrichment ignoring the interests of the state and these of society, along with other negative conditions in the lives of millions of Kyrgyz citizens aligned with the high risks of investment instability led to the most negative social implications.

Analysis of The Current Situation in Kyrgyzstan and Justification of the Need for Sustainable Development and “Green Economy”.

Green economy is a model of economic development that assumes a responsible attitude of a person to any natural resources and towards upcoming generations. It aims at finding a reasonable compromise between economic growth, human resource development and the preservation of natural resources. This is sustainable development and it remains the most important long-term goal of many countries globally, including Kyrgyzstan. However, in order to achieve it, it is necessary to make the economy green (Ministry of Economy and Commerce of the Kyrgyz Republic, 2024).

Economy is associated with production and consumption. As global pollution of the environment keeps exacerbating since most, if not all, of the nations on earth are run by the market economy, both production and consumption have a negative impact on the natural environment, and many issues of human development, sadly, continue to remain unresolved. Green economy is an economy that is focused on economic growth accompanied by human development, employment, poverty eradication and ensuring the protection of all elements of the natural environment from degradation. However, in most countries of the world, including the Kyrgyz Republic, both production and consumption are carried out without observing the principles of „green" economy. As a result, natural

resources are greatly depleted, atmospheric air and water are polluted, and soil degradation and contamination keeps constant.

The agricultural sector holds a significant share in the economy of Kyrgyzstan. Agriculture is the main consumer of the republic's water resources. In 2022, the volume of water consumption amounted to 5.8 billion cubic meters of water, an increase of 14.8% compared to 2018. Of the total water consumption, 94.3% of water was used for irrigation and agricultural water supply, 3.4% for domestic and drinking needs, and 1.4% for industrial needs. As it is known, water consumers, unlike water users, irrevocably take this valuable natural resource from nature. At the same time, more than 27% of the taken water is lost during transportation due to the unsatisfactory condition of irrigation systems (National Statistical Committee of the Kyrgyz Republic, 2023).

An important place in the agriculture of Kyrgyzstan is given to livestock breeding. A distinctive feature of livestock care in the country is grazing in open spaces. Hence, pastures play an extremely important role. Over the past five years, pasture area's size has decreased. If at the beginning of 2019 the area of pastures were 9005,7 thousand hectares, by the beginning of 2023 it made for some 8995,4 thousand hectares. Due to soil degradation, the quality characteristics of pasture lands, which occupy 85% of agricultural land, have deteriorated (National Statistical Committee of the Kyrgyz Republic, 2023).

According to the State Design Institute for Land Management "Kyrgyzgiprozem", 1/4 of the total area of pastures in Kyrgyzstan is moderately and severely degraded due to excessive load on them connected to the increase in livestock. Domestic research institutes state that the yield of summer and winter pastures has decreased by 3 times over the past 50 years. Unjustifiably intensive exploitation of pastures has caused a decrease in their productivity. Thus, according to experts, as a result of this, over 11 million tons of natural feed are lost annually (Concept of Green Economy in the Kyrgyz Republic, 2018).

In recent years, the state of pasture lands has been negatively affected by tourist activities, including the 'jailoo (*auth*: high-altitude summer pastures that Kyrgyz nomads take their flocks to)' tourism, which are organized without observing the principles of preserving the natural environment. Problems arise due to household waste emerging from serving both domestic and foreign tourists. But, on the other hand, jailoo tourism contributes to improving the well-being of rural residents. Income from jailoo tourism makes up a significant part of the budget of families of shepherds and cattle breeders, most of whom permanently reside in the village of Kochkor in the Naryn region, for example. In general, during the nomadic season on Song-Köl (*auth:* Song-Köl is an alpine lake in northern Naryn Region, Kyrgyzstan. It lies at an altitude of 3016 m, and has an area of about 270 km*^{2} and volume of 2.64 km^3. The lake's maximum length is 29 km,

breadth about 18 km at its widest, and the deepest point is 13.2 m. It is the second largest lake in Kyrgyzstan after Issyk-Kul, and the largest fresh water lake in the country), a family earns about 10-12 thousand dollars from tourists and the sale of livestock (Tumanova, 2021). At the same time, if the problem of getting rid of household waste without harming the environment is not solved, many pasture areas will be degraded.

Currently, this problem has become more acute. The area of degraded pastures has more than doubled. It should be emphasized that this type of economic activity has a negative impact not only on the soil, but also on the natural environment. With the development of jailoo tourism, the quality of atmospheric air in the areas of mountain pastures is deteriorating due to the increase in the number of vehicles. The actual emissions of the most common pollutants into the atmosphere in the Naryn region, where jailoo tourism is developing very quickly, amounted to 1260,4 tons in 2022, which exceeded the maximum permissible levels by 6.1% (National Statistical Committee of the Kyrgyz Republic, 2023). The problem of excessive air pollution also occurs in the cities of Kyrgyzstan, especially in the capital of the republic (Table 1).

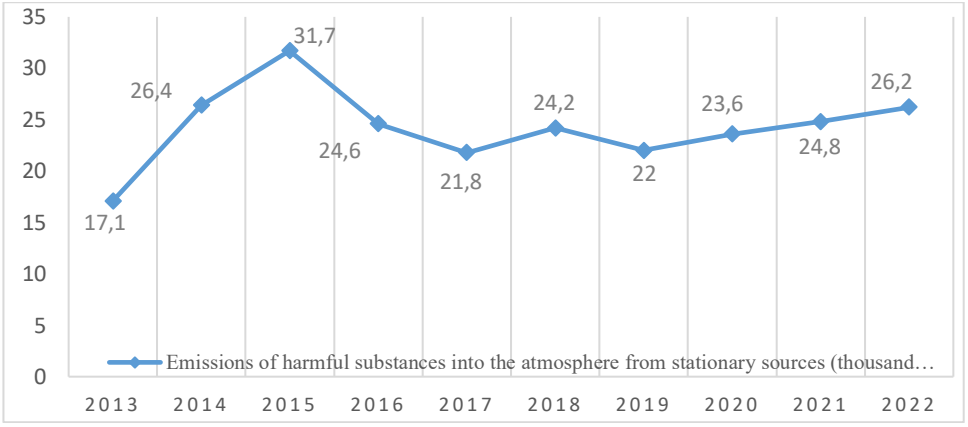
Table no. 1- Cases of exceeding the maximum permissible concentration of nitrogen dioxide (NO2) in the cities of the Kyrgyz Republic in 2022

City title	**The proportion of cases where the maximum permissible concentration was exceeded, in % of the total number of observations**	
	Industrial district	***Residential area***
Bishkek	13	311
Kara-Balta	9	2
Osh	-	-
Tokmok	9	4
Cholpon-Ata	18	-

Source: National Statistical Committee of the Kyrgyz Republic, 2023.

As it can be seen from Table 1, according to the data for 2022, the maximum permissible concentration of a substance hazardous to human health - nitrogen dioxide (NO2) - is exceeded in all cities of the Kyrgyz Republic, except for Osh (data for 2024 for Osh may differ). We observe the worst results in Bishkek, both in the industrial and residential areas. The significant pollutants of atmospheric air in Bishkek are stationary sources (Fig. 2).

Figure no.2 Change in the amount of emissions of harmful substances into the atmosphere from stationary sources in Bishkek (thousand tons).



Source: National Statistical Committee of the Kyrgyz Republic, 2023

Figure 2 clearly shows a significant increase in the emissions of harmful substances into the atmosphere from stationary sources in Bishkek, in the analyzed ten-year period, from 17.1 thousand tons to 26.2 thousand tons, that is, increase by 53.2%. Studies have shown that the main sources worsening the quality of atmospheric air in the capital are residential buildings and motor vehicles. At the same time, a large part in air pollution in the capital is due to families living in informal residential areas that spontaneously emerged around Bishkek because of internal migration since 90s. Most of these families are poor. The poor population, by rule of economy, consumes cheaper goods, the waste from consumption of which is harmful to the environment, for example, low-quality coal.

To identify the relationship between the level of poverty and the degree of air pollution in Bishkek, let us focus on the changes of indicators in different timeframes.

2013-2015: The poverty level in Bishkek increased from 20.4% to 23.5%. Figure 2 shows that in this period, the emissions of harmful substances into the atmosphere from stationary sources in Bishkek also increased, from 17,1 thousand tons to 31,7 thousand tons, or by 85,4%.

2015-2019: In 2019, the poverty level significantly decreased compared to 2015, amounting to 11.9%, and the emissions of harmful substances into the atmosphere in this period also decreased by 30.6%.

2019-2022: In 2022, the poverty level in the capital increased by 23.8% compared to 2019. During this period, air pollution in the city increased by 19.1% (National Statistical Committee of the Kyrgyz Republic, 2022, 2016).

Thus, a comparative analysis of the changes in the poverty level and the amount of air pollutant emissions in Bishkek showed that there is a direct connection between them:

an increase in the poverty level was accompanied by an increase in air pollutant emissions.

Significant damage to the quality of atmospheric air in Bishkek is caused by low-income families. They tend to buy and use cheap, low-quality coal with high sulfur content for heating. According to the results of a study of air pollution sources in Bishkek, conducted by specialists from the United Nations Development Programme in the Kyrgyz Republic and the United Nations Environment Programme, a significant source of emissions come from household heating using fossil fuels with high sulfur content. Heat and power centers (HPC) have a smaller impact on air pollution and, in particular, on the concentration of main pollutants (solid particles and sulfur dioxide) in Bishkek due to the higher emission height of HPC's exhaust pipes, combustion efficiency and monitoring equipment (United Nations Development Programme in the Kyrgyz Republic and United Nations Environment Programme, 2022).

However, the most dangerous source of substances that worsen the quality of atmospheric air in the whole country, including in Bishkek, is motor transport. According to the Ministry of Transport and Communications, in 2022, over 1,387,551 motor vehicles were registered in the Kyrgyz Republic, of which 1,103,400 were passenger cars, 234,600 were trucks, and 49,500 were passenger vehicles (Kudryavtseva, 2023)

According to certain predictions, by 2022, there were supposed to be some 1114000 automobiles, however the actual number of these is less by 10600 pieces. By 2024 the number of automobiles in Kyrgyzstan is expected to reach some 1176000 pieces. According to the Minister of Transport and Communications the actual increase in the number of automobiles in 2022 amounted to 0.7% (table 2).

Table no. 2 - Comparative analysis of actual and projected growth in the number of passenger cars and their maintenance in the Kyrgyz Republic

Indicator	**Factual**		**Prediction**		**in 2022 in % to 2021**	**in 2025 in % to 2024**
	2021	***2022***	***2024***	***2025***		
Number of passenger cars, pieces in thousands	1096	1103,4 *	1151	1176	100,7	102,2
Average annual cost of maintaining one car, taking into account inflation, in Kyrgyz soms	11900	12495	13776	14465	5,0	121,5

Source: authors research

Table 2 shows the actual and projected increase in the number of passenger cars in the country. At the same time, we see an excess of the projected annual growth in 2025 by 1.5% compared to the actual annual growth in 2022. We believe that the reason for the decrease in the annual growth in the actual number of cars is the annual increase in the costs associated with their maintenance: if in 2021 the average annual cost of maintaining a passenger car amounted to 11,900 kyrgyz soms, taking into account 5% inflation; in 2025, according to forecasts, the figure will increase by 21.5% and will amount to 14,465 soms.

On the one hand, these vehicles, being a source of household income, increase the well-being of the population, that is, they contribute to the implementation of one of the most important conditions of the "green" economy - the reduction and elimination of poverty. Automobile transportation differs from other modes of transport in its mobility, relatively high level of reliability and high availability. One of the priority areas of economic development of the Kyrgyz Republic is the transport sector, which is entering a new phase of development. The "road map" for the development of Kyrgyzstan contains specific infrastructure measures to help Kyrgyzstan overcome the "transport impasse" and become a "transit" country (Kambarov, 2022). Data on the performance of work by various types of vehicles are given in Table 3.

Table no. 3 - Execution of works by road transport in the Kyrgyz Republic (2022)

Title of the labor	**Factual performance**		**In % in relation to previous year**	
	2022	***2023****	***2022***	***2023***
Transportation of passengers by buses, minibuses, thousand people.	455 765,3	502 167,3	103,6	110,2
Transportation of taxi passengers, thousand people.	39 375,5	34 806,1	107,4	113,1
Cargo transportation, thousand tons.	35 913,8	41 291,9	137,3	115,0

Source: Preliminary data. Source: National Statistical Committee of the Kyrgyz Republic, 2024

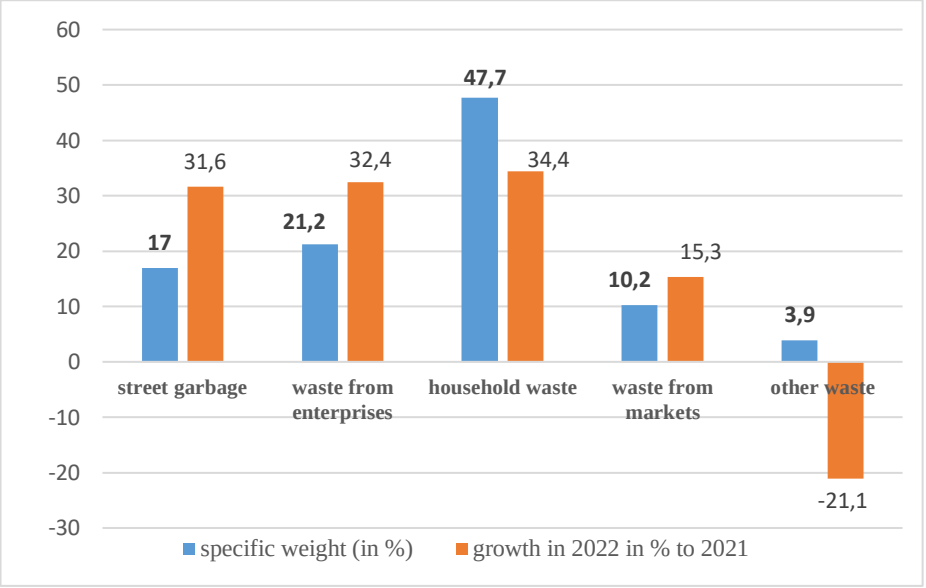
The data in Table 3 reflect the growth in passenger transportation by buses and minibuses volumes compared to the previous year in 2022 by 3.6%, and in 2023 by 10.2%. The number of passengers transported by taxi drivers increased compared to last

year in 2022 by 7.4%, and by 13.1% in 2023. Freight transportation indicators increased significantly compared to the previous year by 37.3% and by 15% in 2022 and 2023, respectively (National Statistical Committee of the Kyrgyz Republic, 2024).

Consequently, the income of the owners of these vehicles increased from year to year. On the other hand, each passenger-kilometer of a vehicle's mileage results in strong pollution of the atmospheric air with exhaust gases. The most significant harm to the atmosphere is caused by diesel fuel used by minibuses transporting passengers and small cargos. The problem is particularly grave in Bishkek. According to official data, the country's capital was designed for 40 thousand cars, however today over 400 thousand cars are registered in Bishkek. Hence, 90% of environmental pollution in Bishkek comes from vehicles. For fairness sake, it should be noted that measures taken by government agencies contribute to solving this problem: four years ago, 100 buses using compressed natural gas (CNG) instead of diesel fuel began to operate in Bishkek (Official website of the Bishkek mayor’s office, 2024). According to the Bishkek mayor’s office, by the end of 2023, some 427 buses replaced the minibuses on passenger route lines in Bishkek. Gradually, all route taxis will be completely replaced by buses, and it is planned to increase their number to 1,500 units (Kaktus Media, 2023). Such measure is described as a meaningful step towards a "green" economy taken by the state at this stage, at least.

At the same time, the issue of environmental damage caused by the huge number of private cars remains open, among which a large share is made of inexpensive cars with worn-out engines, in which the incomplete combustion of fuel converts some of the hydrocarbons into soot containing resinous substances that significantly reduce the quality of atmospheric air. Another environmental problem in Kyrgyzstan is household waste in populated areas, which creates risks of soil and atmospheric air pollution. The volumes of household waste removed, in addition to other waste, in Kyrgyzstan have been increasing rapidly in recent years (Fig. 3).

Figure no.3 Removal of household waste (solid waste) by type of generation in the Kyrgyz Republic in 2022



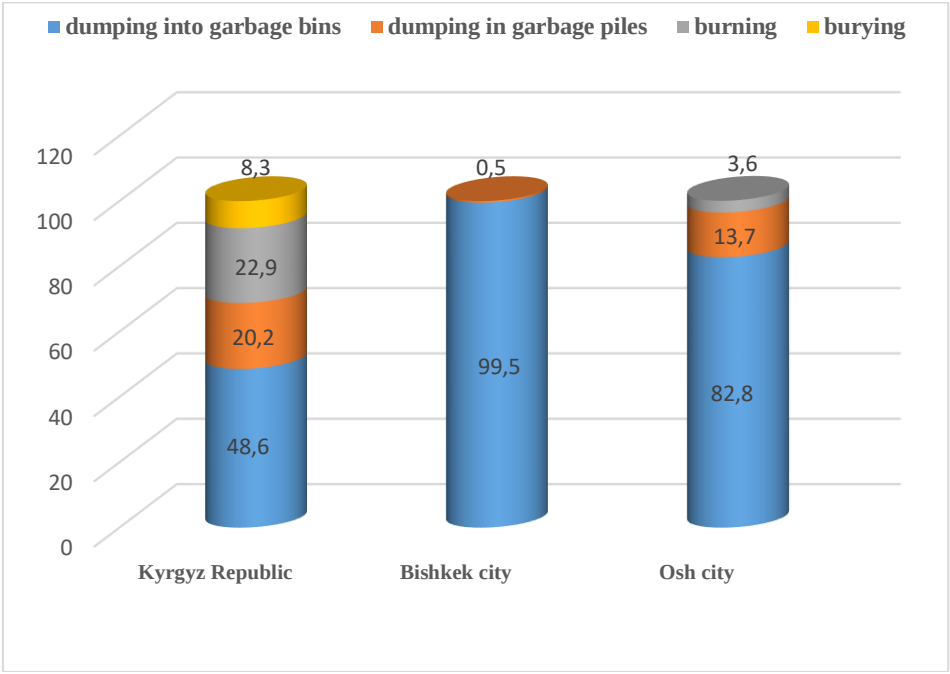
Source: National Statistical Committee of the Kyrgyz Republic, 2023

Figure 3 shows the removal of household waste (solid waste) by type of generation in the Kyrgyz Republic in 2022. It shows that household (family) waste accounts for about 48% of the total volume of waste removed. In addition, we see that this type of household waste generation has shown the highest increase (+34.4%) in the analyzed period. Here, it is necessary to pay attention to the fact that the population has irresponsible attitude towards the environmental issues, throwing away waste that is very harmful to nature as part of household waste. Retail outlets provide plastic bags for free, so people take them away with their purchases in large quantities to use for taking out the trash. The lack of awareness of the population about the extent of harm they cause to the environment plays a large role here. People are also poorly informed about the consequences of their actions. As Figure 3 shows, the second position is held by enterprises (organizations, institutions) with a share of 21.2%, and an annual growth of 32.4%. Next comes street waste with share of 17%, and the annual growth here is 31.6%. Only with repect to waste from enterprises we observe a slight decrease in 2022 compared to 2021, while the share of other waste is miniscule 3.9%.

The analysis showed that production and consumption contribute to the formation of a large amount of household waste. In our opinion, enterprises should be responsible for household waste generated as a result of the consumption of the products they

manufacture. The methods of disposal of household waste play an important role in preserving the natural environment. According to published statistics, 4 methods of disposal of household waste are used in Kyrgyzstan (Fig. 4).

Figure no. 4 Shares of different methods of disposal of household waste in the Kyrgyz Republic and in large cities in 2022, in %.



Source: National Statistical Committee of the Kyrgyz Republic, 2023

As we can see in Figure 4, almost 49% of household waste in the country is disposed by dumping into street garbage bins standing outside of residential blocks. Removal by burning is 22.9 %, whereas the collection into garbage piles is more than 20 %, and the burying way of disposal makes for 8.3 %. It is generally accepted that the best method is dumping into street garbage bins, which is 82.8% in Osh, the second largest city, and 99.5% in the capital Bishkek. However, waste from street garbage bins is taken out of the city by special transport, where mountains of landfills are formed. Among the waste, there are many plastic bags, discarded plastic products (broken toys, disposable tableware, forks, spoons, etc.), which, when heated by sunlight, release toxic substances into the atmosphere. The worst way to dispose of waste is burning, which releases a large amount of pollutants into the open air, spreading it further over the city. Burying the waste across the country makes for just 8.3%, and this approach is not used in Bishkek and Osh.

When household waste is buried, the plastic contained in it pollutes the soil. Polyethylene waste varies in the degree of harmfulness to the natural environment. High-density polyethylene, PEHD (HDPE), out of which bottles, toys, food containers, cling film are made, practically does not decompose (the decomposition period is more than 1000 years), but is effectively recycled with proper sorting (Ohrey, 2020).

Thus, production and consumption in Kyrgyzstan, organized on the basis of the principles of a market economy, do not solve the problems associated with poverty, irrational use of natural resources, and environmental pollution, but actually aggravate them even further. In this regard, the need for a "green" economy for Kyrgyzstan is obvious.

Conclusions and recommendations

Summarizing this relatively small but comprehensive research, we came to the conclusion that, at the current stage of development, the basic principles of the "green" economy in the Kyrgyz Republic are not observed. There are many problems associated with ensuring social justice and solving the problem of poverty. The majority share of the nation is rural. In villages, the poverty level remains high. Solving problems requires an integrated approach. In our opinion, among other things, the problem can be solved, to a certain extent, by developing rural tourism as an additional type of economic activity. Rural tourism does not require large capital investments. Rural families have much of what is needed to organize rural tourism. If rural families unite in cooperatives, their chances of success will increase. Rural tourism services can be provided jointly with other types, for example, educational tourism.

The tourist product consists of tourist resources, services, and goods. It can have a variety of contents, since it is determined by the needs of tourists and the desire of the businesses to meet them, to some extent. These resources are natural-climatic, socio-cultural, and historical, entertainment, cult, religious and others that help meet tourist needs. The product of educational tourism is a combination of the tourist product and the product of education. This combination is well integrated and paired to meet the tourist and educational needs of consumers. The combination of tourism and education products can take various shapes. The specific about the tourist product that participates in is static. It includes basic tourist services such as transport, accommodation, and meals. While the product of education may be different. It can be training, seminars, research trips, summer camps and the like. There is a certain variety of the types of educational products that could, together with tourism, make the product of educational tourism (Voleva-Petrova, 2020). Rural tourism in Kyrgyzstan can be presented in the form of jailoo tourism - living in high mountain pastures in yurts (the home of the ancient nomadic people - the

Kyrgyz). The combination of rural and jailoo tourism will increase the attractiveness of this tourism product and will contribute to improving the well-being of rural residents.

Providing rural tourism services based on the principle of "one village - one tourism product" is useful from the point of view of the success of the rural tourism business. In this regard, it is necessary to begin active work in Kyrgyzstan to form a culture of using rural tourism services among residents of cities and urban-type settlements. Measures are needed to promote this type of economic activity in villages, to teach villagers the art of providing rural tourism services. It is necessary to conduct seminars, trainings, courses for villagers in online and offline modes, teaching the art of hospitality and running a small tourist business in villages. Today, even the residents of remote highland villages of Kyrgyzstan use the Internet. This achievement of scientific and technological progress should also be used to benefit the "green" economy.

Positioned in different business niches, entrepreneurs can use the expanding opportunities to simultaneously implement technological and non-technological (including social) innovations, thus contributing to compensating the skill gaps of different groups of persons in the labor market. Opportunities for courses and training that contribute to creating sustainable jobs are expanding (Bogdanova, 2022).

The main conclusion is that the environmental situation in the country is difficult, and there are many problems associated with the pollution of all elements of the environment. At the same time, the government is taking certain measures to solve the most acute of them. For example, in Bishkek, the minibuses providing public transport services are being replaced by buses. Minibuses use diesel fuel, which is very harmful to the atmosphere, and buses use compressed natural gas, which has a low level of negative impact on air quality. It is important to conclude that individual vehicles are a dangerous source of air pollution in Bishkek. We consider it appropriate to oblige vehicle owners to install equipment in their vehicles to control emissions that pollute the atmosphere. A necessary measure is to introduce strict quality control of exhaust gases from vehicles used on Bishkek roads. Of course promoting walking and/or biking habits can contribute to decreasing air pollution.

It is necessary to pay special attention to household waste, which contains environmentally hazardous types of polyethylene and plastic. The solution to this problem is active work with the population to develop responsible consumer behavior. It seems appropriate to introduce strict measures aimed at restricting the ban on the production and import of goods from hazardous non-degradable types of plastic, as is done today in some countries.

It is necessary to study in depth the international experience of countries moving towards a "green" economy and apply it in our country, taking into account the

peculiarities of the Kyrgyz Republic. In our opinion, a big step forward towards a "green" economy will be made, if we manage to replace coal with alternative fuel in the near future.

The reality is that in most countries of the world, including Kyrgyzstan, it looks impossible to do without using coal today. Global practice shows that over the past 10 years, almost half of the global increase in energy consumption was covered by coal (Füchs, 2020). However, putting forward up front, the issue of solving this problem by using alternative and renewable energy sources must become a priority. The Ministry of Energy of the Kyrgyz Republic has proposed a radical measure to develop alternative energy in the country by installating solar panels on the roof of each house. This draft law has been put up for public discussion. According to the official document, starting in 2024, all construction companies will be required to equip multi-story buildings under construction with photovoltaic panels. It is proposed to establish a requirement to occupy at least 50% of the free space on the roofs of newly built houses with solar panels, regardless of the form of ownership. This initiative is designed to stimulate the use of renewable energy sources in the country to reduce the level of energy deficit (Eurasia Today, 2024). It should be concluded that Kyrgyzstan's transition to the path of "green" development is a time-consuming process that requires a comprehensive professional approach at all levels, and it should be done immediately.

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