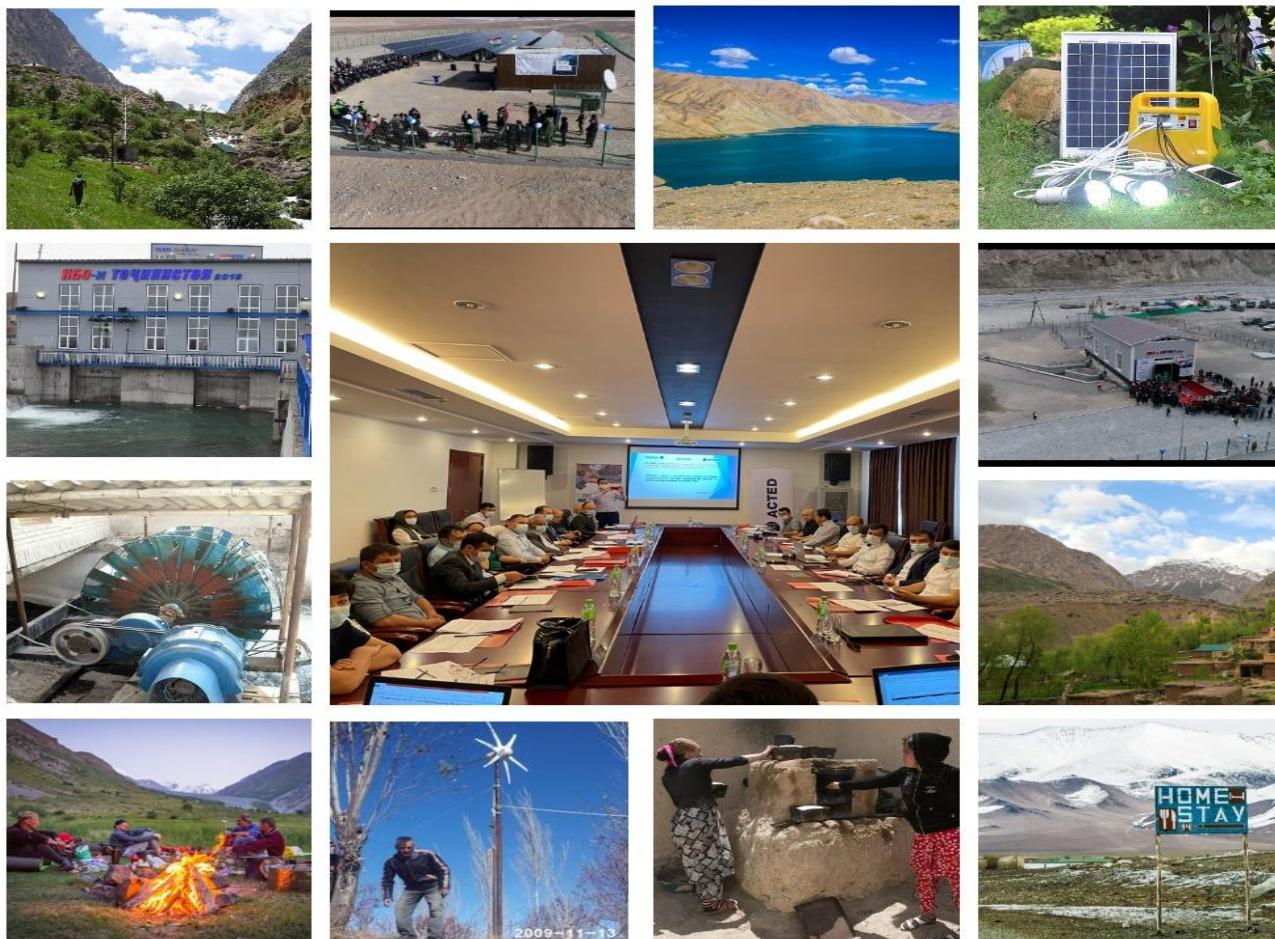


**European Union SWITCH Asia II Program Project
"Promoting Energy Efficiency and Renewable Energy Production in the Community
Based Tourism Sector in Central Asia"**

ROADMAP

**to achieve the goals of changes, improvement of policies,
aimed at increasing energy production and consumption
based on renewable energy, the widespread introduction of E/E in the
community based tourism sector
and emissions reduction.**



Dushanbe – February 2022

EXPRESSION OF APPRECIATION

This draft Roadmap has been prepared by an expert group of the Republic of Tajikistan with the assistance of the Analytical Center BizExpert, partners in the implementation of the Project "Promoting Energy Efficiency and Renewable Energy Production in the Community Based Tourism Sector in Central Asia" (hereinafter referred to as the Project): the Ministry of Energy and Water Resources of the Republic of Tajikistan, the organization ACTED Tajikistan, the Development Committee tourism under the Government of the Republic of Tajikistan.

Personal gratitude is expressed:

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and also

Members of the Interdepartmental Working Group approved by the Order of the Minister of Energy and Water Resources of the Republic of Tajikistan dated May 03, 2021, No. 31, partners from among scientific institutions, civil society and the private sector for assistance in the development of this Roadmap, including representatives of the following public authorities, business circles, public organizations:

To the Ministry of Energy and Water Resources of the Republic of Tajikistan

Ministry of Economic Development and Trade of the Republic of Tajikistan

Ministry of Industry and New Technologies of the Republic of Tajikistan

To the State Committee for Land Management and Geodesy of the Republic of Tajikistan

To the State Committee for Investment and Public Administration Government of the Republic of Tajikistan

Committee for Tourism Development under the Government of the Republic of Tajikistan

Committee on Environmental Protection under the Government of the Republic of Tajikistan

Committee on Architecture and Construction under the Government of the Republic of Tajikistan

To the Tax Committee under the Government of the Republic of Tajikistan

Agency for Standardization, Metrology, Certification and Trade

inspections under the Government of the Republic of Tajikistan

OAHK "Barki Tojik"

JSC "Shabakahoi taksimoti bark"

NGO "Association of Power Engineers of Tajikistan"

NGO "Association of Renewable Energy Sources"

JSC "Sistema Avtomatika"

JSC Technologiyahoi Sabz (Green Technologies)

NGO "Tajik Association of Tourist Organizations" (TATO)

NGO "Association of Microfinance Organizations of Tajikistan" (AMFOT)

to all participating in the consultations who shared their vision of the problems and showed sincere interest in preparing this Roadmap.

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Please, for more information about the Project, visit www.switch-asia.eu

ABOUT THE PROJECT

The project "Promoting Energy Efficiency and Renewable Energy Production in the Community Based Tourism Sector in Central Asia" of the European Union's SWITCH Asia program aims to reduce the carbon footprint in the tourism sector of Kyrgyzstan, Uzbekistan and Tajikistan. The project is aimed at creating a favorable environment for the growth of energy efficiency (E/E) and ensuring sustainable consumption and production of energy based on renewable energy sources (RES) by MSME (B) entities in the community based tourism sector.

The basis for the implementation of the project is that Tajikistan has obligations to reduce emissions and reduce the negative impact on the environment. It is also important that the current strategic and program documents define the objectives of the development of sustainable (green) tourism and energy efficiency growth, including through the development of energy production and consumption based on RES and the growth of E/E.

As part of the first stage of this project, the National Expert Group prepared a report on the results of the analysis of the energy sector, identified the problems of the development of the use of renewable energy and the growth of E/E. The analysis was carried out with elements of the RIA methodology based on an assessment of the availability of the main factors of production (economic resources), an assessment of the impact of policies (program documents) on development, a review of the regulatory framework, which made it possible to separate sectoral environmental problems from policy gaps and identify problematic areas of regulatory legislation.

Throughout the project, consultations were held with experts and stakeholders in the energy sector. The prepared Report is the primary analytical basis for the work of the IWG on the development of this Draft RM to achieve the goals of changes, improvement of policies aimed at increasing the generation and consumption of energy based on RES, the widespread introduction of E/E in the community based tourism sector and reducing emissions.

During the development of the RM project, a unified RIA methodology was used to develop recommendations, substantiate measures to influence problems, coordinate positions, determine benefits and expected results.

This document has been prepared with the financial support of the European Union. The content of these documents is the sole responsibility of Bizexpert and under any circumstances cannot be considered as a reflection of the position of the European Union. The dissemination and use of this draft Roadmap is welcome with the obligatory indication of the source, while the full intellectual property rights to all publications of the Project belong to the European Union, and partial borrowing of materials imposes responsibility on the user in case of distortion of the primary meanings and texts.

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I. Targets and indicators of the action plan ("roadmap")

1. A brief description of the scope of implementation of the roadmap.

1.1. Introduction

Situational analysis of the energy sector, potential, production, consumption of energy, including energy generated by RES and EE growth

Tajikistan is a mountainous country. The country borders Afghanistan, China, Kyrgyzstan and Uzbekistan. At the beginning of 2020, the country's population reached 9.835 million people with an average annual increase of about 2-2.2%. The volume of the gross domestic product of the republic in 2020 amounted to 82.5 billion. somoni, and its real growth is provided at the level of 4.5%. Over the past 20 years, the poverty rate in the country has decreased from 83% in 2000 to 26.3% in 2020.

The Republic of Tajikistan does not possess significant proven reserves of oil and gas, the main modern energy sources, and is an importer of almost half of the hydrocarbon resources consumed in the country (oil and gas). The country has significant coal reserves for it, the main deposits of which are located in remote mountainous areas.

Tajikistan has 4% of the earth's total hydropower potential and is one of the world leaders in reserves of renewable hydropower resources, with the use of which it is theoretically possible to generate electricity up to 527 billion kWh per year. In terms of specific indicators of hydropower potential per square kilometer of territory and per capita, Tajikistan ranks first and second, respectively, and in terms of the use of "green energy" production resources, it is in the top six countries of the world. Currently, less than 5% of technically possible reserves of hydropower resources are used.

The country also has significant opportunities to use other types of renewable energy, such as solar and wind energy, biomass energy, thermal sources, which can practically provide about 10% of the energy needs of the republic. Active growth in the use of various types of renewable energy (with the exception of hydropower) it hasn't started yet. An important aspect is that the country has set tasks for the development of renewable energy. Strategic goals and priorities indicate Tajikistan's intentions to develop solar and other renewable energy sources.

The potential for improving energy efficiency is high. The growth of energy efficiency has become one of the priorities of national policy. Energy-efficient technologies are being implemented in the street lighting system and energy-saving lamps for residential and public buildings, as well as the sale of incandescent lamps has been discontinued. However, energy-saving measures and energy-efficient technologies in industrial enterprises and in the residential sector, which could potentially increase energy efficiency in the country, are insufficiently applied, since they require capital investments, and their implementation is much more difficult than the modernization of lighting systems.

Tajikistan has a fairly extensive centralized power supply system, covering more than 98% of the country's populated territory. In 2011, the Unified Energy System of Tajikistan was created, connecting the southern energy system of the country with the northern one. However, the assets of the electricity transmission system were not serviced and were not upgraded properly, which negatively affected the provision of reliable energy supply to household consumers. There is a high level of electricity losses: losses in the power transmission system are 3.7%, and losses in distribution networks are 26%.

In the energy system of Tajikistan, two companies are engaged in electricity generation – Barki Tojik and Pamir Energy. OAXC "Barki Tojik" controls power stations and networks, generation, transmission and distribution of electricity throughout the republic, with the exception of the territory of the Gorno-Badakhshan Autonomous Region (GBAO). In December 2002, GBAO's electricity supply network was transferred from the company "Barki Tojik" to the private company "Pamir Energy" on the basis of a Concession agreement for a period of 25 years. The GBAO power supply system operates in isolation, and so far has no connection with the main electric power system of the Republic of Tajikistan.

The production of electric energy is carried out by 6 large, 5 medium and 16 small hydroelectric power plants, 3 thermal power plants, which are on the balance sheet of the state OAKHK "Barki Tojik". Pamir Energy operates 13 small and mini hydroelectric power plants with a total installed capacity of 44.79

MW and a 35/10/0.4 kV transmission line with a total length of 2,609 km. In particular, the company has one solar power plant with an installed capacity of 200 kW on its balance sheet.

As of January 1, 2021, the total available capacity of the power system, with the exception of the Rogun HPP under construction, is 6,484,119 MW, including 5,766,119 MW or 88.92% of the total capacity is accounted for by the HPP, 718 MW or 11.08% – by the TPP.

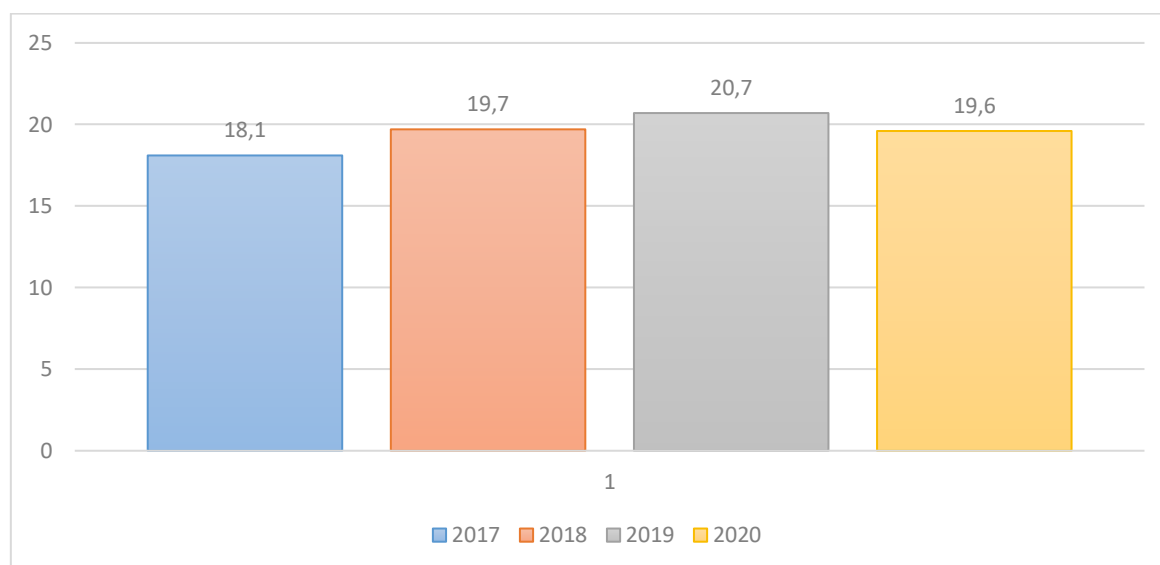
Hydropower resources are still the most highly efficient among renewable energy sources, and electricity generated at hydroelectric power plants is the cheapest of all existing methods of obtaining energy in Tajikistan. About 92% of the total electricity production in the country is generated by hydroelectric power plants.

Due to the construction of new and modernization of old HPPs and thermal power plants over the past 10 years, the production capacity of the country's energy system has increased in the amount of 1,900 megawatts. 12 substations and 1,390 kilometers of 220-500 kV high-voltage power transmission lines were put into operation.

The construction of the Rogun HPP with a total capacity of 3,600 MW is underway. Currently, 2 units with a capacity of 760 MW have been put into operation. The design capacity of the station will be reached after the completion of the dam construction.

According to the operational data of the IEVR, the annual electricity generation in the Tajik energy system in 2020 amounted to 19.6 billion. kWh. In total electricity generation, the share of large HPPs is 89.2%, medium-sized HPPs – 2.3%, small HPPs – 0.1% and CHP - 8.4%. The dynamics of electricity generation in the Tajik energy system for 2017-2020 is shown in Figure 1.

Diagram 1. Total electricity generation in the Republic of Tajikistan in 2017-2020 (billion kWh).



Potential and production of electricity using renewable energy sources

Small hydropower. The most complete assessment of the potential of Tajikistan's total hydropower was carried out in the 60s of the last century¹, where their design study and the possibility of use were noted.

Table 1. Energy resources of small hydropower in Tajikistan

Districts	Potential	Industrial
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¹ Petrov G. N., Akhmedov H. M., Karimov H. Materials of the Republican scientific and practical conference "Economics and prospects for the development of renewable energy sources in the Republic of Tajikistan". Khujand, November 12-13, 2015. https://www.researchgate.net/publication/336056537_VIE_i_ih_ocenka_v_Tadzikistane

	N MW.	E TW·h.	N MW.	E TW·h
Sughd group of districts	1288,0	11,28	450,8	3,95
Districts of republican subordination	16056,0	140,65	5619,6	49,23
Gorno-Badakhshan Autonomous Region	3713,0	32,53	742,6	6,51
TOTAL for Tajikistan	21057,0	184,46	6813,0	59,69

According to experts, the use of energy from small rivers can satisfy the electricity demand of about 500-600 thousand people living in remote regions of the country by 50-70%, and in some cases - by 100%. And today, the population of the mountain regions itself is actively building micro and mini hydroelectric power plants, using both its own funds and donor funds.

The energy of the sun. Tajikistan is located between the 36th and 41st degrees of north latitude and east longitude, in the zone of the so-called "world solar belt". The climate of Tajikistan is favorable for the use of solar energy. The number of sunny days ranges from 280 to 330 days per year, the intensity of total solar radiation varies throughout the year from 280 to 925 MJ/m² in foothill areas, as well as from 360 to 1120 MJ/m² in mountainous areas. According to estimates, the potential of solar energy in Tajikistan is about 25 billion. kWh / year.

Wind energy resources. There is a small wind energy potential in Tajikistan. The strongest winds are in mountainous regions such as FerMhenko and Anzob, as well as in the vicinity of the city of Khujand and in Fayzabad. The average annual wind speed in these regions is about 5-6 m / s . In open plains and valleys , winds with an average wind speed of 3-4 m / s can be found .

Economically, wind power in Tajikistan today cannot compete with the existing hydropower. The use of wind energy as a supplement to the main hydropower is justified in some regions.

Thermal water resources. Tajikistan has a large number of thermal springs, especially in the Pamirs. Geothermal resources in Tajikistan are poorly studied, although they are used in some areas of Tajikistan, in particular, in Khoja Obi-Garm.

The experience of a number of countries shows that thermal waters are of interest for generating electricity if their temperature is not lower than 150 ° C, and even 300 ° C. Thermal water sources with a temperature of more than 60 ° C are of interest for heating. The remaining sources can only be used for thermal water supply.

Biomass energy resources. Tajikistan has a sufficient number of cattle, horses, sheep, goats, chickens, which, taking into account some growth in the future, can provide total energy resources from livestock and poultry farming equal to 204.34 MW with an annual electricity generation of 1,790 million kWh.²

The potential of Tajikistan's renewable energy resources is shown in Table 2. Even partial use of this potential will significantly improve rural access to energy resources, stabilize the energy balance and the environmental situation in the country and the Central Asian region.

Table 2. Renewable energy resources of Tajikistan, million tons per year

Resources	Gross potential	Technical potential	Economic potential
Small hydropower	63.0	20.6	20.6
Solar energy	4790.6	3.92	1.43
Biomass energy	4.25	4.25	1.12
Wind energy	163	10.12	5.06

² Petrov G. N., Akhmedov H. M., Karimov H. Materials of the Republican scientific and practical conference "Economics and prospects for the development of renewable energy sources in the Republic of Tajikistan". Khujand, November 12-13, 2015. https://www.researchgate.net/publication/336056537_VIE_i_ih_ocenka_v_Tadzikistane

Geothermal energy	0.045	0.045	0.045
Total	5020.6	38.6	28.0

The use of renewable energy in the Republic of Tajikistan mainly accounts for small hydroelectric power plants with a capacity of up to 5 MW. According to the IEVR, 297 small-scale energy facilities have been registered in Tajikistan, including the Murghab solar power plant. The total installed capacity of all types of renewable energy power plants is 69.5 MW.

Most of the MSPPS operating in the country belong to the private sector and local communities, the construction of which was partially funded by UNDP, ADB and other organizations.

The share of energy generation from VI in the final energy consumption in the country is 1.08 percent and is mainly accounted for by small hydroelectric power plants (MSPPS). There are no other official data on renewable energy generation by other entities, as there is no data on the cost of energy produced on the basis of renewable energy (microgeneration), with the exception of isolated examples.

According to the operational data of the MEVR, in 2020, only 211206.4 thousand kWh of electricity was generated by RES, including 211164 thousand kWh by small hydroelectric power plants and 42.4 thousand kWh by the Murgab solar power plant.

Consumption. Data on electricity consumption by sectors of the economy of the Republic of Tajikistan show that the main consumer of electricity is currently the population, whose share is 59% of the total consumption in the country. The second largest consumer of electricity is the agricultural sector, accounting for 18% of total consumption, 10% of consumption falls on industrial enterprises and 13% - on other industries. In 2020, 2.9 billion rubles were consumed in the country. kWh is more than in 2014, which is a consequence of demographic processes and the development of the country's economy. There are currently no statistics on electricity consumption from MSME and CBT entities.

Diagram 2. Electricity consumption in the Republic of Tajikistan in 2018

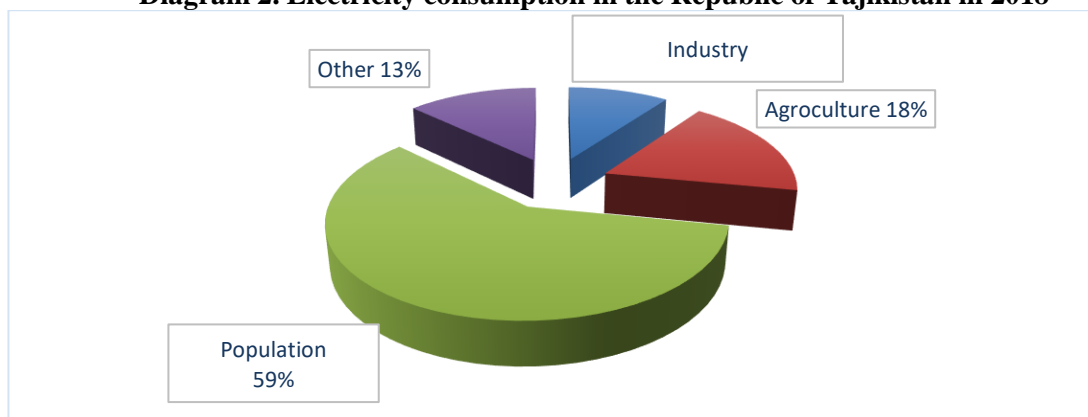
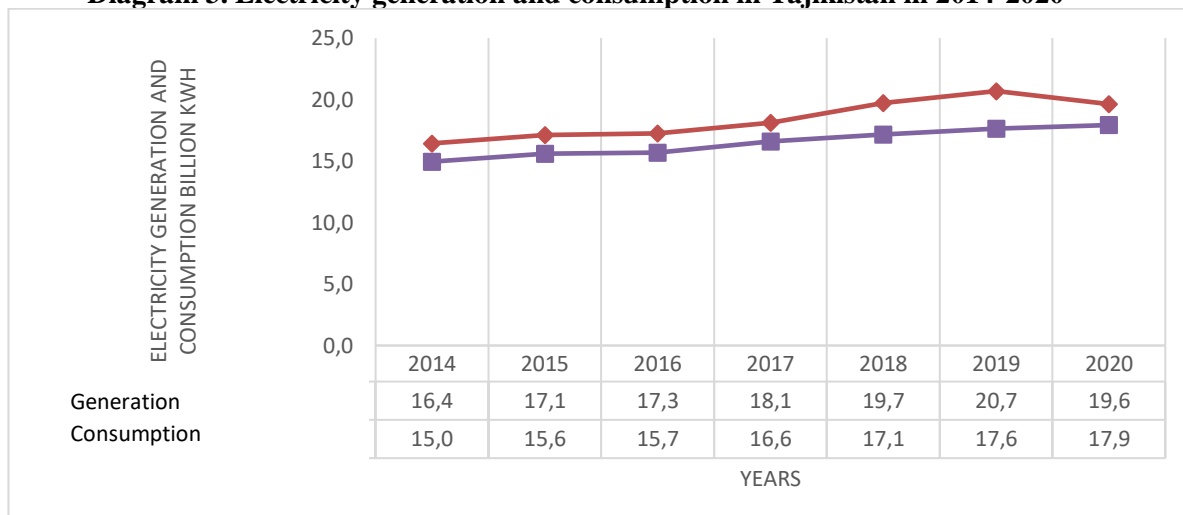


Diagram 3. Electricity generation and consumption in Tajikistan in 2014-2020

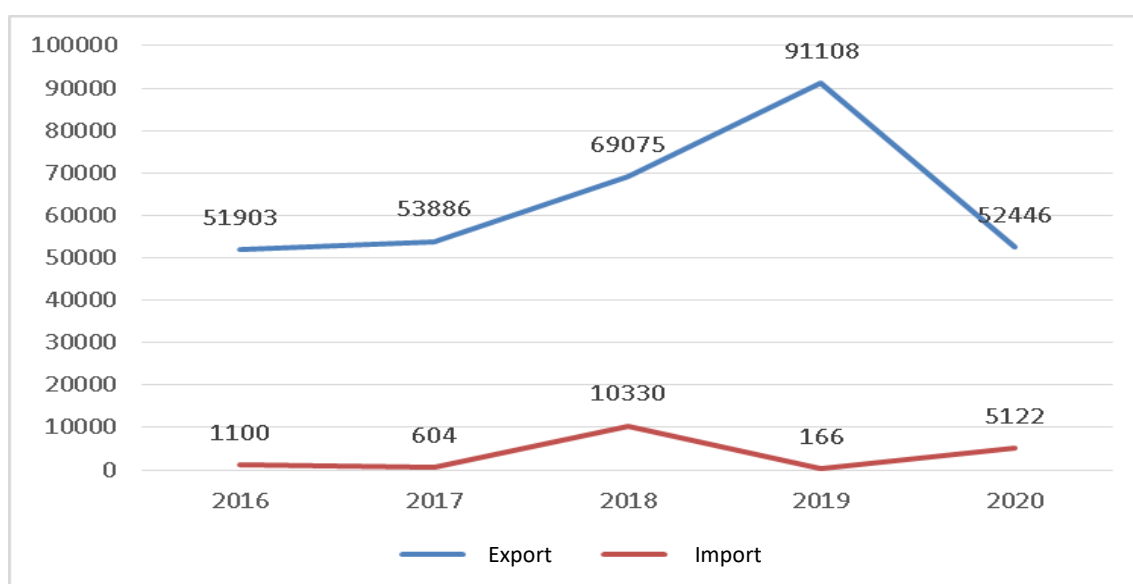


In the commodity nomenclature of foreign economic activity, the export and import of electricity play an important role. The main importing countries of Tajik electricity are Afghanistan, Uzbekistan and Kyrgyzstan. In the autumn-winter season, during the period of low water, Tajikistan partially buys electricity from Uzbekistan and Kyrgyzstan.

For export-import electricity supplies between the Republic of Tajikistan and neighboring states, there are 13 power transmission lines (power lines) of various voltages. At the same time, 3,500 MW is accounted for by power lines between Tajikistan and Uzbekistan, 500 MW between Tajikistan and Kyrgyzstan and 570 MW between Tajikistan and Afghanistan

In recent years, inter-country communications on the exchange of electricity have begun to be established. In total, in 2019, the export of electricity to the Republic of Uzbekistan amounted to 1.42 billion. kWh, to Afghanistan 1.46 billion· kWh, to the Kyrgyz Republic – 44 million kWh. The volume of exports and imports of electricity in 2020 and 2021 depended on the level of water supply to the reservoir of the Nurek HPP. The share of electricity in the foreign trade turnover of the Republic of Tajikistan in 2020 amounted to 2.3%, and in the export of goods and services – 3.7%.

Figure 4. Export and import of electricity (thousands of US dollars)³



Analysis of the most important factors and identification of key problems and priorities in the development of the sector

The electricity generated at the HPP is seasonal and depends on the flow of water in rivers. There are large fluctuations in water flows between spring-summer and autumn-winter, which leads to overproduction of hydroelectric power in summer and a shortage in winter. The lowest level of electricity generation is observed in the autumn-winter period (from October to April/May), while the demand for electricity is the highest at this time. At the same time, during the summer period, the electricity supply is the most reliable, at this time of the year there is an excess of electricity in the amount of 3-5 billion. kWh.

73% of Tajikistan's population lives in rural areas, including more than 10% in remote mountainous areas, along the valleys of small rivers and watercourses, the dispersion of which is significant. The minimum population density in such zones, in some places, is 2-3 people per 1 sq. km. There is limited access to infrastructure, as well as significant wear and tear of power equipment, utility networks, lack of capacity, resulting in periodic failures in the supply of electricity. According to experts, about 2.5 percent of the population of the republic, more than 700 villages do not have access to electricity and networks. Most of these settlements are newly created settlements that are located in remote and hard-to-reach territories.

According to the management of the OAHK "Barki Tojik", it is economically unprofitable to pull power lines, install separate transformers, and build substations in such zones. In addition, these works are

³ Export and import of the Republic of Tajikistan by HS items

the responsibility of local executive bodies of state power (MIOGV), which do not have the necessary funds, and the best option for the power supply of these villages is the installation of solar panels⁴, as well as the use of other types of renewable energy.

The issue of diversification of available energy sources is becoming more and more urgent. The tasks of improving energy efficiency and energy conservation are important, as an effective, less capital-intensive and quickly feasible way to solve energy problems. Energy losses in Tajikistan at the stages of its production and transportation amount to 3.7%, and in the consumption sector – up to 26.0%. The potential of energy saving in the country is about 3.8 billion. kWh.

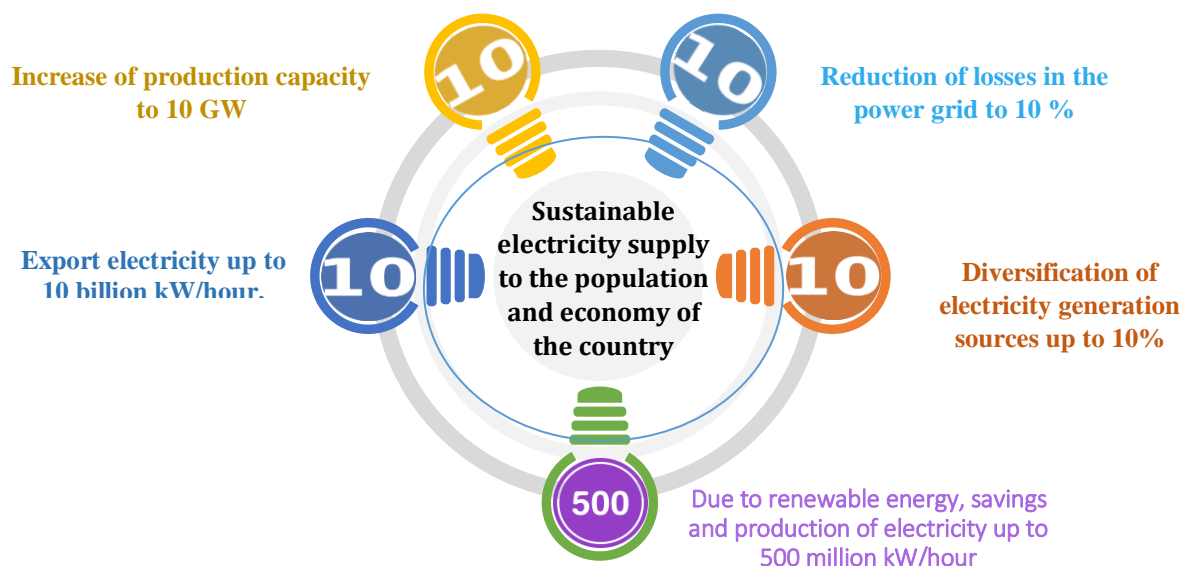
Large-scale use of renewable energy in Tajikistan (especially in rural areas and mountainous regions) will contribute to improving the energy supply of the population, reducing poverty in the country, creating conditions for human development through access to normally functioning sectors of the economy, housing and communal and sanitary services, and preserving the environment. Also, at the same time, it will contribute to the development of new modern technologies, the creation of high-tech production in the country.

The National Development Strategy of the country until 2030 (NSR-2030) sets a task to increase the share of energy generated from alternative energy sources, including renewable energy sources (small power, solar and wind energy, thermal water energy, biomass) in the total volume of electricity production to 10%.

Achieving energy independence has been defined by the Government of the Republic of Tajikistan as one of the four strategic goals within the framework of the National Development Strategy until 2030.

The NSR-2030 defines key indicators in the energy sector - 10/10/10 / 10-500, which will increase the design capacity of the country's energy system to 10 GW, reduce technical and commercial losses in the network by 10%, increase annual electricity exports to 10 billion kWh per year, diversification of the country's energy system capacity from other sources to 10 interest and obtaining an additional more than 500 million kWh per year due to renewable energy sources and the use of energy-saving technologies.

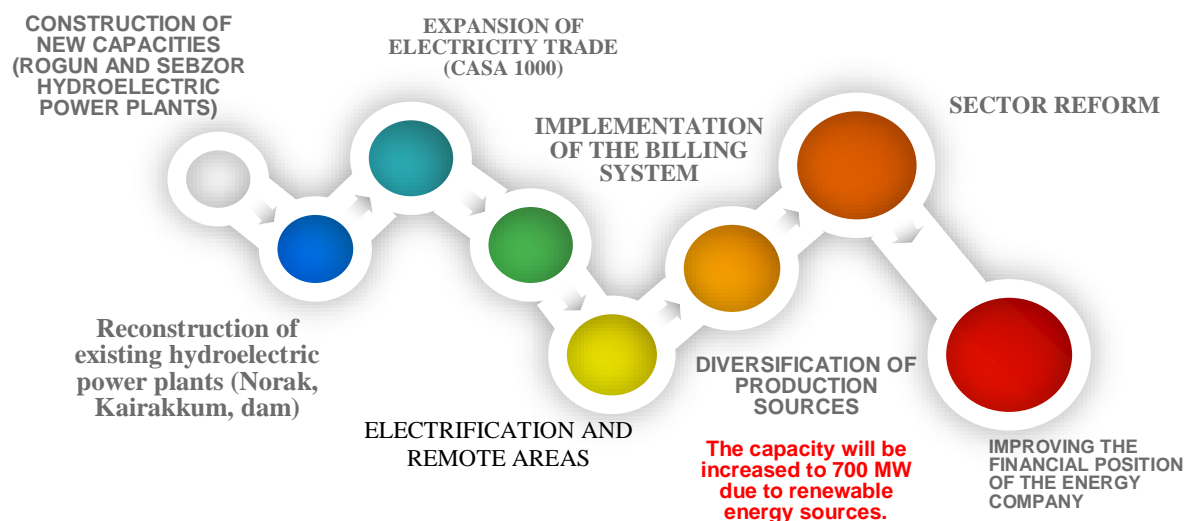
Fig. 1. Key indicators in the energy sector



⁴ In Tajikistan, over 700 villages were counted without electricity. STANRADAR, 02/16/2018 <https://stanradar.com/news/full/28465-v-tadzhikistane-naschitali-svyshe-700-sel-bez-elektrichstva.html>

Current activities

Fig. 2. Sequence of development of the energy sector



Analysis of tourism development (strategic goals of the Republic of Tajikistan for the development of the tourism sector)

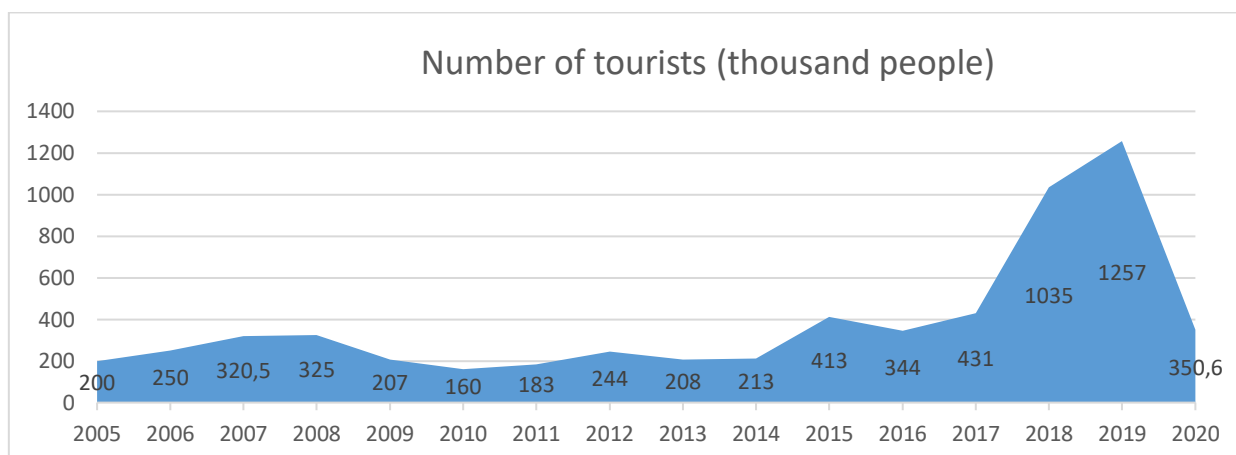
The tourism industry in the modern world is one of the most profitable sectors of the economy and plays an important role in providing employment and improving the standard of living of the population. Therefore, the creation of favorable conditions for the development of the tourism industry is considered the most important priority of the socio-economic development of the Republic of Tajikistan. The ability of tourism to create jobs, stimulate economic growth, accumulate foreign currency, improve infrastructure and promote environmental protection makes this industry an attractive means to combat poverty and accelerate local development.

As a result of the implementation of a systematic policy in the field of tourism, Tajikistan is recognized by the world tourism community as one of the best tourist destinations and a country with 4 Silk Road trails. Implementing the planned measures for the development of the tourism industry, the Government of the Republic of Tajikistan has provided important tax and customs privileges to tourism companies, they are exempt from income tax during the first five years of activity, and the import of equipment, machinery and construction materials for the construction of tourist facilities is exempt from value added tax and customs duties. The duty on the import of new cars was also reduced by 50 percent.

In order to attract more tourists to Tajikistan, the Government has introduced a simplified electronic visa system for citizens of more than 80 countries, which has contributed to an increase in the number of tourist arrivals to the country — up to 2.1 million tourists over the past five years. The decrease in the tourist flow in 2020 occurred only because of the restrictions imposed in the countries of the world caused by the COVID - 2019 pandemic, which in turn reduced the business activity of all sectors of the country's economy.

As a result of the measures taken by the Government, foreign tourists' visits to the country are increasing every year.

Figure 5. Dynamics of the number of tourists visiting the country



As can be seen from figure 5, since 2014, the flow of tourists to the country has increased. In 2019, the number of tourists visiting the country increased 6 times compared to 2014. The decrease in the flow of tourists by 3.5 times in 2020 was due to the impact of the pandemic (COVID19) and the introduction of restrictive measures.

At the same time, it should be noted that the republic's tourism resources are not being used properly in accordance with modern international tourism standards, there are large reserves for increasing the contribution of tourism to the country's GDP and increasing the potential of this industry. In this context, it should be noted that the contribution of tourism to Tajikistan's GDP in 2019 amounted to 2.5%, and in 2020 this indicator decreased to 1% (the impact of the pandemic, COVID19). This is one of the lowest rates among the post-Soviet countries. For example, in Georgia, this indicator is 27.1%, in Azerbaijan and Armenia – 14.6 and 14%, respectively, in Kazakhstan - 6.2%, in Belarus - 5.9%, in Ukraine – 5.6%, in Russia - 5%. And in developed countries, it averages 40-55%.⁵

Based on this, in accordance with the strategic goals in the tourism sector, Tajikistan has determined that by 2030 the flow of tourists to the country will increase to 2.5 million people, which, accordingly, will contribute to the growth of the contribution of tourism to the country's GDP up to 8%.

The target indicators of the Tourism Development Strategy in Tajikistan for the period up to 2030 are shown in Table 3. A significant 2.5-fold increase in the number of tourists is expected compared to 2019, which will be facilitated by an increase and improvement of the services provided in this sector.

Table 3. Target indicators of the Tourism Development Strategy in the Republic of Tajikistan for the period up to 2030. ⁶

№	Name of indicators	2025	2030
1.	Number of tourists visiting the country (thousand people)	1600,0	2500,0
2.	Tourism contribution to GDP (%)	6,5	8,0
3.	Tourism's contribution to exports (%)	12,0	15,0
4.	The share of capital in the tourism industry in the investment package (%)	5,0	10,0
5.	The share of tourism in the state budget revenue (%)	1,6	3,0
6.	The scale of services provided in the tourism industry (million somoni)	7080,0	11862,6
7.	The number of registered entities providing services in the field of recreation and treatment	410	500
8.	Employment of the population in the tourism industry (in %)	5,0	10,0
9.	Tajikistan's position in the ranking of hospitable countries conducted by the World Economic Forum	75/136	50/136

⁵ [Tourist contribution — Forbes Kazakhstan](https://forbes.kz) URL: <https://forbes.kz>

⁶ [Strategy of tourism development in the Republic of Tajikistan for the period up to 2030](https://ctd.tj/ru) URL: <https://ctd.tj/ru>

The Strategy for the Development of Tourism in the Republic of Tajikistan for the period up to 2030 states that "the main goal of the Strategy is to ensure the sustainable development of tourism in the country. To achieve the strategic goals, the following main measures will be provided:

- development of road transport infrastructure, including modern roadside facilities for sanitary and hygienic and technical services, signs and symbols in Tajik, Russian and English;
- development of the infrastructure base of tourism, covering sports and recreation complexes, recreation and entertainment;
- development of mountain and ecological tourism infrastructure;
- development of modern network infrastructure of hotels, restaurants, museums and libraries, theater and cinematographic institutions in accordance with national elements;
- development of information and communication infrastructure and financial services.
- improving the efficiency of the use of natural and recreational resources;
- environmental protection and environmental safety".

During the analysis of the Tourism Development Strategy in the Republic of Tajikistan for the period up to 2030, it was revealed that the main goal is the development of the tourism industry in the context of the "green economy".

Tourism, in the context of the "green economy", a brief analysis of the consumption and availability of renewable energy and e/e technologies in the tourism sector

Today, the level of development of the green economy is one of the determining factors of the competitiveness of the national economy.

Tourism in the context of a "green" economy means tourism activities that fully take into account current and future economic, social and environmental impacts, as well as meeting the needs of service consumers (tourists), industry and local communities. This is not a separate form of tourism – all types of tourism should become "green" and sustainable.

There is an urgent need to maximize the potential of "green" tourism for sustainable development, which is undoubtedly very great. At the same time, the development of tourism provides an incentive for the development of other sectors of the economy (agriculture, food and processing industries, transport and infrastructure, construction, services, etc.).

Research shows that the choice of tourists is increasingly influenced by environmental considerations – more and more people take into account the health of the environment when planning trips and prefer to stay in an environmentally friendly hotel. Such consumer preferences give additional impetus to initiatives to introduce "green" tourism.

In the green economy, green technologies become the determining factor of production, which include alternative energy, environmental transport, and waste management. Therefore, the issue of greening tourism, the introduction of green technologies in the tourism industry is becoming urgent.

Today, the pace of development of eco-tourism is the highest in the world and is, according to the World Tourism Organization, 6% annually. Every year, the number of ecotourists in the world increases by 7-20%. According to these indicators, ecotourism is one of the fastest growing sectors of the global tourism industry⁷.

The development of tourism is associated with an increase in energy consumption during travel, including by transport, in places of residence and during the provision of tourist services. All this contributes to the aggravation of the problem of climate change.

One of the priority areas of action in the main strategic document of the country NSR-2030 is the creation of conditions and transport and logistics infrastructure for the formation and development of tourism business in rural areas, in areas of decentralized energy supply and areas of the country with unique natural conditions, which directly echoes the objectives of the project. It is noted that this will provide new jobs, the availability, accessibility and sufficiency of food, a decrease in the number of migrant workers, the formation and development of the middle class in rural areas.

In the draft Program of medium-term development of the Republic of Tajikistan for the next five-year period 2021-2025 (AKP-2025), special attention is also paid to such new factors of economic

⁷ Afanasyev O.V., Afanasyeva A.V. The concept of "ecological tourism" in world and Russian practice: comparative analysis and cases // Modern problems of service and tourism. 2017. Volume 11. No. 4. Pp. 7-25.

development as the development of the "green" and digital economy; the effective use of the potential of the mining economy; the use of transit and tourism potential of the country. A separate paragraph of the AKP-2025 is devoted to the development of the "green economy", which, among other things, provides for "launching industrial production of solar panels and equipment at manufacturing enterprises using domestic raw materials (silicon raw materials) and thereby reducing the cost of electricity production from this source."

The lack of energy hinders the socio-economic development of these settlements, local communities, although due to their identity, the wealth of natural resources, they have significant potential for the development of CBT, which, in turn, would reduce unemployment and poverty of the local population, solve other social problems at the community level and in the whole area.

According to the results of the survey and the results of the FGD, it was revealed that of the total amount of energy consumed by subjects in the field of CBT, 85% is used to provide services for the accommodation of tourists and the provision of food (cooking, food storage), and 15% - for the manufacture and production of goods and handicrafts. Moreover, coal, firewood, gas, and liquid fuel are mainly used for these purposes.

Assessment of the state of greenhouse gas emissions and ways to reduce them at the national level

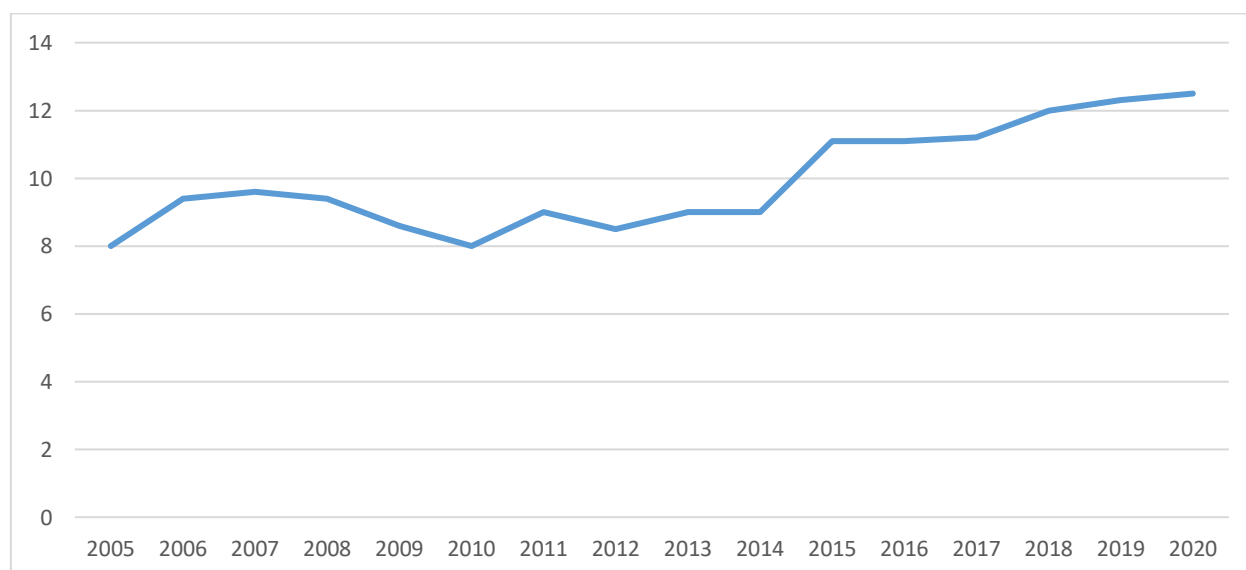
It should be noted that Tajikistan has obligations to reduce emissions, reduce the negative impact on the environment. Due to the use of hydro resources in the country that provide environmentally friendly electricity, greenhouse gas emissions in Tajikistan amount to less than one ton per person per year, and the share of the country's emissions in the region is only 5%.⁸

The country has also adopted policy and strategic documents that define the tasks of developing sustainable (green) tourism and energy efficiency growth, including through the development of energy production and consumption based on renewable energy sources.

The Law of the Republic of Tajikistan "On Environmental Impact Assessment" establishes the legal and organizational basis for environmental impact assessment, its relationship with the state environmental expertise, as well as the procedure for accounting and classification of environmental impact assessment objects.

However, despite the fact that Tajikistan occupies the lowest rungs in the world ranking in terms of greenhouse gas emissions, according to experts, greenhouse gas emissions in the Republic of Tajikistan have begun to increase in recent years.

Figure 6. Dynamics of greenhouse gas emissions (CO₂) in the Republic of Tajikistan



⁸ Ecological networks "Zoi". Tajikistan climate: facts and policy, Analytical materials and own information. 2016.

As can be seen in Figure 6, compared with 2013, GHG emissions increased 2.5 times, that is, from 8.5 million tons increased to 12.5 million tons.

According to the study, about 20% of the total emissions come from the energy sector.⁹

The following reasons contribute to the growth of GHG in the energy sector:

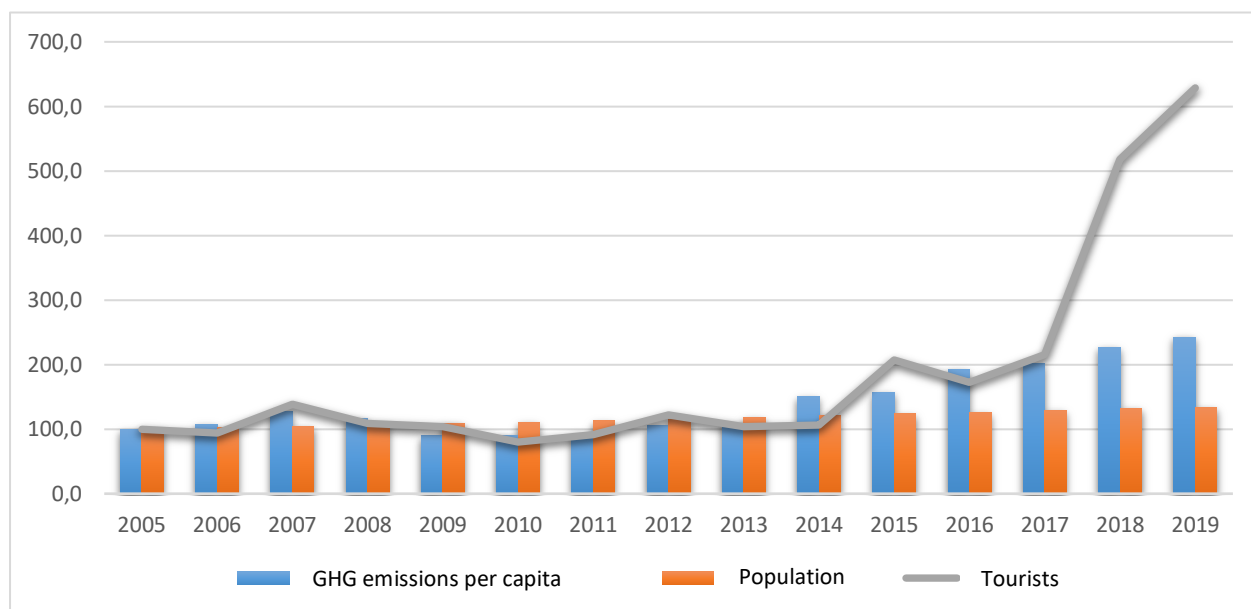
- fuel combustion activities (almost 98.5% on average of the total GHG emissions in the energy sector.)
- the growth of the country's population, including the increased number of tourists visiting Tajikistan.

It should be noted that tourism is an important source of greenhouse gas emissions on a global scale. According to various estimates, tourism currently contributes approximately 5.2–12.5% of all greenhouse gas emissions.

Therefore, the comparison of the impact of population and tourist growth and the dynamics of GHG emissions in the Republic of Tajikistan shown in Figure 7 is of interest.

To clarify the factors influencing the growth of GHG emissions, the diagram uses the growth rates of greenhouse gases, the growth rate of the number of tourists and the growth rate of the population of the Republic of Tajikistan. 2005 was adopted as the base year (that is, 2005 = 100%), and the remaining years - growth to the base year.

Figure 7. The dynamics of GHG emissions and the ratio of population growth and the number of tourists



As can be seen from figure 7, the growth rate of greenhouse gas emissions and the growth rate of the number of tourists are approximately the same until 2017. However, already in 2018 and 2019 there is a big difference. Thus, it is possible to correlate the situation of GHG emissions growth depending on population growth, including the increase in the number of tourists.

It is well known that the burning of coal, wood and burned fuels are sources of greenhouse gas emissions to the atmosphere. Based on this, it is necessary to build a model that will show the dependence of the growth of greenhouse gases on the number of tourists, the number of people and the production and consumption of coal.

⁹ Tajikistan climate: facts and policy, Analytical materials and own information of the Ecological Network "Zoi".

Figure 3. Energy and greenhouse gas emissions



The econometric model is based on the multifactorial method.

Table 4. Estimation of multiple regression coefficients

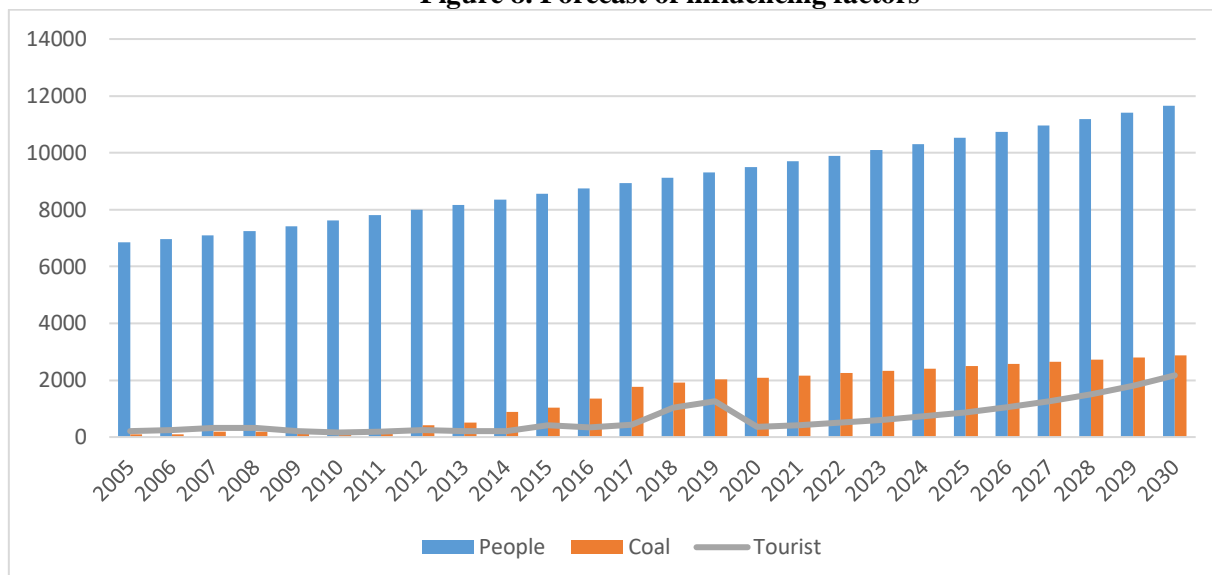
Dependent variable: CO₂

Variables	Coefficients	Std. errors	t-statistics	Probably.
Coal	2.363515	0.129075	18.31119	0.0000
Population	0.272914	0.017347	15.73245	0.0000
Tourists	0.313369	0.102674	3.052088	0.0100
R-square	0.978499	The average dependent variable		4122.667
Corrected. R-square	0.974916	Stand.off. head.perem.		1929.902
Stand. regression error	305.6591	Infor. Akaike criterion		14.45967
Sum of squares residuals	1121130.	The Schwartz Criterion		14.60128
Logarithm. Probability	-105.4476	The Hannan-Quinn criterion.		14.45817
Stat.Durbin-Watson	2.841653			

As shown in Table 4, the estimation of multiple regression coefficients, the largest impact on greenhouse gas emissions is observed from the production and consumption of coal (the coefficient of influence is 2.36)

According to forecast data, by 2030, coal production in the country will increase by 38.5%, the population of the Republic of Tajikistan will amount to over 11.5 million people, and the number of tourists will reach almost 2.5 million people.

Figure 8. Forecast of influencing factors



All these indicators ultimately contribute to an increase in greenhouse gas emissions. The following linear multiple equation is used to predict greenhouse gas emissions due to these three factors

$$co_2 = b_1 coal + b_2 pop + b_3 tour$$

Where are co_2 –greenhouse gas emissions

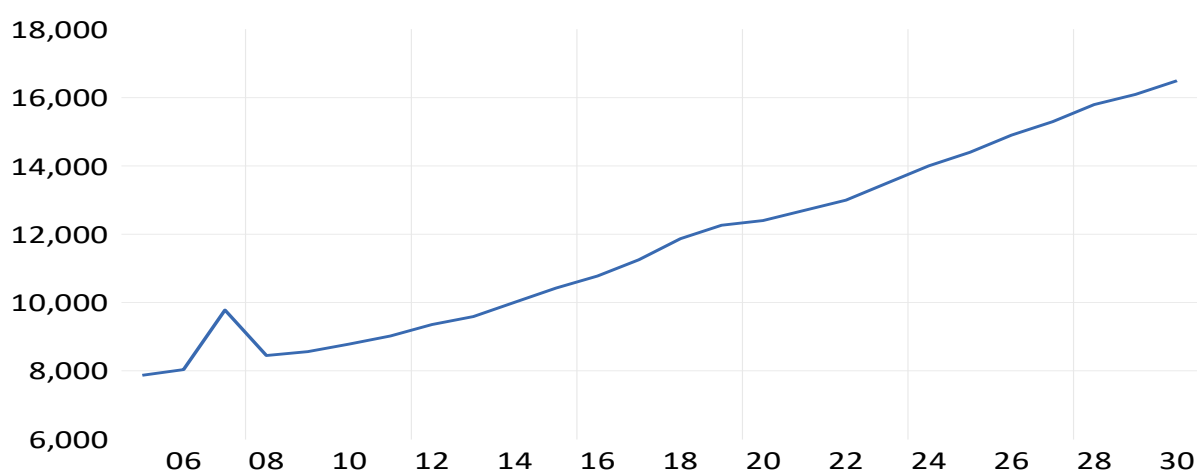
$coal$ – coal production volume

pop – population size

$tour$ – number of tourists

b_1, b_2, b_3 –equation parameters

Figure 9. Forecast of greenhouse gas emissions in the Republic of Tajikistan

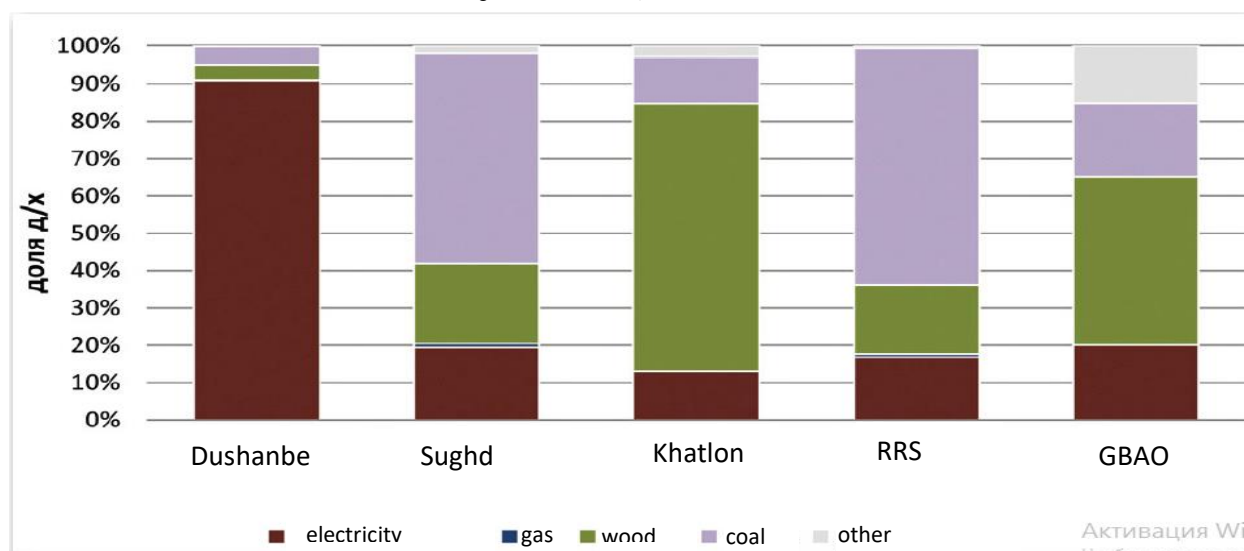


Based on the equation and calculation, it is predicted that greenhouse gas emissions in the Republic of Tajikistan may reach 16.5 million eq. tons by 2030, that is, they will increase by 25% compared to 2021 (see figure 9).

Thus, in order to reduce greenhouse gas emissions, it is necessary to reduce coal consumption, replacing its use with the introduction of renewable energy.

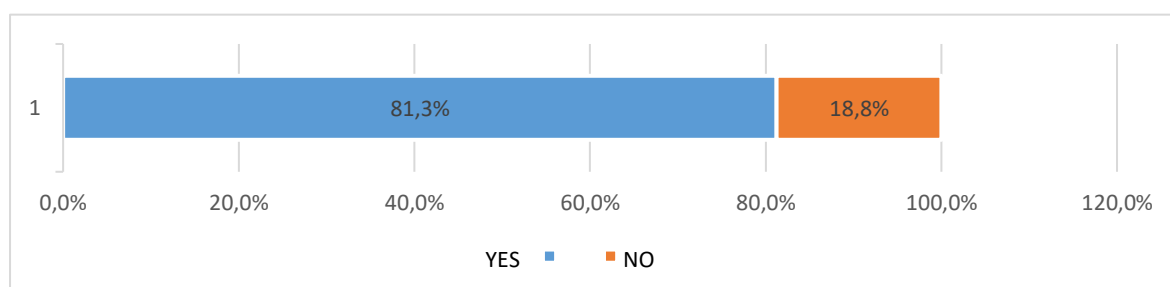
Data from the 2013 Long-term Inclusive Social Survey in Central Asia (CALISS) ¹⁰ show that there was a significant difference in energy consumption in the context of urban and rural populations, as well as territories. The population of densely populated and large cities of the country mainly used electricity, whereas in rural areas, in particular, in the Khatlon region and GBAO, wood was the main source of energy for heating, and in the Sughd region and the RRP, most families heated their homes using coal. It is characteristic that the use of hydrocarbons and other fuels for heating purposes prevailed over the consumption of electric energy. Coal and agrofuels accounted for the bulk of the population's energy expenditure.

Figure 10. Assessment of the situation related to the lack of energy for the population in Tajikistan. WB, June 2014



The data on the results of the survey and focus group discussion of CBT entities conducted by the expert group of the project in February-March 2021 also confirm the predominance of the use of hydrocarbons for heating, cooking, hot water supply. So, to the question "Do you use hydrocarbon fuel for heating, cooking food, hot water supply", more than 81% of respondents answered "Yes".

Figure 11. Do you use hydrocarbon fuel for heating, cooking and hot water supply?



Reduction of greenhouse gas emissions in the energy sector can be achieved:

- by increasing energy efficiency;
- the introduction of an alternative option for the production of electricity and thermal energy (based on RES).

The first group of measures involves improving insulation and reducing electricity losses through the introduction of energy-efficient technologies, such as double-glazed windows, thermal insulation materials, appliances (smart home).

¹⁰ Source: Multi-year Inclusive Social Research in Central Asia (CALISS) 2013 Final report on the assessment of the situation related to the shortage of energy for the population in Tajikistan, World Bank, June 2014.

The second group of measures focuses on obtaining energy using the energy of small watercourses, solar, wind and geothermal sources, respectively, the construction of mini and microelectric power plants for microgeneration.

Assessment of the profit of the state, entrepreneurs and households from the introduction of renewable energy

With the introduction of renewable energy in the tourism sector, the state will profit from the following:

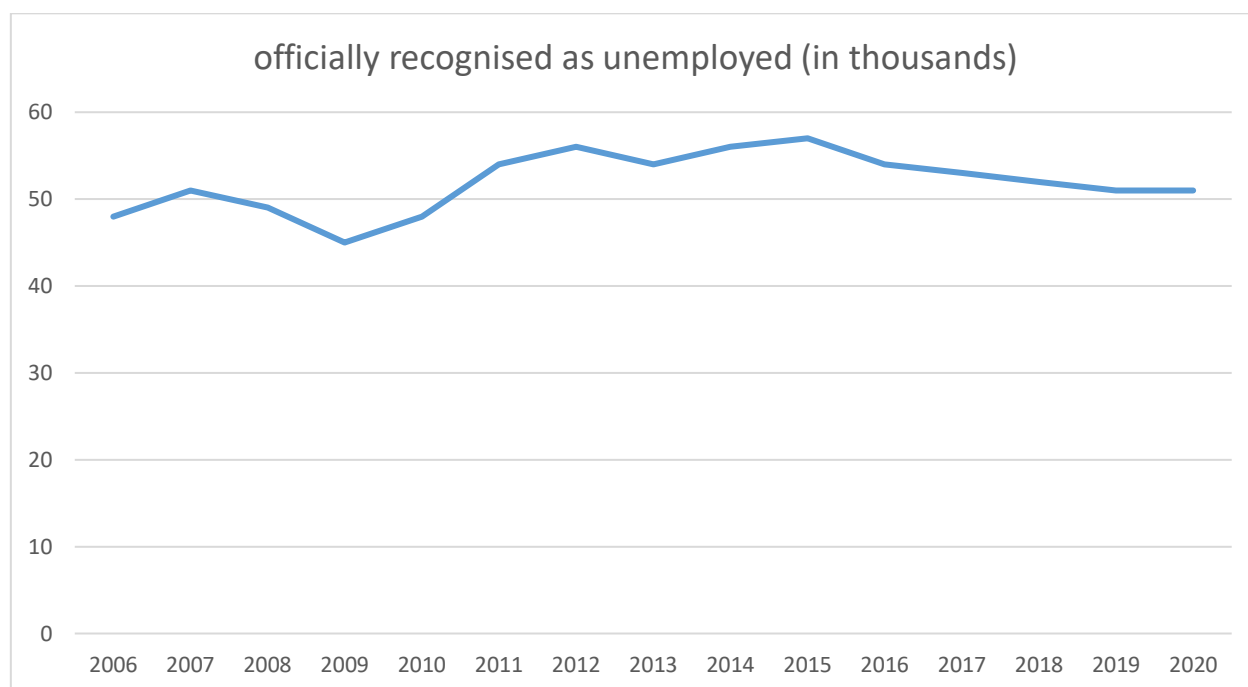
1. ***The growth in the number of tourists.***

As mentioned above, ecotourism is developing very quickly (the annual growth rate is 6%). Therefore, the introduction of green technologies in the tourism sector in Tajikistan (based on renewable energy) will increase the interest of tourists in visiting the country, which in turn will contribute to the growth of tax revenues.

2. ***Creation of new jobs.***

On the one hand, the increase in tourists will accordingly expand the field for the provision of services for their maintenance. On the other hand, the use of renewable energy sources as microgeneration will require the involvement of specialists in the design, installation and maintenance of appropriate equipment. All this will increase employment in the tourism sector and lead to a decrease in unemployment. In 2019, it was recorded that the total contribution of the tourism sector to the employment of the country's population is 182.1 thousand people (taking into account the jobs created by the tourism sector for other sectors, for example, handicrafts).¹¹

Figure 12. Unemployment



As for entrepreneurs (importers/exporters of renewable energy technology, producers of microgeneration), their profits from the introduction of renewable energy will also increase. Since the demand for E/E technologies and equipment for the use of renewable energy in connection with the transition to a green economy in all countries of the world has increased.

The introduction of renewable energy will contribute to the creation of a new market for the supply of technologies and equipment for the use of renewable energy and services for their maintenance, which in turn will stimulate domestic manufacturers to produce renewable energy technologies and equipment.

¹¹ World Data Atlas. Tajikistan. Tourism. The overall contribution of tourism to employment. <https://knoema.ru/atlas>

Also, owners, producers of electricity from renewable energy sources, have the opportunity to increase their profits by technological connection to public networks and the sale of surplus electricity produced.

Households, in turn, when obtaining the appropriate legal status, can create hostels on the basis of a Green certificate, provide services to tourists, including the production of goods and handicraft products in demand among tourists. Thus, households will be able to improve their social status and quality of life.

Analysis of RES technology supply channels to Tajikistan

In order to determine the supply channels for renewable energy technology and equipment, it is initially necessary to analyze their manufacturers.

It is known that the Financial and Analytical agency Bloomberg (Bloomberg) ¹²compiles and publishes a rating of global producers of renewable energy technology every year. When compiling them, a large number of factors are analyzed, including the annual volume of manufactured goods, the level of technical equipment of production, investment attractiveness, etc.

In recent years, the TOP 5 manufacturers have not changed dramatically. As before, the leading position is occupied by Chinese manufacturers. (the assessment was made both in terms of volume and quality of production).

Table 5. TOP 5 producers of renewable energy technology in the world market

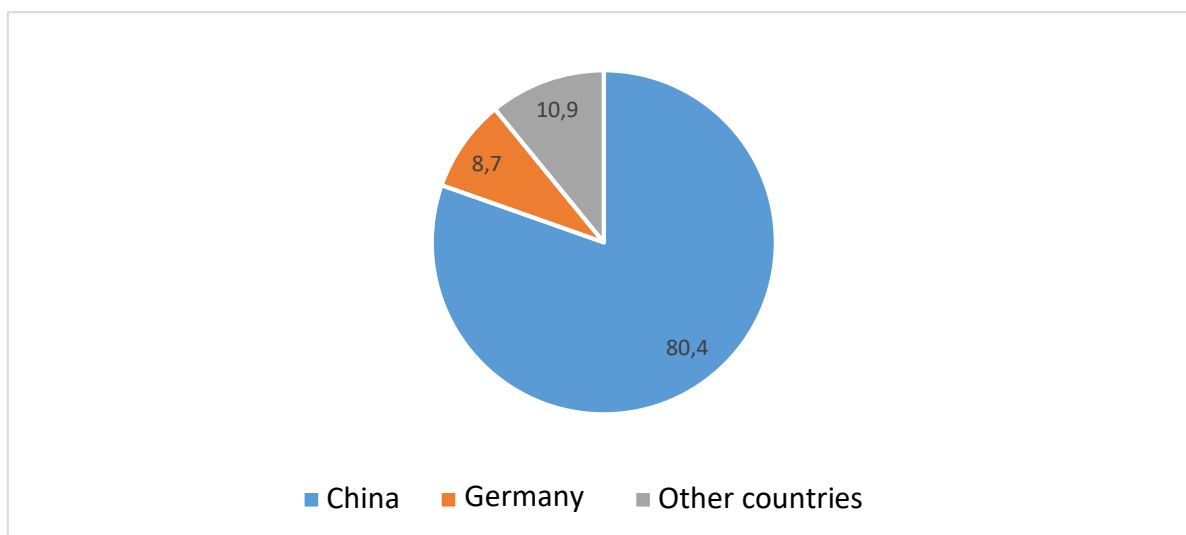
<i>Rating</i>	<i>Solar panels</i>	<i>Wind generators</i>	<i>Micro hydroelectric power station</i>
1	China - Jinko Solar	Denmark - Vestas	China, Japan, Germany, Russia, Ukraine,
2	China - JA SOLAR	South Korea - Siemens Gamesa	
3	Canada - Canadian Solar	China - Goldwind	
4	South Korea - Hanwha Q CELLS	France - GE Renewable Energy	
5	China - Trina Solar	Germany - Enercon	

Also, in China, the production of renewable energy technology is cheaper. Due to cheaper production and large output volumes, Chinese manufacturers have invested heavily in research and development activities, which has allowed to improve technologies for the production of solar panels. By introducing new technologies, Chinese manufacturers increase RES, while reducing production costs.

Given these factors, the main suppliers of technologies for renewable energy sources in Russia and Belarus are China and Germany. As can be seen from figure 13, the share of suppliers from China is 80.4%, from Germany – 8.7%, the remaining 10.9% falls on other countries of the world.

¹² [TOP 10 Solar Panel Manufacturers 2019 \(eenergy.com.ua\)](https://eenergy.com.ua/) <https://eenergy.com.ua/>

Figure 13. The share of the main suppliers of renewable energy technologies to Russia and Belarus



The analysis shows that China is the best option for Tajikistan as a supplier of renewable energy technologies, since their production there is cheaper than that of other manufacturers. In addition, Tajik entrepreneurs already have experience in trading with China.

As for the supply channels, road (cargo) transportation between China and Tajikistan has been developed and is expanding, which is mainly carried out at the Kulma checkpoint on the Tajik-Chinese border.

The roadmap, its purpose, a reference point for the community based tourism sector

The purpose of the roadmap is to create conditions for the introduction of renewable energy and E/E technologies in the community based tourism sector, thereby increasing the consumption of clean energy from renewable energy sources and reducing the use of coal and wood to produce energy that contributes to reducing greenhouse gas emissions into the atmosphere.

The developed document provides information that substantiates the relevance of this Roadmap, its relationship with national and sectoral priorities and international obligations.

This roadmap is a development plan that defines the goals and desired result for expanding the use of renewable energy and improving E/E for the community based tourism sector in the Republic of Tajikistan for the long term (until 2030) and includes the main steps or stages necessary to achieve it.

The roadmap also serves as a means of communication, a document consolidating the opinion of a wide range of participants and stakeholders (in particular, responsible ministries and departments, representatives of civil society and the private sector involved in the process of developing the use of renewable energy and the growth of EE by CBT entities, production, import and export of equipment for renewable energy and EE).

RIA in the system of state regulation of Tajikistan

The implementation of the project assumes that when developing a RM to solve the problems of alternative energy supply based on renewable energy and the growth of energy efficiency in the tourism sector (CBT), the RIA methodology, which is enshrined in the legislation of Tajikistan, will be used.

This methodology establishes the procedure for analyzing the regulatory impact of regulatory legal acts on the activities and development of business entities. RIA is used in the development of draft NLAs and in the analysis of existing NLAs that affect the activities of business entities, contributes to the substantiation of the norms governing entrepreneurial activity proposed in the draft NLAs.

One of the expert conclusions in the Report on the analysis of the energy sector was determined by the lack of compliance with the norms of legislation on the periodic assessment of the impact of decisions and government programs on development.

In accordance with Article 34 of the RT Law "On Regulatory legal acts of the Republic of Tajikistan" (dated 30.05.2017, No. 1414), it is necessary to introduce a procedure for analyzing the regulatory impact (RIA) of permissive NLAs on entrepreneurial activity, optimizing the permissive regulatory system.

According to the Law, further removal of administrative obstacles and restrictions in the field of entrepreneurial and investment activities should be carried out through the analysis of regulatory impact as a process of revision and optimization of the regulatory regulatory framework in this area.

At the same time, it is also necessary to be guided by the requirements of the following regulatory legal acts regulating the process of developing and adopting an NLA:

- Law RT dated 02.08.2011, No. 751 "On the licensing system" Article 18, Chapter 3;
- Law of the Republic of Tajikistan "On State forecasts, concepts, strategy and programs of socio-economic development of the Republic of Tajikistan";
- Resolution of the Government of the Republic of Tajikistan dated November 18, 2015, No. 673 "On the adoption of the Concept of the Regulatory Impact Analysis System in the Republic of Tajikistan".

The "Concept of the Regulatory Impact Analysis System in the Republic of Tajikistan" adopted by the Government obliged ministries, state committees, administrative departments, other executive authorities, local state authorities and local self-government bodies to be guided by this RIA methodology when developing regulatory legal acts regulating entrepreneurial activity.

The main role of the RIA in the public administration system is to eliminate rash and inappropriate decisions at the stage of adoption of the NLA, entailing negative consequences or uncertainty.

The principles of RIA are: validity, objectivity, transparency, consistency and clarity.

The RIA methodology, the main purpose of which is to get an answer to the question whether the benefits received from the adoption of the NLA exceed the costs incurred by the private sector associated with meeting the requirements of the introduced NLA, is used within the framework of this Project.

One of the principles of RIA is the openness of the process, through the involvement of stakeholders.

Proceeding from the above, on the basis of the order of the Minister of Energy and Water Resources of the Republic of Tajikistan dated May 03, 2021, No. 31, an Interdepartmental working group was established, which included representatives of interested ministries and departments, business structures and public organizations. The main task of the IWG is to participate in the development of the Roadmap, the preparation of proposals for amendments and additions to the legislation of the Republic of Tajikistan and the NLA, as well as decision-making in order to eliminate obstacles in the development of entrepreneurship of MSME entities providing tourist services at the community level.

Identification of participants in legal relations and identification of target groups

When preparing the Report on the Analysis of the energy sector, fulfilling the requirements of the methodology of regulatory impact analysis (RIA), an analysis was carried out, taking into account the generalization of the opinions of stakeholders collected by conducting their survey through questionnaires and discussion at a round table and focus group discussion with the participation of about 126 respondents.

The main task of the survey and the FGD was to identify the problems and current situation of the business environment, production and use of renewable energy/EE and the community based tourism sector. Target groups were allocated to solve this problem.

Target audience:

- importers/exporters (supply and sale) of finished goods, equipment, appliances, devices, components using RES/EE
- manufacturers of finished goods, equipment, appliances, devices, components using renewable energy/EE and energy saving, works and services
- producers, generation and sale of electricity
- financial and credit sector
- public sector
- civil society, academic and university circles

- subjects of tourism at the community level.

74 respondents were interviewed using the approved two following questionnaires:

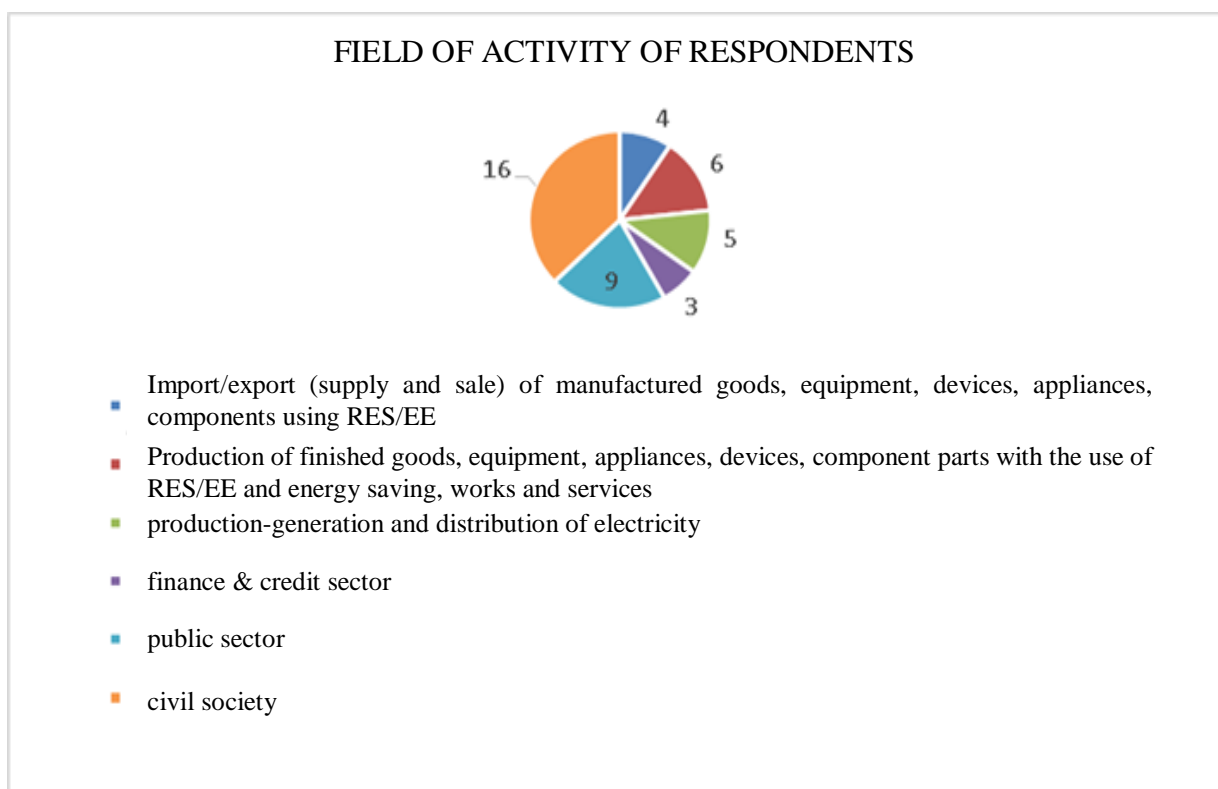
Questionnaire 1 - for representatives of the public sector, non-governmental organizations, academia, importers and exporters of RES equipment, equipment manufacturers, organizations generating RES and EE;

Questionnaire 2 - for CBT entities (owners of guesthouses, hostels, private community hotels and representatives of tourism campaigns).

Out of the total number of respondents, 57% were participants in the survey on the first questionnaire, i.e. 42 respondents, 4 of them women (10%).

According to the field of activity, the respondents who answered the first questionnaire varied as follows:

Figure 14. Respondents' field of activity



43% or 32 respondents participated in the survey on the second questionnaire, 7 of them were women (22%). Of the total number of respondents who answered the second questionnaire, 78% were subjects of community-based tourism (owners of guesthouses, homesteads, etc.) and 22% were representatives of tourism campaigns.

21 people, including 5 women (23%), took part in the FCD, and 31 people, including 7 women (23%), took part in the round table

Assessment of the actual effectiveness of policies (program documents) and justification of proposals for policy improvement

Tajikistan has formed legislation covering the sphere of relations in the field of energy, including in terms of regulating relations on the use of renewable energy. The regulatory and legal framework of the tourism industry has also been formed.

However, energy law in Tajikistan, despite its importance in the social aspect, for the development of entrepreneurship and attracting investment, including for the development of CBT, is still far from perfect. As the volume of work carried out in this area increases, and investors' interest in energy and tourism facilities in Tajikistan increases, the importance of improving the regulatory framework of the

energy and tourism sectors increases, and the timely introduction of necessary amendments to legislation taking into account the interests of all interested parties.

It should be noted that the current strategic program documents do not sufficiently cover the development of CBT entities as a priority, and measures to improve the quality of their services through the use of renewable energy and E/E technologies are not specified. The issues of creating local networks and systems of heat, water, energy supply, production and consumption are not considered. This is considered the subject of industry programs in the field of energy, which reduces the synergistic effect. In the program documents, there is no relationship between planning the use and development of RES and E/E with the budgeting process. The main focus is on the development of large projects and entities, and the interests of small and medium-sized businesses to increase profits, increase production and sales are not reflected, there are not even prerequisites for the development of entrepreneurship in the field of renewable energy.

Assessment of the impact of the current norms and provisions of legislation on the development of economic and economic activities of MSME, CBT entities and on entrepreneurial activity in related fields.

As noted earlier, 73% of Tajikistan's population lives in rural areas, including more than 10% in remote mountainous areas.

According to the current legislation, priority zones and places for the use of renewable energy are, in particular:

- ✓ zones of decentralized energy supply where, due to low population density, the construction of traditional power plants and high-voltage power lines is economically unprofitable or practically impracticable;
- ✓ zones of centralized power supply, where due to the unsatisfactory condition of energy networks or a shortage of power or energy, frequent disconnections of consumers occur, which leads to significant economic damage and negative social consequences;
- ✓ settlements and places of mass recreation of the population, where a difficult ecological situation is created due to harmful emissions into the atmosphere of industrial and urban boilers on organic fuel;
- ✓ settlements, cottages and places of temporary residence of people where there is a problem of heating, electricity and hot water supply.

In fact, ecological and mountain tourism is most developed in these zones.

As noted above, at the first stage of the project implementation, target groups were identified who participated in the analysis, through questionnaires, participation in a focus group discussion and at a round table, as beneficiaries and stakeholders of the process.

At the second stage of the work, it is necessary to determine the range of MSME subjects, suppliers of technologies and equipment for the use of renewable energy and energy efficiency growth in the community based tourism sector, subject to changes or measures of state support, state regulation, for which the following is necessary:

- identify those homogeneous groups of entrepreneurs, on whose activities the achievement of the set goal depends;
- determine who will be affected and who is interested in changes.

According to the results of the discussion, the IWG (Protocol No. 2 of October 12, 2021) determined that the beneficiaries who are interested in changes and the impact of the policy on the implementation of renewable energy, in particular, these are:

- **Legal entities, private entrepreneurs of the community based tourism** who intend to use technologies, equipment, resources to obtain clean energy based on renewable energy sources and apply technologies and materials for energy efficient use of resources (owners of hotels, hostels, guest houses, motels) that provide services to tourists (namely: accommodation services, transport services, food, internet service, heating) located in mountainous areas and not having access to electricity
- **Owners** - producers of small and microgeneration from renewable energy sources
- **Owners of local renewable energy** systems, autonomous complexes of generation, transmission, storage and consumption of energy

➤ **Service services and entrepreneurs** who provide engineering services in the field, for technical support of certain types of activities from the design stage, the creation of the object to the operation, maintenance and repair of the object.

➤ **Suppliers** – firms, companies, organizations, individual entrepreneurs, manufacturers of goods, works, services of renewable energy equipment and energy-efficient technologies:

- **Suppliers of renewable energy technologies**

- **Suppliers of E/E technologies**

Including:

- importers/exporters (supply and sale) of finished goods, equipment, appliances, devices, components using RES/EE

- manufacturers of finished goods, equipment, appliances, devices, components using renewable energy/EE and energy saving. (solar installations, generators, manufacturers of devices (smart home), double-glazed windows, thermal insulation materials, convectors, recuperators, heat pumps, etc.)

➤ **Consumers (households)** located in decentralized zones where electricity and heat are generated by very low-power facilities, on-site or near the place of consumption, regardless of size, technology or fuel - both off-grid and in parallel with the grid.

Consumers are legal entities and individuals, private entrepreneurs of the community based tourism sector who intend to use technologies, equipment, resources to produce clean energy based on renewable energy sources, as well as apply technologies and materials for energy efficient use of resources (owners of hotels, hostels, guest houses, motels) that provide services to tourists (accommodation services, transportation services, food, internet service, heating) located in mountainous areas that do not have access to electricity.

Assessment and analysis of environmental problems, identification of market failures and gaps

During the survey of CBT entities at the first stage of this project, it was revealed that 80% of respondents use coal, wood and other types of burned fuel to generate energy to provide services to tourists. Basically, these services are designed for cooking, room heating and water heating.

The analysis of the responses received during the survey and focus group discussions conducted by the project's expert group in February-March 2021 showed that the majority of respondents from among the subjects of CBT know the main types of RES and the possibilities of E/E. They indicated which of them could be developed in their respective territories.

Basically, respondents chose the following 3 types of RES for the development of their business and taking into account their capabilities:

1. Hydropower (47%)
2. Solar energy (33%)
3. Wind energy (20%)

Eco- and mountain tourism are among the preferred tourist destinations among foreign tourists. The East Pamir (GBAO) and Fan Mountain (Zarafshan Valley) destinations are particularly popular among them. These destinations are mainly located in remote and hard-to-reach mountainous areas, where the providers of tourist services are the subjects of CBT, and belong to the zones of decentralized energy supply, which, due to the low population density and the dispersion of settlements on the territory, cannot be provided with energy from centralized energy generating sources. Therefore, in these zones of decentralized energy supply, the full use of renewable energy is a conscious necessity today, which can become more efficient sources of energy supply.

In this regard, for tourist sites located along the valleys of small rivers and watercourses, it is advisable to use mini and micro hydropower plants located in close proximity to CBT facilities, potential consumers. This will allow rational use of renewable energy resources and avoid large investments in the construction of expensive power lines and step-down transformer substations.

The possibility of efficient use of solar energy is available for tourist sites located in areas of decentralized energy supply and in settlements that do not have access to electricity. At present, when energy prices have sharply increased, the costs of using solar energy for household needs are becoming comparable with the costs of using electricity from other energy carriers. The great advantages of solar energy for this sector are the absence of the need for the development of power lines, the speed of

development and focus on individual consumers, the use of low-power decentralized generation for the object, sufficient only for one private house for the purpose of microgeneration. At the same time, the excess energy produced is transferred to the grid (if available), and the lack of generation is replenished from the grid, and can also be sold to other consumers.

The wind energy potential in Tajikistan can be used for tourism facilities in certain areas of the country as autonomous or additional sources of low-power energy. Having no great industrial significance, wind energy can solve important social problems, providing energy to farms, pasture and beekeeping cooperatives, small tourist facilities for raising water, grinding grain, etc.

Along with other renewable energy sources, thermoelectric converters for generating electric energy, as well as the use of low-temperature potential of the earth and watercourses using heat pumps, may be promising for CBT in the mountainous regions of Tajikistan. The calculations have shown that, for example, in the conditions of the Pamirs, thermal springs are very competitive compared to coal and petroleum products imported to the region. At the same time, the main advantage of geothermal developments is the renewable nature of these resources, as well as environmental safety.

The study revealed that the country inefficiently uses RES and E/E resources to meet the needs of MSMEs in the field of CBT located in remote and hard-to-reach regions of the country for a number of reasons.

When asked which of the following problems most hinder the development of the use of renewable energy and the growth of EE in the tourism sector of the Republic of Tajikistan, the following generalized answers were given:

- 69.4% indicate weak investment attractiveness and low business activity on the introduction of technologies and the establishment of production facilities in the field of renewable energy and EE,
- 52.8% indicate an insufficient level of human resources and low availability of specialists in the field of RES and EE,
- 50% note weak state support and insufficient stimulation of the industry,
- 50% indicate limited access to information about RES and EE,
- 36.1% consider dependence on import of technologies and equipment for RES and EE to be a problem of the industry, 33.3% note insufficient strategic planning,
- 30.3% identified imperfect environmental requirements, lack of "green certification" of tourism facilities,
- 27.8% indicate low interest of citizens and tourism entities in the use of renewable energy.

Along with the increase in the number of stays of foreign tourists in the mountainous regions of the country, the activity of entrepreneurial initiatives to create community-based tourism services is increasing. In particular, catering and trade points are being created, the production of handicraft goods is being established, transport and other services are being provided, hotels and hostels are being created within households and in suburban areas. In particular, in Khorog, Rushan, Murghab, Ishkashim, DRIAAz districts, Varzob and Ramit villages, Karatag and Fan mountains, etc. Accordingly, the need of MSME subjects for electricity and sustainable access to it increases.

Mainly in tourist areas and households use low-power stations (microgeneration) to generate electric energy, including MPPS with a capacity of 5 to 30 kW, solar hot water sources, wind farms, which are most often used to meet their own needs. It is advisable and effective to use microgeneration for lighting, food preparation, water heating, the use of communication and mass media (television, radio, computer technology).

According to the definition of the World Distributed Energy Union (WADE), MICROGENERATION is the use of a low-power decentralized generation facility sufficient for only one private house. At the same time, the excess energy produced is transferred to the grid, and the lack of generation is replenished from the grid. Microgeneration should provide, at a minimum, the needs of backup power supply. The restriction to the needs of a private house follows from the very principle of decentralized energy, which provides for the maximum approximation of generation to the consumer.

Generating equipment can use renewable sources of electricity - solar panels, microelectric power plants, wind generators, or refers to traditional energy - diesel generators. But within the framework of the ongoing project, it is important to encourage RES-microgeneration.

It should be borne in mind that the microgeneration object;

- belongs to the consumer of electric energy;
- connected to the power grid at a voltage level not exceeding 1000 volts;

- the volume of electricity output to the grid does not exceed the maximum installed capacity at the point of delivery specified in the documents on technical connection
- electrical equipment intended for servicing more than one room in the building, including those included in the common property of an apartment building, is not used to supply electrical energy of such an object to the electrical network.

The economic goal and business benefit of microgeneration is the possibility of technological connection to public networks and the sale of surplus produced energy to a guaranteeing supplier.

However, there is no concept of "Microgeneration" in the current legislation of the Republic of Tajikistan, which has a negative impact on the widespread use of renewable energy in CBT and does not allow them to consider this factor as obtaining the necessary benefits from them.

Identified problems

Over the past 25 years, significant changes have taken place in the structure of energy consumption in the country. The geography of consumption has changed, until 2018 there were such problems in the country as the instability of energy supplies to rural settlements (4-5 hours a day), the deterioration and low energy efficiency of energy production enterprises, an increased level of energy losses – more than 0.6%.

Until 2015, the share of industry in energy consumption exceeded other categories of consumers (population, agriculture, etc.), and then gradually began to decline due to falling production volumes, deterioration of the financial condition of enterprises and other internal and external negative factors.

In recent years, there has been an increase in the structure of energy consumption in favor of the population due to the commissioning of new capacities for generating electricity, heat, as well as an increase in the level of daily duration of providing electricity to the population (24 per day). At the same time, there was an increase in consumers (MSME subjects) in those territories where it was not assumed that there was capacity to meet business (production) needs.

In general, the legal analysis carried out, the generalization of the results of the Survey, the FGD and the Round Table at the first stage of the project implementation made it possible to identify gaps and shortcomings in the regulatory framework and implemented policies of the Republic of Tajikistan in the field of energy generation and consumption based on renewable energy, increasing E/E in the CBT sector.

It was also revealed that there are key problems and gaps hindering the development of entrepreneurial initiatives, such as the uncertainty of their legal status, as well as limited access of MSME entities in the field of CBT to resources such as land, information, finance, labor, technology, which are discussed in the following sections of this Roadmap.

The level of business literacy of the population of remote and hard-to-reach mountainous areas on the organization of entrepreneurial activity in the field of renewable energy use, the benefits from the growth of E/ E at the CBT level is insufficient.

The low level of legal awareness, technical and financial literacy is monitored. The majority of respondents and participants of the FGD believe that the main barriers to the growth of the use of RES by MSME subjects in the field of CBT are their high cost and lack of own funds for the design, installation, purchase of RES equipment, materials, E/E technologies.

It is noted that RES equipment is technically complex devices, and CBT representatives lack the skills of their maintenance and operation. In addition, they confirm their low awareness of the benefits of using RES/EE, the complexity of obtaining permits and placing generating facilities on land and sites, facilities.

The causal relationships of the problems hindering the sustainable development of renewable energy and E/E production in the CBT sector by the main factors in the Report were presented as follows:

"INFORMATION"

Environmental issues:

The inability of MSME entities to independently collect, analyze technical information, copy (adopt the experience of using renewable energy sources, E/ E to obtain green benefits).

Reasons:

- Low level of literacy of CBT entities on the use of RES and E/E.
- Lack of funds to attract specialist consultants.
- Limited technical, economic, and financial information, with the exception of advertising.

- Problems of the public administration system:
- Limited information for management decision-making at the level of authorized authorities on the actual needs of the tourism sector and trends in the development of macrogeneration.
- Lack of a system for reporting and monitoring the development of RES and E/E.

Reasons

- Lack of an adequate reporting system and information security in decision-making.
- Lack of assessment of the impact of legislation and policies on the development of RES and E/E.
- Low awareness of the responsible employees of the ministries and departments involved about the current strategies and programs for the development of tourism in the country.
- The quality of statistics and data does not meet the needs of users in the development of investment plans and significantly reduces the quality of the developed policies in the field of RES and E/E use.
- The complexity of the process of monitoring and assessing the actual impact, the lack of budgetary resources.
- Insufficient level of social partnership and participation of civil society and MSME entities in decision-making on the use of RES and E/E due to low awareness and legal literacy.
- The low level of the potential of responsible state structures to ensure broad participation and social partnership in decision-making.
- Lack of available information of hydraulic engineering data on the beds of small rivers, tributaries, irrigation channels (fast-flowing), mapping of resources, capacities, water forecasts.
- Lack of basic knowledge among persons engaged in activities in the field of tourism.
- Lack of funds to attract specialist consultants.
- Limited technical, economic, and financial information, with the exception of advertising.
- Limited access to up-to-date departmental NLA and statistics on RES, in particular, mapping of the country on the use of RES has not been carried out, there is no data on the total installed capacity of RES by region.
- There is no information platform for demonstrating modern methods and examples of energy saving, energy efficiency, on which it would be possible to show examples of compliance with the E/E regime.
- Insufficient awareness of business representatives and the public about the benefits of using renewable energy.

"**TECHNOLOGY**" means the availability of technologies, the possibility of choosing technical solutions that bring benefits and public utility, ensure profitability, payback of costs and allow you to extract additional profit from the introduction of technologies.

The problem of the environment

Low level of technology development in the field of RES and E/E.

Reasons:

- Underdevelopment of applied scientific research in public and private research institutes
- Weak level of borrowing and technology imports from other countries
- High technological dependence in the use of equipment, production methods, energy generation from renewable energy sources, use of materials, E/E systems
- The absence of stimulating and preferential tax and customs regimes for the supply of equipment and equipment for an indefinite circle of persons – potential consumers (buyers), in particular, production and technological equipment for RES and E/E (with the exception of equipment of large hydroelectric power plants) are not included in the list of goods approved by the decree of the Government of the Republic of Tajikistan dated March 2, 2013, No. 93, which exempt from payment of customs duty and value added tax
- The underdevelopment of technological consulting, the high cost of developing individual projects (feasibility studies), business plans, technical projects.
- The practical lack of involvement of specialists of the Department of New Technologies of the Ministry of Industry and New Technologies of the Republic of Tajikistan in solving technological problems in the field of development of the use of RES and E/E.

For developers and manufacturers of equipment (RES Suppliers).

- Lack of measures of state support for R&D.
- The underdevelopment of institutions and infrastructure to support the introduction of innovations, the lack of budgetary resources for the practical implementation of state support measures.

- The lag of the technical regulation system and unreasonable barriers in the form of standards, approved types of measuring instruments, ensuring conformity assessment and safety confirmation of engineering systems being put into operation, generating equipment units.

- Regulatory and technical binding to traditional technologies through mandatory requirements for the energy supply of real estate, certain types of services.

- Use, production, import of energy-intensive equipment and machinery with a low E/E index.

For the CBT sector

- Low literacy and level of knowledge on the use of energy obtained on the basis of renewable energy sources.

- There is no practical experience in using the achievements of mechanics, heat engineering, biogas production based on renewable energy.

- Lack of special knowledge about the use of traditional materials for the purposes of energy saving, economy.

- The presence of a stereotype about the difficulties of such technologies in maintenance and their high cost.

- The complexity of the choice, independent design, carrying out technical and economic calculations of the validity of the choice of equipment, equipment and technologies for the energy supply of tourism facilities and the production of individual services based on RES.

"ECOLOGY" is a growth factor in the use of renewable energy, E/E.

A reasonable balance between regulatory costs, prohibitions on the use of hydrocarbons and the use of natural RES resources (water from surface drains of small rivers, tributaries, irrigation channels, discharge structures (locks), including hydroelectric power plants, geothermal waters, and a limited natural resource – land).

- Low awareness of MSME subjects about approved environmental standards of RES and E/E.

- There is no "green certification" of objects, and in particular, of CBT entities.

- Lack of adequate systems for assessing environmental risks and threats from the placement of microgeneration facilities at renewable energy sources.

- The low level of extracting additional benefits of MSME entities from the use of high environmental standards in their activities.

- Inapplicability of environmental requirements for industrial power generation facilities in the design, construction, installation, operation of microgeneration facilities at the household level, CBT facilities.

"LAND" is the main resource, the availability of which determines the development of entrepreneurship.

Land use and land ownership. Regulation of land use, water use – in cities and settlements, outside on lands of various categories, development management (design and construction of alternative energy facilities).

- Placement of small energy facilities based on renewable energy sources on land plots that are part of residential buildings and their certification;

- There are no allocated plots within residential development blocks for the placement of small-scale generation facilities and there are no regulations (except for the allocation of land for the placement of traditional energy facilities);

- Lack of regulatory regulation of the placement of microgeneration facilities.

- A gap in the regulation and management of land use and water use (hydropower) the return of water to the riverbed, irrigation channels without actual consumption. (water bodies are located on land plots).

- High administrative barriers (the procedure and procedures for obtaining permits, approvals by analogy with the construction of urban development facilities).

CAPITAL - FINANCE is the main resource for development and growth.

- Lack of state grant support and preferential targeted lending dependence on the import of technologies and equipment for renewable energy and E/E.

- The absence of concessional targeted loans to RES, E/E, CBT entities from special development funds is the reason for the low use of RES and E/E in the tourism sector at the level of the community), increases the payback period of investments and affects the high level of interest rates of credit institutions.

- Low level of application of public-private partnership in the field of renewable energy and E/E.

- The provision of loans is complicated just where renewable energy is used, in remote mountainous areas, there are no branches of banks, banking service centers.

- Low availability of financial resources for producers/suppliers of renewable energy, CBT entities.

"HUMAN RESOURCES" - Competencies and competence

- There is a shortage of mid-level specialists, as well as working professions in the energy sector, and for remote mountain regions, which is a deterrent to ensuring the design and operation of renewable energy facilities, the state support measures implemented in this area are insufficient.

- The absence of educational programs and courses in the vocational training system with a focus on training specialists in the field of production and maintenance of RES and E/E.

- There is a shortage of design engineers, specialists in the maintenance and installation of renewable energy equipment, builders of small energy and renewable energy facilities, managers and marketers.

- Insufficient involvement and interest of scientists from the institutes of the National Academy of Sciences of Tajikistan.

- The low level of competence of entrepreneurs dealing with RES and E/E, in the field of generation technologies, energy based on RES; business planning and marketing, financial management and others.

- Lack of specialized retraining courses for specialists and managers in the field of RES and E/E.

- Insufficient attention is paid to the creation of new sought-after specialties in universities and vocational schools in the field of renewable energy and E/E.

- The absence of thematic seminars and trainings for stakeholders and CBT entities on the use of RES and E/E.

- Imperfect educational standards and programs of higher education institutions and vocational schools on the development and application of RES and E/E.

- Limited access of the population to educational and educational information and materials via the Internet.

- Insufficient development of professional networks and associations.

"Entrepreneurial and Investment Initiative" - the engine of development of generation, consumption of clean energy, E/E.

- Low level of application of the PPP mechanism in the field of RES and E/E.

- Underdevelopment of business infrastructure.

- Lack of experience and successful practices of using renewable energy sources to obtain benefits.

- The investment initiative is constrained by high administrative and regulatory barriers, the costs in percentage terms exceed the costs of purchasing microgeneration equipment.

- Lack of technological support for MSME and R&D.

- Lack of engineering services provided by business support centers and their underdevelopment.

- The absence of simple and understandable rules in state regulation when selling surplus energy to third parties.

- The disinterest of the subjects of traditional energy in the growth of E / E consumer restrains

During the preparation of the RM, the expert conducted an analysis of all identified adverse events, phenomena, facts, processes that cause dissatisfaction with stakeholders, and the solution of which will contribute to the development of recommendations and necessary actions to expand the use of renewable energy, increase E / E in the CBT sector.

The **analysis** of the opinions of stakeholders in each category was also carried out: entrepreneurs, individuals and their associations, state bodies and the impact on their interests was indicated. Identification of problems by sources and systematization of participants in legal relations, the number of declared problems was made.

The identification result is shown in the table. For example, the participants, representatives of the public sector, stated 22 problems during the survey, at the round table and during the FGD.

Table 6. The number of applications from participants in legal relations.

Participants	Number of allocated problems and gaps
Representatives of the public sector	22
Non-governmental organizations	25
Academic circles and universities	21

Importers and Exporters of renewable energy equipment	25
Equipment Manufacturers	23
Generating RES and EE	26
Financial and credit sector	13
Travel companies	14
CBT entities	13
Total	182 problems and gaps have been identified

At this stage, all the information providing grounds for the consideration of problems by the state body has been collected, and the links between negative events and their causes have been identified, root problems and causes of their occurrence have been **analyzed** and described, and those root problems that will be solved by changing state regulation have been selected.

The RIA methodology also involves the use of a score assessment of indicators to identify sensitivity in the evaluation and analysis of data. The values of the largest indicators are analyzed, and the smallest indicators indicate a negative impact or are equated to low-sensitive ones. For example, if the indicator is equal to or more than 50%, then it is recognized as sensitive. The results obtained make it possible to identify existing trends and confirm the correctness of expert approaches in identifying topical problems of the sector and policy gaps.

Further, from the general list of problems (182 problems), the most relevant and priority ones were selected, the solution of which is necessary to achieve the set goal of the project. To do this, the entire list of questions was grouped by sectors and areas of activity, percentage indicators were determined according to sensitivity, which were highlighted in the relevant questionnaires. The result of this work is given in the table.

Table 7. Main sectors and areas of activity

	Main sectors and areas of activity	Total	30%	40%	50% or more
1	Regulation of land and water use;	20	6	10	4
2	Licensing and permitting regulation;	19	6	8	5
3	Control and supervision;	19	5	6	8
4	Tax and customs regulation;	23	8	7	8
5	Prices and tariffs, pricing.	16	5	5	6
6	Ecology, Tourism - transition to a "green economy"	25	7	9	9
7	Sufficiency of state support measures;	21	8	5	8
8	Information and human resources.	23	8	8	7
9	Technology and entrepreneurship	16	5	6	5
		182	58	64	60

In the last column of the table, 60 sensitive problems with indicators of more than 50% are highlighted, on the implementation of which the solution of problems with criteria of 30-40% depends.

When analyzing already 60 sensitive problems and gaps, the following measures have been carried out:

- ✓ correction of the formulations of the description of problems, the **similarity** of problems was also considered.

- ✓ the description of the problems are brought into line with the laws and regulations in terms of regulating the **analyzed** relations, especially law enforcement practice and determining which state bodies or self-government bodies affect the situation.

- ✓ work has been carried out to formulate goals related to the requirements of legislation, the strategic goals of the development of the state and the industry, the provision of financial and time resources and other **similar** restrictions.

An example of this work is given in Table 8.

Table 8. Proposals of the participants

<i>Proposals of the participants</i>	Revised offer
Difficulties with commissioning of renewable energy facilities, conformity assessment.	<i>Difficulties with commissioning of facilities, assessment of compliance with norms and standards</i>
On the ground, in rural communities and households that have installed their own solar stations, micro-GES, wind farms, misunderstandings arise on the part of regulatory authorities	<i>Unjustified regulatory interference in the activities of private entrepreneurship and households using renewable energy facilities</i>
Weak state support and insufficient stimulation of the industry.	<i>Lack of economic and legal incentives for the use of renewable energy and EE facilities in the tourism sector</i>

Out of 60 problems, problems related to entrepreneurial activity that will be affected are also highlighted, problems and gaps of the same meaning and meaning are cut off, not related to microgeneration and CBT development, the same type of proposals are grouped into one sentence with the appropriate meaning.

Table 9: Sentences of the same type and identical in meaning and meaning

№	Description of the same type of problems	%	Grouped into one sentence on this issue
1.	It is not defined in regulatory documents, the placement of small-scale energy (microgeneration) facilities based on renewable energy on land plots that are part of residential buildings and their certification;	51%	<i>The absence of regulatory and legal regulation for the use of land within residential development blocks for the placement of small-generation facilities and the construction changes made to real estate objects, through the introduction of urban planning regulations.</i>
2.	There are no allocated plots within residential development blocks for the placement of small-scale generation facilities and there are no regulations (except for the allocation of land for the placement of traditional energy facilities);	35%	
3.	Lack of regulatory regulation of the placement of microgeneration facilities.	32%	

At the second meeting of the IWG (dated October 12, 2021), with the participation of stakeholders, including key partners, representatives of all stakeholders, including business entities and business associations, the proposed list of priority areas of regulated relations was discussed. This list of priority areas of regulated relations was supported by the members of the IWG, recommended for use in the development of the RM and documented. This list is presented below:

- Regulation of land use and water use;
- Licensing and permitting regulation;

- Control and supervision;
- Tax and customs regulation;
- Sufficiency of state support measures;
- Tariff regulation.

As a result of the work carried out, an expanded range of specific tasks has been developed that ensure the achievement of selected priority areas of regulated relations. Below, in the following sections of the RM, these tasks are presented, and detailed solutions to each task are also given (the regulatory mechanism and its features, the regulatory tools that will be applied, the main measures for implementing the regulation option, their sequence and features of implementing this regulation option).

1.2. Goals and objectives of the Roadmap

The goal is determined on the basis of strategic documents, sectoral and sectoral plans, commitments made (in this case on climate change), intentions to achieve the desired state in the development of sustainable (green) tourism, in particular the development of those types of entrepreneurial activities that have an intersectoral relationship and on which the growth of production and consumption of clean renewable energy depends, the growth of E/E for the period and for the control dates of the implementation of the Roadmap activities.

The goal of the implementation of the "road map" until 2030 is:

Reduction of greenhouse gas emissions into the atmosphere through the introduction of renewable energy and the growth of E/E in the community based tourism sector.

- the volume of emissions should not exceed 80-90% of the 1991 level, that is equivalent to 1.5 – 1.7 tons of CO₂ per capita.

Development of large-scale production and consumption of clean energy at the level of CBT entities and E/E growth.

- an increase in the share of renewable energy in the final energy consumption of CBT entities by 10%.

This indicator was selected from the goals of the NSR-2030, which states "on ensuring the diversification of the country's electric power system by at least 10%, due to an increase in energy sources, including from renewable energy sources."¹³

Sustainable financing of RES and E/E projects at the CBT level

- an increase in investment in the development of microgeneration for CBT facilities from clean energy sources (solar energy, wind energy and thermal energy) by 10%.

When creating favorable conditions for the development of renewable energy, as defined in the NSR-2030, there is a significant probability that the share of renewable energy in the final consumption of CBT entities may increase by 10%. This implies a 10% increase in investment in renewable energy development.¹⁴

Creating conditions for the large-scale application of renewable energy technologies in the tourism sector

- increasing the revenue of travel companies by building their own power plants using renewable energy by 5%.

Research was conducted by Criteo Analytics (more than 13,000 travelers around the world were interviewed). According to the study, 87% of tourists, if possible, choose more environmentally friendly options, and 67% are willing to overpay from 5% or more, provided that their trip will have a minimal impact on the environment¹⁵.

Sustainable development

- employment growth in the tourism industry by 10%.¹⁶
- poverty reduction by 15%.¹⁷

¹³ The National Development Strategy of the Republic of Tajikistan for the period up to 2030. Page 66.

¹⁴ The National Development Strategy of the Republic of Tajikistan for the period up to 2030. Page 66.

¹⁵ [Research] Ecotourism trends in 2020 | EN - Criteo.com

¹⁶ Tourism development strategy in the Republic of Tajikistan for the period up to 2030. URL: <https://ctd.tj/ru>

¹⁷ The National Development Strategy of the Republic of Tajikistan for the period up to 2030. Page 83.

Tasks and proposed changes

1. Development and improvement of regulatory and legal regulation - submission of a list of regulatory legal and regulatory acts affecting changing and developing the project goals

Tajikistan has formed a sufficient legislative framework covering the sphere of relations in the field of energy, including in terms of regulating relations on the use of renewable energy. The regulatory and legal framework of the tourism industry has also been formed.

The list of current regulatory and regulatory acts affecting the change and development of the project objectives in the energy sector, in the context of the use of renewable energy and the improvement of E/E and the development of tourism, includes the following legislative and subordinate regulatory acts, respectively, by regulatory branches:

▪ in the field of energy, renewable energy use, energy saving and E/E

1. RT Law "On Energy" dated November 29, 2000, No. 33 (as of 12/28/2013)
2. RT Law "On the Use of Renewable Energy Sources" dated January 12, 2010, No. 587 (as of November 23, 2015)
3. RT Law "On Energy Saving and Energy Efficiency" dated September 19, 2013, No. 1018.
4. Decree of the President of the Republic of Tajikistan dated April 24, 2009 No. 653 "On additional measures for economical use of energy and energy conservation".
5. Rules for the use of electric energy. (approved by the Resolution of the Government of the Republic of Tajikistan dated March 6, 1998, No. 84).
6. Resolution of the Government of the Republic of Tajikistan dated March 3, 2011, No. 116 "On approval of the Rules for maintaining the State Cadastre of Renewable Energy Sources".
7. Resolution of the Government of the Republic of Tajikistan dated June 22, 2019, No. 329 "On tariffs for electric and thermal energy".
8. Order of the Ministry of Energy and Industry of the Republic of Tajikistan dated December 03, 2010, No. 111 "Rules for maintaining a catalog of installations for the use of renewable energy sources of the Republic of Tajikistan".
9. Order of the Ministry of Energy and Industry of the Republic of Tajikistan No. 112 dated December 10, 2010 "On approval of the Regulations on the procedure for connection (connection) of installations for the use of renewable energy sources to common electric networks."
10. Order of the Ministry of Energy and Industry of the Republic of Tajikistan No. 112 dated December 10, 2010 "On approval of the Regulations on safety during operation of installations for the use of renewable energy sources in the Republic of Tajikistan".
11. Order of the Ministry of Energy and Industry of the Republic of Tajikistan No. 112 dated December 10, 2010 "On approval of the Regulation on the relationship between the network operator (dispatcher of the energy supply organization) and operational personnel or the person responsible for the operation of technological and electrical equipment of the energy producer using renewable energy sources (RES)."
12. Order of the Ministry of Energy and Industry of the Republic of Tajikistan dated December 28, 2010, No. 1316 "Methodological guidelines for calculating regulated tariffs for electric (thermal) energy generated by renewable energy installations in the Republic of Tajikistan". Application for preliminary approval of a project for the construction of a power plant using renewable energy. Application for approval of a project for the construction of a power plant using renewable energy.
13. Order of the Ministry of Energy and Industry of the Republic of Tajikistan No. 111 dated December 3, 2010: "Methodological guidelines for the procedure for obtaining permits for the installation and placement of energy facilities operating on the basis of renewable energy sources on the territory of the Republic of Tajikistan".

▪ in the field of tourism

14. RT Law "On Tourism" dated August 7, 2020, No. 1717.
15. The strategy of tourism development in the Republic of Tajikistan for the period up to 2030 (approved by the Decree of the Government of the Republic of Tajikistan dated August 1, 2018, No. 372).
16. Resolution of the Government of the Republic of Tajikistan dated April 12, 2018, No. 189 "On the list of tourist facilities for the creation of which the import of equipment, machinery and construction materials is exempt from value added tax and customs duties".

17. State Cadastre of Tourist Resources of the Republic of Tajikistan (dated August 27, 2021 33 35).
▪ *in the field of the use of natural resources*
18. **Water Code of the Republic of Tajikistan** dated April 02, 2020, No. 1688
 - Section I. General provisions. Chapter I. Basic provisions. Article 7. Competence of local executive bodies of state power in the field of regulation of water relations.
 - Section II. Water use. Chapter 6. The procedure and conditions for the provision of water bodies for use. Article 31. Economic conditions for the provision of water bodies for use.
 - Chapter 12. "Use of water bodies for industrial purposes and for the needs of hydropower". Article 83. Use of prominent objects for the needs of hydropower. Article 84. The rights and obligations of hydropower enterprises for water use.
19. Resolution of the Government of the Republic of Tajikistan dated March 4, 2003, No. 95 "On approval of the Rules for the use of water bodies for the needs of hydropower".
20. **Land Code of the Republic of Tajikistan No. 327 dated December 13, 1996 (with amendments and additions as of December 23, 2021)**
21. Rules on allotment of land plots for individuals and legal entities (approved by the Decree of the Government of the Republic of Tajikistan dated September 1, 2005, No. 342).
▪ *in the field of environmental protection*
22. **RT Law "On Environmental Protection"** dated August 02, 2011, 760 (as of July 18, 2017).
23. **RT Law "On Environmental Impact Assessment"** dated July 18, 2017, No. 1448.
▪ *in the field of entrepreneurship and investment*
24. **Civil Code of the Republic of Tajikistan (Part Two)** of December 11, 1999, No. 884 (as of January 02, 2019)
 - Section IV. Certain types of obligations. Chapter 29. Purchase and sale.
25. **Tax Code of the Republic of Tajikistan** dated November 3, 2021, No. 549
 - Section VIII. Value added tax. Chapter 39. Tax exemptions
 - Section X. Taxes for natural resources. Chapter 45. Tax on users of natural resources.
 - Section XIII. Local taxes. Chapter 48. Property taxes. §2. Land tax
26. **RT Law "On Licensing of Certain types of activities"** dated May 17, 2004, No. 37 (as of July 04, 2020).
27. **RT Law "On Standardization"** dated April 16, 2012, No. 814.
28. **RT Law "On Investments"** dated March 15, 2016, No. 1299 (as of August 03, 2018)
29. **RT Law "On Investment Agreement"** dated March 19, 2013, No. 944 (as of May 30, 2017).
30. **RT Law "On State Registration of Legal Entities and Individual Entrepreneurs"** dated May 19, 2009, No. 508 (as of January 02, 2020).
31. **RT Law "On State Registration of Immovable Property and Rights to It"** dated March 20, 2008, No. 375 (as of July 04, 2020).
32. **RT Law "On Technical Regulation"** dated May 19, 2009, No. 522 (as of June 28, 2011).
33. **RT Law "On Conformity Assessment"** dated August 02, 2011, No. 759 (as of August 01, 2012).
34. **RT Law "On State Protection and Support of Entrepreneurship"** dated July 17, 2014, No. 694
35. **RT Law "On Natural Monopolies"** dated March 5, 2007, No. 235.
36. Resolution of the Government of the Republic of Tajikistan dated April 3, 2007, No. 72 "On Approval of the Regulation "On the Specifics of licensing certain types of activities" (as of February 25, 2017).
37. Resolution of the Government of the Republic of Tajikistan dated June 18, 2012, No. 310 "On the List of goods (works, services) subject to mandatory certification" (as of September 29, 2017).
38. Order of the Ministry of Energy and Industry of the Republic of Tajikistan No. 112 dated December 10, 2010 "On approval of a model Contract for the purchase and sale of electricity generated using renewable energy sources RES".
Standards in the field of certification of electrical equipment and electrical energy, including for RES:
39. Standard of the Republic of Tajikistan No. ST HT 5.10-2010. National Certification System of the Republic of Tajikistan. Rules for certification of electrical equipment and electrical

energy. (Approved and put into effect by the Order of the Agency for Standardization, Metrology, Certification and Trade Inspection dated September 1, 2010, No. 07).

40. ST RT 51237-2010 "Unconventional energy. Wind energy. Terms and definitions"
41. ST RT 51238-2010 "Unconventional energy. Hydropower is small. Terms and definitions"
42. ST RT 51594-2010 "Unconventional energy. Solar energy. Terms and definitions"
43. ST RT 51596-2010 "Unconventional energy. Solar energy. Solar collectors. Test methods"
44. ST RT 51595-2010 "Unconventional energy. Solar energy. Solar collectors. General technical conditions"
45. ST RT 51597-2010 "Unconventional energy. Solar photovoltaic modules. Types and basic parameters"
46. ST RT 51388-2009 "Energy saving. Informing consumers about the energy efficiency of household and utility products"
47. ST RT 5.10-2010 "On recommendations for certification of electrical equipment and electrical energy"

Standards in the field of energy conservation and energy efficiency of buildings and structures. In order to implement the requirements of the Law of the Republic of Tajikistan "On Energy Conservation and Energy Efficiency" (Article 9 "Ensuring energy efficiency of buildings and structures") Tajikstandart has adopted the following documents as an interstate standard:

48. GOST 25380-2014 Energy saving. Buildings and structures. methods for measuring the surface density of heat flows and determining the heat transfer coefficients between enclosing structures and the environment.
49. GOST 31427-2010 Residential and public buildings. Composition of energy efficiency indicators
50. GOST R 54531-2011 Unconventional technologies. Renewable and alternative energy sources. Terms and definitions
51. GOST R 54418.1-2012 Renewable energy. Wind energy. Wind power installations. Part 1. Technical requirements
52. GOST R 54418.2-2014 (IEC 61400-2:2006) Renewable energy. Wind energy. Wind power installations Part 2. Technical requirements for small wind power plants
53. GOST R 54433-2011 Renewable energy. Wind farms. Safety requirements during operation
54. GOST R 56124.5-2014 Renewable energy. Hybrid power plants based on renewable energy sources designed for rural electrification. Recommendations. Part 5. Electrical safety
55. GOST 51991-2002 Unconventional energy. Wind energy. Wind power installations. General technical requirements
56. GOST R 56124.2-2014 Renewable energy. Hybrid power plants based on renewable energy sources designed for rural electrification. Recommendations. Part 2. From the requirements for the classification of power supply systems
57. GOST R 56124.7.1-2014 Renewable energy. Hybrid power plants based on renewable energy sources designed for rural electrification. Recommendations. Part 7-1. Generators. Photovoltaic batteries
58. GOST R 56124.1-2014 Renewable energy. Hybrid power plants based on renewable energy sources designed for rural electrification. Recommendations. Part 1. General Introduction for rural electrification
59. IEC TS 62257 Recommendations on renewable energy sources and hybrid systems for rural electrification
60. IEC TS 63102 ED1: Methods for assessing compliance with the requirements of power grids for connecting wind and photovoltaic power plants to the grid
61. IEC TS 63102 ED1: Methods for assessing compliance with grid regulations for connecting wind and photovoltaic power plants to the grid.
62. IEC 62934 ED1: Integration into the renewable energy production network. Terms and definitions
63. PNST 329-2018 "Green" standards "Green" products and "Green" technologies Conformity assessment according to the requirements of "green" standards. General provisions

Strategies and programs

64. National Development Strategy of the Republic of Tajikistan for the period up to 2030 (NSR-2030)

65. Medium-term Development Program of the Republic of Tajikistan for the next five-year period 2021-2025 (AKP-2025)

- review of existing mechanisms of state regulation and provision of state support in the field of renewable energy and tourism

1. The Law of the Republic of Tajikistan "On Energy" dated November 29, 2000, No. 33 (as amended on December 28, 2013) defines the main organizational and legal principles and methods of regulating economic activity in the field of energy of the Republic of Tajikistan. This Law has the character of a general legislative act, in which the legal regulation of the fuel and energy complex (fuel and energy complex) is determined not by the details of the methods of regulating relations, but only by the general sphere of regulation - relations related to the organization and functioning of the fuel and energy complex of Tajikistan. The Law stipulates the expediency of using renewable energy in order to improve the efficiency of the fuel and energy sector, however, the legal status of renewable energy entities, their rights and obligations are not defined, a mechanism for regulating the price and tariff policy of the state in the energy sector in general, and in the use of renewable energy in particular, has not been developed. However, in article 15 of the law on pricing in the field of energy, it is noted that in order to encourage and support domestic and foreign investors, when developing and using electric power resources, purchasing excess electricity, the authorized body for regulating the activities of natural monopolies may set other prices and tariffs.

2. The Law of the Republic of Tajikistan "On the Use of Renewable Energy Sources" dated January 12, 2010, No. 587, (as amended on 11/23/2015) regulates activities in the field of renewable energy in the Republic of Tajikistan, including establishes the principles and objectives of state policy in the field of renewable energy development; defines ways of integrating renewable energy into the republican energy system, as well as organizational, research, design, expert, design, regulatory activities aimed at increasing the use of renewable energy; provides for the correlation (relationship) of activities in the field of production, accounting, transportation, distribution and use of energy from renewable energy; defines economic and organizational measures aimed at stimulating the production and use of renewable energy.

This Law regulates legal relations in the field of priority and efficient use of renewable energy (small energy). The objects of regulation are the production, consumption and sale of electric and thermal energy using renewable energy sources, as well as the production and supply of equipment and technologies in the field of renewable energy in the territory of the Republic of Tajikistan.

Subparagraph 4 of Article 11 of the Law defines that "energy network operators and wholesale consumers are obliged to purchase energy produced from renewable energy sources on the basis of a contract while maintaining the established balance of production volume and quality of energy from renewable energy sources."

According to Article 17 of the Law, "prices and tariffs for energy produced from renewable energy sources, taking into account the costs of energy produced and support for the development of the use of renewable energy sources for sale to natural monopolies, on the proposal of the authorized body for regulating the activities of natural monopolies, are approved by the Government of the Republic of Tajikistan. The sale of energy from RES is carried out by the subject of natural monopolies at the prices set for the products of natural monopolies, and the difference between the prices set for RES energy is covered by the tariffs set for the products of the subject of natural monopolies, taking into account the anticipated losses."

In accordance with Article 14 "State support in the use of renewable energy sources" of this Law includes:

- formation of an effective pricing policy for energy produced from renewable energy sources, stimulating their production and acquisition;
- protection of energy producers from renewable energy sources from unfair competition from organizations that occupy a dominant position in the field of energy production and use;

- recognition of the use of renewable energy sources as environmental and (or) energy-saving activities with the establishment of appropriate benefits for legal entities and individuals engaged in activities in the field of renewable energy sources;

- according to the volume of financing and production capacity, legal entities and individual entrepreneurs engaged in the production of energy from renewable energy sources, in accordance with the Tax Code of the Republic of Tajikistan, benefits are provided;

- regulation of energy tariffs for energy supply to consumers obtained from the operation of installations for the use of renewable energy sources, including by subsidizing (subsidizing) from sources established by legislation for the production of such energy;

- establishment of accelerated depreciation of installations for the use of renewable energy sources;

- ensuring unhindered access of individuals and legal entities using renewable energy sources for their own energy supply to the resources of these energy sources by simplifying the procedure for transferring rights of use to the natural and other resources necessary for this;

- guaranteed connection of producers of energy produced from renewable energy sources to power grids;

- stimulating investment activities and the introduction of new technologies in the use of renewable energy sources, including the creation of favorable conditions for national and foreign investors;

- scientific and technical support for the creation and implementation of installations for the use of renewable energy sources."

3. **"Regulation on the procedure for connection (connection) of installations for the use of renewable energy sources to common energy networks"** approved by the Order of the Minister of Energy and Industry of the Republic of Tajikistan No. 112 dated December 10, 2010, is one of the important documents of the relationship between the energy supply organization and the energy producer using RES. It reflects issues related to the technical conditions of connection of renewable energy installations, energy accounting, calculations for energy supplied to the common network, conditions for the termination of energy supply to the common network and the responsibility of the energy producer using renewable energy, whose installations are connected to the common network.

It should be noted that this Regulation provides preferential conditions for the energy producer of renewable energy installations in the event of a shortage of energy due to the fault of the energy supplier. For non-delivery of energy without objective reasons, the renewable energy producer pays a fine to the network organization in the amount of 0.3% of the tariff cost of undelivered energy, when for ordinary suppliers this figure is 5%.

4. The **Land Code of the Republic of Tajikistan**. Relations related to the use and protection of land, as well as property relations in the field of land use arising in connection with the receipt (acquisition) of the right to alienate the right to use a land plot are regulated by land legislation, the basis of which is the Land Code of the Republic of Tajikistan dated December 13, 1996, No. 326 (as amended on November 14, 2016).

5. **Tax Code of the Republic of Tajikistan** dated November 3, 2021, No. 549. The main NLA in the field of taxation is the Tax Code of the Republic of Tajikistan.

For energy production activities, as in general for the production of goods, according to Article 183, the income tax rate is set at 13 percent, which is 7 percent lower than for other types of activities.

In accordance with part 2 of Article 189 of Chapter 39, the following types of income of legal entities are not subject to tax:

7) income received from tourism activities within 5 years from the date of state registration, if there are licenses for conducting tourism activities.

In accordance with article 189, new enterprises for the production of goods, including energy production, are exempt from income tax for a period of 2 to 5 years, depending on the volume of investments, starting from the date of initial state registration, when their founders contribute to the authorized capital of such enterprises within 12 calendar months after the date of state registration. registration of the specified investment volumes. Entities operating in the field of renewable energy will be able to use this benefit if the investment volume is over 200 thousand dollars.

According to paragraph 4, paragraphs 6 and 7, of Article 251, the following types of imports are exempt from value added tax:

- import of goods for the construction of particularly important facilities, with the exception of goods produced in the republic, the list of which is determined by the Government of the Republic of Tajikistan.

- import of equipment, machinery, construction materials and other materials to meet the needs of tourist facilities (including hotels, health resorts and resorts, tourist centers and other tourist facilities), with the exception of goods produced in the republic. The list of tourist sites, the name and quantity of imported equipment, machinery and construction and other materials are approved by the Government of the Republic of Tajikistan;

In accordance with part 1 of Article 254 of Chapter 39, when exporting electricity from the Republic of Tajikistan, including electricity produced from renewable energy sources, a zero VAT rate is applied, which corresponds to international standards for the application of VAT when exporting goods.

In accordance with Chapter 45, §5. Water royalties, Article 313. "Water royalty payers (hereinafter referred to as taxpayers in this chapter) are persons who use water in the Republic of Tajikistan to generate electricity."

According to Article 316, "Facilities with a production capacity of up to 1000 kilowatts of electricity are exempt from calculating and paying royalties for water, i.e. micro and mini power plants with a capacity of up to 1000 kW."

Article 318. "The water royalty rate is set at 0.06 percent for calculations for every 1,000 kilowatt/hours of electricity produced." Thus, persons using water for electricity generation pay a royalty for water in the amount of 0.06 indicator for calculations for every 1,000 kilowatts/hour of electricity produced as of the end of each month.

According to paragraph 1, paragraph 7, of Article 353 of Chapter 48, "land for the installation of renewable energy sources (with a nominal capacity of 0.1 MW or more) is exempt from payment of land tax for a period of 5 years from the date of commissioning;"

According to Article 374 of Chapter 52, the simplified taxation regime is applied to business entities whose gross income for the last twelve consecutive calendar months has not exceeded 1 million somoni. In accordance with article 380. The tax rate under the simplified regime is set at 6 percent.

6. Strategy for the development of tourism in the Republic of Tajikistan for the period up to 2030, PRRT of 1.08.2018, No. 372.

7. Customs Code of the Republic of Tajikistan dated November 3, 2004, No. 1209.

The rates of customs duties for imported goods in the Republic of Tajikistan are determined by the Decree of the Government of the Republic of Tajikistan dated August 08, 2018, No. 399 "On the rates of import customs duties of the Republic of Tajikistan". This resolution establishes a free trade regime and the application of a zero rate of import customs duty when importing goods originating from the member States of the Free Trade Zone Agreement of October 18, 2011 and from countries with which bilateral free trade agreements have been signed, with the exception of goods withdrawn from the free trade regime. Regardless of the person, when importing equipment or goods intended for use in the field of renewable energy from countries such as the Russian Federation, the Republic of Kazakhstan, Uzbekistan, Kyrgyzstan, Belarus, Ukraine, customs duties are not charged and import from other countries outside the free trade zones, the rates of customs duties for equipment and goods for RES, they make up from 5 to 10 percent of their cost.

8. Resolution of the Government of the Republic of Tajikistan No. 189 dated April 12, 2018

The List of tourist facilities has been approved, for the creation of which the import of equipment, machinery and construction materials is exempt from value added tax and customs duties.

The duty on the import of new cars was also reduced by 50 percent.

9. The Law of the Republic of Tajikistan "On State Registration of Legal Entities and Individual Entrepreneurs" dated May 19, 2009, No. 508, established that individuals operating installations for the use of renewable energy for energy support of their activities that are not aimed at making a profit are not subject to state registration and do not pay taxes established for entrepreneurial activity.

- amendments and additions to the legislation to determine the legal status of renewable energy entities, the concept of microgeneration based on renewable energy, mechanisms for implementing measures of state support for the development of microgeneration, in particular in the tourism sector based on CBT

Legal status of renewable energy entities

It should be noted that during the survey, 65% of beneficiaries indicated the need to introduce the concept of the legal status of renewable energy entities as an "energy supply organization".

The term "Energy supply organization" is used in the Civil Code of the Republic of Tajikistan and the Rules for the Use of Electric Energy in 1998, but this concept is not mentioned in any of the laws

of the energy sector (On Energy, on the use of Renewable Energy, On energy conservation and energy efficiency).

In the absence of a legal status, renewable energy entities are **not entitled to:**

- conclude a purchase and sale agreement;
- obtain a license for the generation, distribution and sale of energy;
- receive a quality certificate for the generated electrical (thermal) energy.

In Article 569, the Power Supply Contract, Chapter 29 Purchase and Sale, Section 5. The Civil Code of the Republic of Tajikistan names only one of the contracts concluded when providing energy to consumers - the Energy Supply Contract. It is concluded by the energy supply organization and the subscriber. However, there is no unambiguous understanding of the energy supply organization and the subscriber, both in the Civil Code of the Republic of Tajikistan and in the current laws of the Republic of Tajikistan in the field of energy.

An energy supply organization is a commercial organization that sells both produced and purchased electric and (or) thermal energy to consumers. Such subjects are generating stations using renewable energy sources.

The concept of "energy supply organization" should be contained precisely in the Civil Code of the Republic of Tajikistan, since it is essential, as well as in the context of RES in the Law of the Republic of Tajikistan "On the Use of RES".

Recommendations:

Make the following changes and additions to the relevant NLA:

- To introduce the concept of "energy supply organization" into the Civil Code.
- To introduce the concept of "energy supply organization" into the Law of the Republic of Tajikistan "On the Use of Renewable Energy", as well as to define the legal status of renewable energy entities as an "energy supply organization" and equate electric power plants, including microgeneration, to energy supply organizations that produce, distribute and sell electric and thermal energy using renewable energy.

Microgeneration based on renewable energy sources

51% of respondents indicated the absence of a definition of the term "microgeneration".

Microgeneration is the production (generation) of electricity, heat energy by objects of very low power. According to the classification, small or microgeneration is the production of electricity at or near the place of consumption, regardless of size, technology or fuel - both off-grid and in parallel with the grid.

There is no concept of "microgeneration" in the current legislation of the country's energy sector. Accordingly, there are no mechanisms for the implementation of measures of state support for the development of microgeneration in non-profile subjects - CBT.

Article 1 of the Law of the Republic of Tajikistan "On the Use of Renewable Energy" introduces the concept of "small energy - micro, mini and small power plants with a capacity of up to 100 kW, from 101 to 1000 kW and from 1001 to 30,000 kW, respectively." At the same time, for the implementation of the project, low-power electric power plants, such as solar hot water sources, wind farms, which are most often used in tourist areas and households to meet their own needs, are most in demand. At the same time, the generating facility is a power plant operating on the basis of the use of renewable energy sources.

At the same time, in the legislation of a number of countries, this term has been introduced into the relevant NLAs. So the concept of "Microgeneration" is used in the legislation of the Russian Federation. In particular, the Decree of the Government of the Russian Federation No. 299, March 2021 "On Amendments to certain Acts of the Government of the Russian Federation regarding the definition of the specifics of the legal regulation of relations on the functioning of microgeneration facilities" was adopted, on the basis of which this concept is legalized. The economic purpose of this and the benefits of the business are that there is a legal possibility of technological connection to public networks and the sale of surplus microgeneration energy to a guaranteeing supplier.

In the NLA of the Russian Federation, Microgeneration includes electric stations of no more than 15 kW, (up to 30 kW in Ukraine). The object of microgeneration is an electric power production facility owned by the right of ownership or other legal basis to the consumer of electricity, functioning, including on the basis of the use of renewable energy sources, the installed generating capacity of which does not exceed the maximum capacity of power receiving devices of no more than 15 kW. Technological connection of

microgeneration facilities can be carried out to electric facilities of no more than 1 kW. The law applies to citizens of the Russian Federation and legal entities registered in the territory of the Russian Federation. As an incentive for such activities, the necessary changes have been made to the Tax Code of the Russian Federation. Thus, the sale of energy by the owner of a generating micro-installation is not considered entrepreneurship and personal income tax is not levied until 2029.

Here is an example of calculating the benefits of business from changes in microgeneration. To do this, we use a Model calculation to justify the benefits of business from the introduction of the concept of "Microgeneration" in the legislation of the Russian Federation.

The main goal: to ensure the payback of the power plant through the sale of surplus electricity

Given: the cost of kWh of electricity in the retail market = 6 rubles.

The sale of surplus = 3 rubles. will bring a gross revenue of 22,800 rubles per year, due to the sale of 7,600 kWh (a conditional value calculated from the capacity of the installation).

A measure to support the activity of energy generation (microgeneration based on renewable energy), the supply (sale) of electricity up to 30,000 rubles of income is not taxed.

The cost of the solar power plant in question, taking into account delivery and installation, is about 500,000 rubles. For simplicity of calculations, let's assume that the tariff of 6 rubles per kWh does not change for 5 years.

For a year, a solar power plant allows you to save electricity from traditional sources in the amount of 6 rubles / kWh * 2400 kWh = 14,400 rubles. The declared service life of solar power plants before physical wear is 25 years.

When selling surplus electricity, the electricity savings and the proceeds from the sale are summed up: $A(1) + A(2) = x$? $30\,000 + 14\,400 = 44,400$ rubles. Total direct business benefit:

The calculation of the payback point for investments in renewable energy and E/E facilities is determined by consulting with the business, and the decision on the choice of the regulation option is subject to the value of the following formula:

1 year < 5 years < 10 years (the shorter the payback period, the greater the benefits)

Thus, the necessity of including the term "microgeneration" with the relevant norms in the legislation of the country is justified and proved.

Recommendations:

- It is necessary to make additions to the industry legislation of the relevant norms and regulations on microgeneration, including:

- To make the following amendments and additions to the Law "On the Use of Renewable Energy":

1. To introduce the concept of "microgeneration" in addition to the Law.
2. Determine that microgeneration includes electric stations of no more than 15 kW.
3. To supplement the scale of power plant capacities in the relevant articles of this law using the concept of microgeneration with a capacity of up to 15 kW.
4. Determine the conditions that support the functioning of microgeneration.
5. To determine that the technological connection of microgeneration facilities can be carried out to electric facilities of no more than 1 kW.
6. Determine that the law applies to citizens of the Republic of Tajikistan and legal entities registered in the territory of the Republic of Tajikistan.

- To develop Rules for the qualification of a generating facility operating on the basis of the use of renewable energy.

- To study the issue of adopting a program for the development of microgeneration (development of engineering infrastructure of tourism facilities of CBT) based on a decentralized model and submit it to the authorized body for consideration.

- improvement of the legal framework for the development of a decentralized model of the energy sector (local production and consumption of electricity generated from renewable energy sources)

48% of the focus group discussion participants noted the lack of a mechanism for connecting renewable energy facilities to centralized electric networks in the absence of these networks in remote

mountainous areas of decentralized energy supply, the possibility (supply) of selling electric energy to the power system.

A decentralized model of energy sector development is local production and consumption.

Priority zones and places for the use of renewable energy are, in particular, zones of decentralized energy supply, where, due to low population density, the construction of traditional power plants and high-voltage power lines is economically unprofitable or practically impracticable. The need to use alternative energy sources in Tajikistan is also due to the fact that many settlements are excessively remote and are not connected to the unified energy system.

The construction and operation of power plants based on renewable energy sources in these places could solve the problem of electricity supply to the population of these areas.

An example of a decentralized model of electricity supply is the use of the Sorvo MSPP, located on the territory of the Sorvo jamoat of Romit Vakhdat district, which is located at a distance of 130 km from the city of Dushanbe in a remote mountainous region. The installed capacity of the MSPP is 30 kW, built with the financial support of UNDP in the Republic of Tajikistan, the owner is the jamoat of Romit Vakhdat district.

Prior to the construction of the Sorvo MSPP, the population of Dehot Sorvo did not have access to electricity, since this settlement was not covered by a centralized power supply system, and, accordingly, there was no centralized supply of electricity from the power system. Dehot Sorvo is located in a mountain gorge in one of the most picturesque places of the district at an altitude of 2200 m above sea level. Next to the dehot flows the river Sorvo with turbulent watercourses, where a micro-hydroelectric station with two units of 15 kW is installed, which is connected to the houses of residents and social facilities of the dehot by a 0.4 kV power line.

Since its launch, the Sorvo MSPP has provided residents of Dehot (67 households), a local school with 89 students, a medical center and a retail store with electric energy. The generated electricity was enough to provide lighting for the houses of the residents of Dehot, the operation of the TV, computer and charging mobile phones (430 watts per house). Thanks to this, the residents of Dehot were aware of the events taking place in the country and the world, could watch various programs, children could attend school, prepare lessons, communicate by phone, the entire population could receive medical care. Weather conditions and terrain allow residents to do without household refrigerators and air conditioners. Women are engaged in handicrafts at home, and men are engaged in cattle breeding, gardening and potato growing. Also, the residents of Dehot provide services to guests and tourists, rent them rooms and provide them with the necessary conditions for living. Thanks to the microhydrostation, people are provided with work, engaged in their favorite business, which helps to reduce poverty.

The owners of households and social facilities of dehot pay for the electricity consumed according to the established tariff for electricity generated by this MSPP. The collected funds are used to maintain the operation of the station, maintain its staff, repair work, etc.

Also, as an example, a station with a capacity of 35 kW in the village of Rogich of the Penjikent district can be cited. It was designed and installed by specialists of Technologiyahoi Sabz LLC by order of the German Agroaction within the framework of the EU project. Prior to that, there was no electricity in the village of Rogich, in which there are 55 households, due to inaccessibility.

However, when implementing this decentralized model, a number of issues and problems were identified. In particular, the need to improve the legal framework for the development of microgeneration in decentralized power supply zones with proper regulation of state support in order to eliminate problems in the field of small-scale energy.

In addition to the above example, there are cases when there are areas in the flat part where it is advisable to use solar or wind energy. Due to population growth, possible increase in electricity prices, a certain part of consumers are forced to look for alternative energy sources – autonomous small hydroelectric power plants, solar, wind, geothermal, biogas.

The law "On the Use of Renewable Energy" obliges system operators to purchase energy produced from renewable energy, but does not provide conditions for the implementation of this norm in the absence of power grid networks in decentralized zones, where there are no electric networks and related equipment at all, and there are no conditions for the sale of electricity to the system operator.

Also, Article 12 of the Law stipulates that the sale of energy produced from renewable energy sources is carried out in compliance with the following requirements and conditions:

- availability of a certificate of conformity for the energy sold;

- sale of energy on a contractual or competitive basis at regulated tariffs;
- to the authorized body in the field of energy.

That is, the manufacturer's action is regulated by this paragraph of the Law.

At the same time, the Law does not answer the question of how the authorized body in the field of energy organizes the purchase of electricity from the owner of an electric station when there are no electric distribution networks in the zone of decentralized power supply from the authorized body (energy supply organization).

The Law also regulates the sale of energy produced from renewable energy sources only to the authorized body in the field of energy, the owner of the station independently does not have the right to sell the generated energy to the side with decentralized power supply.

The "Regulation on the procedure for connecting (connecting) installations for the use of renewable energy sources to common energy networks" does not stipulate that for owners using the generated energy for their own needs, there is no need to obtain technical conditions for connection from a network organization.

Recommendations:

Make the following changes and additions to the NLA of the Republic of Tajikistan:

- To make appropriate amendments and additions to the Law "On the Use of Renewable Energy", which would determine the mechanism for the purchase of electricity produced from renewable energy directly by the consumer in the absence of an electric distribution network in the zones of decentralized power supply. Allow the producer of electricity (thermal) from renewable energy sources to conclude direct contracts directly with electricity consumers for the sale of electric energy, indicating the approved tariff.

- To make an addition to the "Regulation on the procedure for connecting (connecting) installations for the use of renewable energy sources to common energy networks" on the exclusion of the owner of microgeneration from the list of recipients of technical specifications from network organizations when using the generated energy only for their own needs.

- development and implementation of standards for the use of RES, E/E, regulations and rules

Issues of standardization in the field of renewable energy, energy conservation and energy efficiency are regulated by the Laws of the Republic of Tajikistan "On Standardization", "On the use of renewable energy sources", "On Energy Conservation and Energy Efficiency" and "On Energy", Decree of the President of the Republic of Tajikistan, No. 653 of April 24, 2009 "On additional measures for the economical use of energy" and a number of resolutions of the Government of the Republic.

Based on the directives and norms of the standards of the European Union, the Customs Union and the implementation of Article 18 of the Law of the Republic of Tajikistan "On the Use of Renewable Energy Sources", since 2011, the Agency for Standardization, Metrology, Certification and Trade Control under the Government of the Republic of Tajikistan has adopted an additional 14 national standards in the field of renewable energy and energy efficiency.

The analysis of the NLA in this matter showed that when developing standards for renewable energy sources, the concept of the term "microgeneration" was not taken into account due to its absence in the legislation of the country.

Recommendations:

In terms of the development of relevant standards, regulatory and technical acts, the following works are to be performed:

- To study the issue of inclusion of renewable energy efficiency indicators in technical regulations, standards and other technical regulations of the Republic of Tajikistan.
- To supplement the issues of microgeneration when putting into effect technical regulations, standards and other technical regulations of the Republic of Tajikistan, establishing the methodological, organizational and technical basis for the effective use of renewable energy.
- To study the issue of inclusion in the technical regulations and standards of the Republic of Tajikistan of energy quality parameters brought into line with international standards recognized by the Republic of Tajikistan for microgeneration.
- Analyze the issue of the need for mandatory certification of energy and products produced from renewable energy sources, including microgeneration.
- Develop standards for the use of low-power units and determine the conditions for the quality of energy produced from renewable energy sources.

2. Development of regulatory and legal regulation of the placement of microgeneration facilities based on renewable energy

61% of beneficiaries indicated the absence (lack of knowledge) of a regulatory document on the placement of small-scale energy (microgeneration) facilities based on renewable energy on land plots that are part of residential buildings and their certification, as well as the placement of CBT entities within local territories and consumers

It should be noted that in the CC RT there is no direct indication of the category of land provided for the construction of energy facilities. The issue of placing small-scale energy facilities on the territory of residential quarters is also not reflected in the CC. From the comparison of Articles 3, 77, ¹⁰ and 86, it can be concluded that the land plots provided for use for the construction of renewable energy facilities belong to the "lands of industry, transport, communications, trunk pipelines and other purposes in cities" and "lands of communication lines, radio and power transmission" and be guided by the norms corresponding to this status of land. At the same time, it follows from article 86 that land plots for overhead power transmission lines, buildings, structures and other devices are provided to enterprises, institutions and organizations operating power transmission lines in accordance with technical projects and standards. As of 01.01.2021, the total amount of land allocated for this group is 176,816 hectares.

The assignment of lands to categories and their transfer from one category to another is carried out in accordance with the procedure established by the Government of the Republic of Tajikistan, it is also established that "the transfer of arable land, perennial plantations, hayfields and pastures to a non-agricultural type of agricultural land is carried out by the decision of the Government of the Republic of Tajikistan."

It is determined that the use of a land plot is prohibited before the registration of the right of land use – before the establishment by the relevant land management authorities of the boundaries of the land plot on the ground and the issuance of documents certifying the right to use the land. At the same time, land plots in the Republic of Tajikistan are provided to individuals and legal entities by local executive bodies of state power in accordance with the procedure established by the Government of the Republic of Tajikistan. For the allotment of land plots, a land management case is drawn up, the preparation of which is carried out by specialists of the state body for land management of the Republic of Tajikistan, its local bodies, specialized design institutes and its enterprises. The basis for submitting a petition for the seizure of a land plot is a prospective development project or a decision of a higher authority.

Issues of acquisition and transfer of land plots of any purpose are approved by the Land Code of the Republic of Tajikistan, as well as the Rules for the Provision of land plots to Individuals and Legal Entities approved by the Government of the Republic of Tajikistan dated 01.09.2005. No. 342.

The placement of construction objects is carried out on the basis of district planning projects, the draft general plan of settlements, as well as other promising projects submitted by local architecture and urban planning authorities. The allocation of a land plot for the construction of a renewable energy facility is confirmed by a resolution (decision) of the relevant MIOGV.

This procedure for the provision of land for renewable energy is also reflected in the "Methodological guidelines for the procedure for obtaining a permit for the installation and placement of energy facilities operating on the basis of renewable energy in the territory of the Republic of Tajikistan." This act defines a step-by-step procedure for obtaining permits for the use of renewable energy, and consists of 8 main sections and appendices. However, the specified Order of the Minister of Energy and Industry of the Republic of Tajikistan has not passed state registration in the Ministry of Justice of the Republic of Tajikistan. And NLAs that have not passed state registration do not entail legal consequences and, as they have not entered into force, cannot serve as a basis for regulating the relevant legal relations and applying sanctions for non-compliance with the regulations contained in them. These NLAs cannot be referred to when resolving disputes.

The participants of the FGD and the Round Table gave examples that small hydroelectric power plants built with the support of international organizations could not be connected to electric networks, since they did not have all the necessary permits, first of all, a certificate of securing a land plot.

Thus, the procedure for granting land for renewable energy requires clarification and substantial refinement. The norms of legislation should clearly and concretely describe all the points on the issue of allocating a land plot for the use of renewable energy, in this context it seems appropriate to make

appropriate changes and additions, both to the CC RT and to the Rules on the allocation of Land plots for Individuals and Legal Entities, and, accordingly, to the Methodological Guidelines for the procedure for obtaining a permit for the installation and placement of energy facilities operating on the basis of renewable energy sources. At the same time, it is important to complete the procedure of state registration of these methodological guidelines in the Ministry of Justice of the Republic of Tajikistan.

Land legislation provides for a complex and multi-stage procedure for obtaining a certificate for a land plot intended for the construction of renewable energy and E/E facilities. In addition, it is necessary to obtain a package of permits and approvals for, according to the requirements of urban planning, master plans of the PDP, SNIP, which do not take into account the specifics of the construction of renewable energy facilities and the features of E / E, especially for renewable energy microgeneration plants, assuming its location on site or near the place of consumption. The respondents of the Survey and the Round Table expressed doubt about the need to undergo a State environmental assessment and environmental Impact Assessment when installing solar microgeneration equipment.

Thus, the analysis of land legislation from the point of view of regulating the allocation of land plots for CBT and microgeneration facilities showed the following problems:

- there is no regulatory and legal regulation of the placement of microgeneration facilities in the norms of the Land Code, the procedure for providing land for renewable energy is not specified specifically, which requires additions and improvements;

- the existing complex way of regulating the process of allocating land for the construction of facilities, including renewable energy production enterprises, creates barriers to the entry of new entities into this market and, thereby, hinders the development of entrepreneurship and competition in the renewable energy and EE sector;

- high administrative barriers (the procedure and procedures for obtaining permits and approvals for microgeneration are similar to the construction of urban development facilities);

- there is no clear and specific description of all the points on the allocation of a land plot in the norms of legislation, from which category of land can be allocated for the use of renewable energy sources.

In order to generate and supply energy based on renewable energy on a land plot, it is required to obtain permits and other permissive actions from authorized state bodies regarding obtaining a certificate for the land plot where the renewable energy facility will be located. It is necessary to conduct an environmental assessment, an environmental impact assessment.

Recommendations:

- To develop regulatory and legal regulations for the placement of microgeneration facilities based on renewable energy sources on land plots that are part of residential development facilities and their certification;

- Allow the use of land without changing their legal status and category (The formation of a land plot for microgeneration facilities without changing the status and category);

- To make amendments and additions to the relevant NLA in order to create legal conditions for CBT entities, producers of clean energy, for their placement within local territories and consumers;

- To make additions to the SNiP - norms of territorial planning, taking into account the placement of microgeneration facilities;

- Identify mechanisms to support and stimulate land use and water use of renewable energy microgeneration facilities;

- Provide mechanisms to reduce the financial and time costs of entrepreneurs when they receive the right to allocate land, increase equity and competitiveness in the distribution of land;

- Create a "Single Window" scheme for the interaction of local executive authorities and state organizations involved in the preparation of permits for the installation of renewable energy facilities;

- To improve the normative legal acts of legal relations between local executive bodies and entrepreneurs in the direction of ensuring a greater balance of their rights and obligations.

- Determine the procedure and procedures for the functional and intended purpose of the land plot, the regulation of the placement of microgeneration facilities in cities and towns and beyond: a) using solar energy b) using water energy c) biogas d) wind energy.

- To improve the mechanism of work of authorized bodies in the direction of greater objectivity of decisions, expanding access of the applicant and the entrepreneur to information about his work;

- Legislatively determine the standards for the area of land plots reserved (used) for the placement, construction, construction of small-scale energy facilities;

- To develop standards regulating (space-planning conditions, technical requirements, standards, based on the parameters of the required (augmented) capacity of renewable energy (microgeneration) installations;

- To develop and adopt regional programs for the development of engineering infrastructure, master plans of PDP, taking into account the need for microgeneration facilities;

- To make an addition to the "Land Code" on the allocation of a land plot for the construction of microgeneration on the territory of residential quarters with appropriate preferences for installations from renewable energy micro-stations up to 15 kW;

in particular:

- when installing solar equipment up to 15 kW, it is not necessary to undergo the procedure of the State Environmental Assessment (SEE)

- when installing solar equipment up to 15 kW, it is not necessary to undergo an Environmental Impact Assessment (EIA) procedure.

- to resolve the issue of the need to obtain a certificate for a generating station for its own needs up to 15 kW.

3. Improvement of tariff regulation and measures of tax and customs regulation for state support of microgeneration from renewable energy sources.

- analysis of the establishment of tariffs for electricity produced during microgeneration from renewable energy sources, taking into account current legislation, foreign experience, including fixed tariffs

The tariff policy of the Republic of Tajikistan for the sale/supply of energy produced from renewable energy sources was developed on the basis of the Civil Code of the Republic of Tajikistan (Part Two) of December 11, 1999, No. 884, the Laws of the Republic of Tajikistan "On Energy", "On the Use of Renewable Energy Sources", "On Natural Monopolies".

Chapter 29 "Purchase and Sale" of the Civil Code of the Republic of Tajikistan, section 5 "Energy Supply" regulates the purchase and sale of electricity, establishes the procedure for concluding an energy supply contract, the quantity and quality of energy supplied, the subscriber's obligations for the maintenance and operation of networks, appliances and equipment, energy payments, etc.

The Order of the Ministry of Energy and Industry of the Republic of Tajikistan No. 112 dated December 10, 2010 approved the "Contract for the purchase and sale of electricity generated using renewable energy sources".

The Decree of the Ministry of Energy and Industry of the Republic of Tajikistan dated December 28, 2010, No. 131 also approved "Guidelines for calculating regulated tariffs for electric energy generated by installations for the use of renewable energy sources", which are intended for use by energy producers using renewable energy sources, wholesale buyers of electric energy. However, the practice of their application revealed shortcomings in the proposed formula, which does not take into account a number of factors. In particular, the possible calculation of the tariff for electricity generated from the use of solar energy has not been singled out separately. The proposed calculation method does not take into account the cost of installation and maintenance services for the period of operation of the technology.

By the Decree of the Government of the Republic of Tajikistan dated June 22, 2019, No. 329, tariffs for electric and thermal energy were approved, but not for RES, because according to the above norm of the law, for each type of RES, its own price and tariff should be calculated. At the same time, it should be noted that by now, the cost of electricity from RES has decreased significantly. We see that, on the one hand, tariffs for traditional energy are increasing, and, on the other hand, with the development of technologies, the cost of electricity generated from solar energy is gradually decreasing.

Taking into account the above, in order to determine the size of the effective tariff for electricity received from renewable energy sources, it is proposed to calculate the cost of 1 kWh of electricity based on the payback calculation method. This method is widely used in European countries.

The calculation of the tariff is based on the formula:

$$P_{ener} = \frac{P_{eq} + P_{ser} + Tax + P_{inv} \cdot A}{Pr \cdot K_{IYM} \cdot 24 \cdot 365 \cdot A}$$

P_{ener} - The cost of 1 kWh
 P_{eq} - Cost of equipment
 P_{ser} - The cost of installation and maintenance services. maintenance
Tax - Tax and customs payments
 P_{inv} - % of the value (investor's profit) for 1 year
 Pr - Productive capacity
KIUM - Installed capacity utilization factor
24 - 24 hours a day
365 - Days used in production (365 days)
A - Depreciation period of equipment

To the cost of the equipment, it is necessary to add the P_{ser} - cost of installation and provision of services (maintenance), usually this service is 50% for the entire period of use of the equipment.

To determine the profit (5-10% of the annual return on the invested amount) the cost of electricity is calculated from the sale of electricity.

Table 10. Cost of disclosure

Model (type of station)	Power, kW	Cost, somoni.
<i>Micro-HPP-10Pr</i>	up to 10	127676,47
<i>Micro-HPP-15Pr</i>	up to 15	142697,2
<i>Micro-HPP-50Pr</i>	up to 50	570788,9

Source: INSET Company. (inset.ru)

An example of calculating the electricity tariff. To calculate the electricity tariff, we use Micro – HPP – 10 pr. Table 10 shows the cost of the equipment

$$P_{ener} = \frac{P_{eq} + P_{ser} + Tax + P_{inv} \cdot A}{Pr \cdot KIUM \cdot 24 \cdot 365 \cdot A} = \frac{127676,47 + 63838,23 + (12767,64 \cdot 15)}{10 \cdot 24 \cdot 365 \cdot 15} = 0.29 \text{ somoni}$$

In this calculation, 50% of the total amount was used, that is, 63838.23 somoni, as the cost of installation and maintenance services. maintenance, 10% annual income from the invested amount is also delivered. That is, when selling electricity for 0.29 som. for 1 kW. each investor will receive 10% (12767.64 somoni) of profit from the invested amount every year.

$$P_{ener} = \frac{P_{eq} + P_{ser} + Tax + P_{inv} \cdot A}{Pr \cdot KIUM \cdot 24 \cdot 365 \cdot A} = \frac{127676,47 + 63838,23 + (6383,82 \cdot 15)}{10 \cdot 24 \cdot 365 \cdot 15} = 0.21 \text{ somoni}$$

The second example shows that when selling electricity for 0.21 somoni, the investor will receive an annual income of 5% (6383.82 somoni).

With this method of calculating the cost of electricity generated using renewable energy, the main factor is the profit of the investor (owner of the technology) of renewable energy.

We will also give an example of calculating the benefits of using the MSPP in the Hissar district, which was carried out by the AET in justifying the calculation of the tariff for the electricity generated by this MSPP.

The selected Lolagi MSPP, located on the territory of the Navobod jamoat of the Gissar district, is located 53 km from the city of Dushanbe, installed with a capacity of 75 kW, the customer, investor and owner of the project is a private entrepreneur.

The Lolagi MSPP was already in operation and supplied the electricity generated by it to local consumers without a fixed electricity tariff. Basically, the supply of electricity was carried out in winter, when restrictions were imposed on the supply of centralized electricity. The inhabitants of the village used electricity from the MSPP for lighting, food preparation, water heating, for communications and mass media (television, radio, computer technology). However, at the beginning of the project implementation, the appropriate amount of the regulated tariff for the generated electric energy was not calculated and approved in accordance with the current legislation. This electricity was transferred to consumers on a free basis, which did not contribute to the investor's interest in maintaining the operation of the MSPP. At the request of the owner of the MSPP, the tariff for the generated electricity was calculated.

When calculating the regulated tariff, the norms specified in paragraphs 1, 2 and in sub-paragraphs 4.1, 4.2, 4.3, 4.4 and 4.5 of the "Methodological guidelines for calculating regulated tariffs and prices for electric (thermal) energy generated by installations for the use of renewable energy sources" approved by the Order of the Minister of Energy and Industry of the Republic of Tajikistan were adopted as a basis dated 12/28/10, No. 131.

According to the Methodology, the main indicators for calculating the tariff are investment investments. Since the station was built at the expense of the owner, interest payments on loans were not taken into account in the calculation. Operating costs, which consist of operation, repair and maintenance, as well as the amount of electricity generated, and the operating mode, which are considered the main factors, are determined by a simplified formula.

Thus, the following calculation formula is defined for calculating the tariff:

$$Tr = [Zi/W + (Zi/W \times Kp)] : Ts + [Ze/W + (Ze/W \times Kr)] \text{ (cmn/kWh)}$$

Where, Zi is the investment component, it can be grant (gratuitous) investments, investments without interest on a loan or credit investments.

The first part of the formula $[Zi/W + (Zi/W \times Kp)] : Ts$ is a refundable investment (in monetary terms) or the costs of the investor, for design, construction.

The second part of the formula $Tr = [Ze/W + (Ze/W \times Kr)]$ (smn/kW.h) - operating costs (production, transportation, operation, maintenance and supply, taking into account the profitability of production)

At the same time, the Vehicle is the payback period of investments (8-12 years);

Ze - operating costs, consist of the costs of operation and maintenance of the MSPP, which, according to the Methodology, are determined up to 6% of the cost of the facility;

W - The volume of produced electric energy of the MSPP per year, kWh;

Kr is the profitability coefficient for electric power plants, which corresponds to - 15% of the unit cost of production for the MSPP;

The cost of the object is - 396,000 somoni.

For the purpose of full payback and taking into account the coverage of all costs, the calculation of the tariff on the example of the Lolagi MSPP was carried out in the following modes of operation of the station:

If the Lolagi MSPP will work uninterrupted throughout the year and the output volume will be 614952 kW.hour

The size of the tariff, taking into account the coefficient of profit (15%) = 11.8 diram

Operating costs (up to 6% of the cost of the object) amount to -23760 somoni

Electricity losses on power lines - 0.4 kV

$$614952 \times 0.12 = 73794 \text{ kWh}$$

A useful vacation

$$614952 - 73794 = 541158 \text{ kWh}$$

Cash from the sale of electric energy at a tariff of 11.8 diram will amount to:

$$541158 \times 0.118 = 63856.6 \text{ somoni}$$

The full payback and the amount of profit for the development of the station annually is:

$$63856.6 - 23760 = 40096 \text{ somoni}$$

As can be seen from the calculation, the size of the tariff depends on the installed capacity of the generators, the operating mode of the station, the amount of electricity generated and the size of the investment. The greater the power of the generators and the operating time of the station, the smaller the tariff for the generated electric energy. The energy generated by the owner from microgeneration on the basis of renewable energy, without transmission of electric energy, will be lower at cost, which means that the cost of services is lower. The sale of excess electricity is a profit, with a reduction in tariffs, the cost of services decreases.

The importance of completing the task of setting and approving tariffs for generated electric energy from microgeneration is determined by the following benefits:

- *Elimination of disagreement between the seller of electricity and the consumer;*
- *Availability of funds to pay for the services of the service personnel of the MSPP by collecting funds at the tariff;*
- *Obtaining economic benefits from the sale of electric energy for the return of funds spent on construction, as well as for the further development of the MSPP. (net profit = 40096 somoni)*
- *Increasing the stability and reliability of the MSPP.*

This method is based on the calculation of the tariff for electricity generated from renewable energy sources, based on electricity production.

It should be noted that initially, in Article 17 of the Law "On the Use of Renewable Energy", the setting of prices and tariffs for energy was within the competence of the authorized antimonopoly authority. However, in 2015, amendments were made to the Law regarding the transfer of this issue to the powers of the Governments of the Republic of Tajikistan, which significantly complicates the possibility of approving tariffs and, accordingly, selling energy produced from RES for small energy entities, especially microgeneration. This issue should be legally revised. Due to the fact that the restructuring of Barki Tojik has taken place, the issue of creating a regulatory body is being considered, and there is also a need to study the issue of selling electricity directly to consumers.

It should be noted that the most common mechanism for stimulating the development of renewable energy is the establishment of fixed tariffs (FT). This practice is widespread in the states of the European Union, in Russia, Kazakhstan and other countries. At the same time, the establishment of the tariff value is entirely within the competence of the state. In the EU, the tariff is set in accordance with the specifics of various renewable energy technologies (see Table 11).

Table 11. Fixed tariff in EU countries for solar power plants:

A country	Power	Tariff, euro/kW	For a period of
Austria	5-200 kW	€0,12	13 years old
Serbia	up to 50 kW	€0,17	12 years
Bulgaria	up to 5 kW	€0,11	20 years
Croatia	up to 10 kW	€0,26	14 years
France	36 kW	€0,14	20 years
Germany	up to 10 kW	€0,12	20 years old <
Lithuania	up to 10 kW	€0,16	12 years
Spain	up to 20 kW	€0,28	30 years old
Switzerland	up to 30 kW	€0,22	25 years old
Great Britain	up to 4 kW	€0,12	25 years old

Fixed tariff in the USA:

In 1978, American President Jimmy Carter signed a series of laws on national energy and utilities. Among other things, the acts encouraged the development of alternative energy resources and initiated such

a concept as "feed in tariff" (Green Tariff). At the moment, the average Fixed Tariff rate in the United States for 0.5-50 kW stations is \$0.02/kW.

Fixed rate in Russia:

In Russia, the population was legally allowed to sell generated electricity only in February 2019. The rate is regulated by the state and is set approximately at the level of wholesale electricity purchase prices. On average, it is \$0.02-0.03/kW.

Fixed tariff in Kazakhstan:

Fixed tariffs in Kazakhstan are established according to the Resolution of the Government of the Republic of Kazakhstan dated June 12, 2014 No. 645 "On approval of fixed tariffs".

According to paragraph 2 of Article 8-1 of the Law "On Support for the Use of Renewable Energy", fixed tariffs are indexed annually taking into account inflation.

The Ministry of Energy of Kazakhstan forms proposals for CFT based on a comparative analysis of electricity tariffs from renewable energy sources in other countries, taking into account the generation and consumption of electricity in the country, acquisition and sale outside Kazakhstan, generation from renewable energy facilities, commitments to reduce greenhouse emissions, targets and annual indexation of CFT.

Fixed tariffs are differentiated depending on the installed capacity of renewable energy facilities, as well as for each of the following types of renewable energy sources:

- 1) solar radiation energy;
- 2) wind energy;
- 3) hydrodynamic energy of water (small and large hydroelectric power plants);
- 4) the energy obtained by using biogas.

Table 12. Fixed tariff in the Republic of Kazakhstan

№	Renewable energy technology used to generate electrical energy	Tariff value, USD/kWh (without VAT)
1	Wind power plants, with the exception of a fixed tariff for the Astana EXPO-2017 wind power plant project with a capacity of 100 MW, for the conversion of wind energy	0,05
1.1.	Wind power plant Astana EXPO-2017" with a capacity of 100 MW, for the conversion of wind energy	0,14
2	Photovoltaic solar energy converters, except for the fixed tariff for solar power station projects using photovoltaic modules based on Kazakh silicon (Kaz PV), for solar radiation energy conversion	0,07
3	Small hydroelectric power plants	0,03
4	Biogas plants	0,07

Fixed tariff in Uzbekistan:

In December 2021, the Decree of the President of Uzbekistan approved tariffs for the purchase of electricity from small hydroelectric power plants (up to 5 MW) and solar, wind, biogas power plants (up to 1 MW).

The rates are linked to the tariff for the second group of consumers (hereinafter referred to as the tariff), now, according to Spot, it is \$0.04 per 1 kWh. From January 1, 2022, energy companies will be guaranteed to purchase excess energy generated by the above-mentioned power plants at \$0.03 per 1 kWh.

Private investors will be able to directly supply energy to legal entities and individuals from small hydroelectric power plants and small power plants operating from renewable sources without connecting to a single electric power system — via a local network. Such networks will be built on a contractual basis at agreed prices.

Taking into account the above, for the development of renewable energy in the Republic of Tajikistan, it is advisable to consider the issue of establishing fixed tariffs for electric energy produced by facilities using renewable energy sources. In this case, the establishment of the tariff size by the Government of the Republic of Tajikistan, as established by Law, is justified. It will also remove a significant burden from the owner of an electric station from renewable energy sources, in the context of collecting the necessary documents and going through complex conciliation procedures when setting the tariff by the Government for each specific electric station related to small energy.

Recommendations:

- When developing a new tariff policy in the field of energy production using renewable energy, especially solar energy, to study and use international experience in national legislation.
- To develop and adopt the Resolution of the PRT "Rules for determining fixed tariffs and marginal auction prices".
- To provide for the annual indexation of fixed tariffs taking into account inflation and to approve by resolution the Government of the Republic of Tajikistan.
- Before switching to a system of fixed tariffs, in accordance with the current legislation, when calculating the electricity tariff using RES, apply the European Methodology that calculates the tariff based on the benefits received by the investor (owner of RES) and legislatively allow the establishment of these tariffs for microgeneration by the antimonopoly committee.

- measures of tax and customs incentives for MSME entities on the use of renewable energy in the tourism sector

The analysis shows that the leading countries in the production of energy from renewable sources have been supporting the development of renewable energy for quite a long time with the help of a whole range of measures based on price, cost, volume.

Thus, in 2020, the decree of the Government of the Russian Federation developed by the Ministry of Energy of the Russian Federation (dated 29.08.2020 No. 1298) was adopted, according to which, in order to improve the existing mechanism for stimulating the production of electric energy based on the use of renewable energy sources in retail markets, the implementation of the following measures is proposed:

- clarification of the rules for competitive selection of investment projects for the construction of generating facilities operating on the basis of the use of renewable energy sources in order to include such **projects in schemes and programs for the development of the electric power industry of the subjects of the Russian Federation**, including detailed regulation of the procedure for the inclusion of generating facilities selected based on the results of relevant tenders and operating on the basis of the use of renewable energy sources, in schemes and programs for the development of the electric power industry of the subjects of the Russian Federation.

- transition from the **principle of regulating prices** (tariffs) for electric energy produced at qualified generating facilities and sold to grid organizations to the principle of **setting maximum price levels** (tariffs) for such electric energy with the determination of a specific amount of these prices (tariffs) based on the results of competitive procedures;

- clarification of the **rules and procedures for the qualification of generating facilities** operating on the basis of the use of renewable energy sources;

- improving the **procedure for concluding contracts for the purchase and sale of electric energy** with grid organizations in relation to qualified generating facilities, clarifying the terms of such contracts, as well as **simplifying the procedure for determining the volume of sales** of electric energy under such contracts;

- improvement of the rules for maintaining the register of issuance and **repayment of certificates** confirming the **volume** of electric energy production at qualified generating facilities operating on the basis of renewable energy sources.

The implementation of the proposed measures **will** increase the investment attractiveness and efficiency of the **mechanism for stimulating** the production of electric energy based on the use of renewable energy sources in retail markets.

The competition that arose as a result of the selection had a significant impact on the reduction of the declared **capital costs by the participants**, primarily in the direction of wind generation. In this direction,

the decrease from the planned amount of capital expenditures amounted to 55.3% for the 2023 planned year of commissioning (the actual amount of capex according to the results of the selection was at the level of 65,000 rubles/ kWh with marginal costs of 145477 rubles/ kWh) and by 42.6% for the 2024 planned year of commissioning (65005 rubles/ kWh with marginal capex at the level of 113318 rubles / kWh), almost 50%.

This shows the effectiveness of the competitive selection tool as a mechanism for stimulating renewable energy sources, ensuring the provision of support measures to the **most economically sound projects**, which also reduces pressure on the price of capacity in the wholesale market.

In general, due to the current competition in the renewable energy market, it was possible to significantly reduce the average amount of planned **capital expenditures** for projects per 1 kW of installed capacity: for example, in solar energy, this figure fell by 59.5% compared to 2015, in the field of wind generation for the same period – by 58.2%.

Table 13. The average value of planned capital expenditures based on the results of competitive selection of renewable energy projects, thousand rubles/kW

	2013	2014	2015	2016	2017	2018	2019	2020
SES	115,7	111,6	122,8		112,5	78,2	49,8	65
WES	64,9		155,1	136,0	102,9	67,6	64,9	65
MGES		146,0	174,0		163,9	174,5	175,9	193,4

As part of a targeted policy to stimulate the localization of renewable energy equipment, the production volumes of the relevant components increased to 900 MW per year (from 140 MW per year in 2012), while estimates were obtained on the possibility of ensuring the growth of **industrial potential** in the amount of up to 1.4 GW of manufactured equipment per year, which will provide **employment** for at least 12,000 people.

It should be noted that the new Tax Code of the Republic of Tajikistan provides the following benefits:

- In particular, the tax on road users has been excluded from the list of taxes and the profit tax rate for production activities, including electricity generation, has been maintained at 13 percent.

- From January 1, 2022 to January 1, 2027, the value added tax rate will be reduced from 18% to 15%, and the rate of this type of tax will be reduced from 15% to 13% periodically. The social tax rate for commercial organizations has been reduced from 25% to 20%.

- In accordance with the provisions of Article 353 of the Tax Code, in order to support the production of renewable energy, land on which renewable energy equipment is installed (with a nominal capacity of 0.1 MW or more) is not taxed for 5 years from the date of commissioning.

- In accordance with the requirements of the Tax Code, income from tourist activities within 5 years from the date of state registration, if there is a license to carry out tourist activities, is not subject to income tax and the import of equipment, construction materials and other materials to meet the needs of tourism facilities (including hotels, sanatoriums, camp sites and other tourism facilities), with the exception of goods produced in the republic, it is not subject to value added tax.

- In accordance with Chapter 56 of the Tax Code, a simplified system of taxation of innovative and technological activities is provided, according to which the Subjects of innovative and technological activities, when they carry out their activities, are exempt from paying any types of taxes provided for by this Code, except for paying social tax as an insured taxpayer, paying personal income tax and social tax-the insurer, as well as at the time of payment of income at the source of payment, including dividends as a tax agent. The import of innovative and technological equipment by the subjects of innovative and technological activity, which will be used directly for the own needs of this subject, is exempt from paying value added tax. In case of sale of imported innovative and technological equipment by subjects of

innovative and technological activity, such operations are subject to value added tax and other taxes in the general procedure established by this Code.

Taking into account all the provided benefits and exemptions from taxes of MSME and CBT, it can be noted that serious work has been done on the development of renewable energy in the Republic of Tajikistan.

It is recommended to bring the above preferences to the interested entities, individuals and legal entities.

- development of financing measures, including on the basis of development institutions, companies with state participation in the tourism sector, Green financing

Regarding the issue of financing RES and E/E, 50% of the total number of respondents (half of them are entities importing /exporting finished goods, equipment, manufacturers of finished goods, equipment, appliances, devices and representatives of organizations generating electricity) note that for the development of RES and E/ E mainly use grant funds of organizations and funds, while 40% noted the use of state grants and concessional loans, 40% noted the use of their own funds and 15% of them use borrowed funds of financial organizations (loans, loans, loans, leasing, micro-loans).

Regarding access to the capital factor, respondents' opinions were distributed almost proportionally, 27.8% of respondents rated access to this factor "low", 22.2% rated "very bad", 22.2% rated "good", 22.2% rated "very good" and 5.6% of respondents rated access to capital "satisfactory".

In the process of the survey, respondents prioritized managerial, legislative and institutional problems of the RES and E/E sector into a separate cluster and as a result, 55.6% noted tax and customs barriers as a problem of the sector, while 50% believe that the problem is weak state support and insufficient stimulation of the industry.

In the EU and the USA , two types of mechanisms are used to stimulate the development of renewable energy:

1. Administrative method:

- Conducting information and advertising campaigns and exhibitions in support of renewable energy technologies;
- Conducting tenders for the development of new technologies;
- Conducting tenders for the implementation of energy production projects;
- Establishment of mandatory quotas for renewable energy production;
- Issuance of licenses for the construction of facilities using renewable energy sources and approval of project documentation.

2. Economic method:

- Tax benefits or tax reductions;
- State financing of R&D in the field of renewable energy production;
- Public-private partnership in the construction of renewable energy facilities;
- Provision of grants for the development of technologies using renewable energy;
- Exemption of renewable energy producers from taxes;
- Surcharges to tariffs for energy received from installations using renewable energy sources;
- Application of accelerated depreciation methods for installations using renewable energy sources.

The above methods are very effective in stimulating the development of renewable energy in the country.

To stimulate and develop the introduction of renewable energy technology in the CBT of the country, it is recommended to develop the following financing measures:

Investment tax benefits are provided to private investors to reimburse income tax when investing in renewable energy facilities.

Microcredit - in accordance with the microcredit model, buyers (households, small businesses) take a small loan from a bank to cover the cost of supplying equipment. This model avoids the high initial costs usually associated with renewable energy systems, since users pay for them in installments over an agreed time.

Interest-free loans - some government agencies in the UK provide interest-free loans for the purchase of renewable energy generating equipment

Low-interest loans - for the purchase and implementation of renewable energy technologies by MSME CBT entities located in remote mountainous areas and without access to the power grid.

The definition of "green" financing is still being finalized. The G20 Green Finance Working Group defines green finance as "financing investments that provide environmental benefits in the broader context of environmentally sustainable development." The term "green finance" is usually used to denote a larger phenomenon than climate finance, since it covers other tasks and risks related to the environment. "Green" financing includes a wide range of financial organizations and asset classes, and provides for both public and private financing.

Green finance is an emerging but rapidly growing segment of the financial market. The impetus to strengthen the role of the financial sector in supporting sustainable development and addressing climate change was given by the G20, and then reinforced by the Financial Stability Board and the Paris Agreement, as well as related contributions determined at the national level (NRM). Although some progress has been made in the field of "green" financing, only a small part of the loans provided by banks can clearly be classified as "green" in accordance with national definitions.

Despite the fact that "green" financing as a segment of the financial market is still at the stage of formation, such financial instruments as:

- "green" loans,
- "green" bonds,
- green investment funds,
- "green" stock indexes demonstrate rapid development.

- less than 1% of bonds worldwide are labeled as "green", while less than 1% of investments by institutional investors worldwide belong to the category of "green" infrastructure assets.

According to estimates, \$155.5 billion was mobilized through green bonds in 2017. At the same time, banks issued "green" loans in the amount of \$ 164.7 billion. USA (2014). At the same time, determining and assessing the size of the market remains difficult due to the different interpretation of the term "green", as well as the use of different approaches and financial instruments in different countries

Currently, projects of a number of international financial institutions on "Green Financing" are being implemented in Tajikistan. Including:

The Asian Development Bank (ADB) and the Ministry of Finance of the Republic of Tajikistan signed a Memorandum of Understanding on the project "Access to Green Finance" on May 2, 2012, one of the conditions of which was the creation of a State Institution Project Implementation Center (CPR). The total amount of this project is 11 million 870 thousand dollars. USA. Most of the funding is provided by an ADB grant of \$10 million. The contribution of sub-borrowers amounted to \$980 thousand. The contribution of the Government of Tajikistan is 140 thousand dollars. USA. In addition, technical assistance is provided by the Japanese Poverty Reduction Fund in the amount of \$ 750 thousand. USA

On July 14, the United Nations Development Program (UNDP), together with the Environmental Protection Committee of Tajikistan, launched a new project worth \$2.7 million aimed at improving the country's resilience to climate change. The project will last for three years with the support of the Green Climate Fund and will help the Government of the Republic to strengthen the process of planning adaptation to climate change at the national and sectoral levels and increase the country's capacity to mobilize private and public sector funding from domestic and international sources.

According to the results of the analysis of the market of "green" financing for MSMEs in the CBT and RES/EE sectors conducted by ACTED in 2020, more than 60% of MSMEs entities confirm that they used their own funds to carry out their business activities. In addition, it was revealed that MFIs are not very popular among MSMEs and RES and E/E due to high interest rates and small amounts of loans, as well as the absence of MFIs in the regions where MSMEs operate. The data confirm that only 7% of MSMEs who participated in the study have experience in lending to MFIs. In addition, among MSMEs who used MFIs credit products, 57% of respondents belonged to the CBT sector, which indicates a higher demand for credit financing in this area.

Most often, the amount of MSME CBT loans received amounts up to 10 thousand somoni, MSME RES / EE has a larger amount – up to 50 thousand somoni. But for long-term investment in CBT and RES/EE facilities, such amounts are clearly insufficient. They do not cover the main commercial costs and can only be used to cover small running costs. According to the results of this analysis, the average amount of the desired loan is 92 thousand somoni. The difference between the real and the desired amount

demonstrates significant limitations in the MFIs sector and reduces their attractiveness for CBT and RES and E/E subjects.

80% of MFIs who participated in the study have specialized preferential, credit products for the tourism sector. All credit products aimed at the tourism sector have preferential conditions. The average interest rate on these specialized products is 24% per annum. The loan terms are from 6 months to 3 years. 70% of MFIs have specialized preferential, credit products for the RES and E/E sectors. Most MFIs issue these loan products as part of cooperation with various programs and international institutions, but 20% of MFIs also have a loan product that they issue out of their own funds.

Recommendations:

- IFIs and the banking sector to strengthen work on the development of new banking products. Taking into account the digitalization of the economy, expand remote customer service (taking into account the COVID-19 pandemic), improve customer service, increase the level of practical knowledge of employees.

- To contribute to improving the level of financial literacy of MSMEs in the CBT/RES sectors/EE in the development of business plans for obtaining credit resources in MFIs, as well as to establish closer cooperation with credit organizations, to increase the level of theoretical and practical knowledge.

- To provide financial support to international financial institutions, international and non-profit organizations to the National Strategy on Financial Inclusion, the implementation of which will improve access to MSME lending, raise financial literacy of all sectors of the economy to a higher level.

- To study the issue of reducing the average interest rate on loans for MSMEs in the CBT and RES/EE sector, while increasing the size of the loan issued and the term of its repayment.

- development of measures to stimulate demand for products of national manufacturers-suppliers of equipment, systems of new energy-efficient technologies and services using renewable energy sources, including in the tourism sector

When conducting a survey on the question of readiness to invest in the renewable energy sector, 39.5% of the total number of respondents answered that they were ready to invest, if there were free funds and availability of resources; 16.3% expressed their willingness to invest, if there were "cheap and long loans" at an acceptable cost; 11.6% indicated their readiness in case of creation legal and economic conditions that allow you to extract additional profit.

When asked what problems most hinder the development of the use of renewable energy and the growth of EE in the tourism sector, 69.4% of respondents point to weak investment attractiveness and low business activity in the introduction of technologies and the establishment of production in the field of renewable energy and EE. At the same time, 52.8% of respondents point to an insufficient level of human resources and low availability of specialists in the field of RES and EE, and 50% - note weak state support and insufficient stimulation of the industry, 50% - limited access to information about RES.

It should be noted that in a number of countries around the world, the state protects and supports the domestic manufacturer of equipment for renewable energy. For example, in Turkey, they are obliged to use solar collectors, install dual-circuit systems. In Armenia, builders are required to use domestic equipment. The import of equipment manufactured in the country is prohibited in Uzbekistan.

Therefore, it is necessary to encourage the manufacturer. Domestic manufacturers of renewable energy equipment need state support. It is necessary to develop measures to stimulate demand for the products of national manufacturers-suppliers of equipment, systems of new energy-efficient technologies and services using renewable energy sources, including in the tourism sector. At the same time, it should be borne in mind that the cost of transporting imported raw materials exceeds the cost of the raw materials themselves, which affects the cost of the final product. Therefore, there are difficulties in selling products. The sales market is also problematic.

Recommendations:

- To provide state support to national manufacturers-suppliers of equipment, systems of new energy-efficient technologies and services using renewable energy through:

1. Amendments and additions to the relevant NLA.

2. Creating an opportunity to support a local manufacturer by setting high standards and requirements for imported equipment.

- Launch industrial production of solar panels and equipment at manufacturing plants using domestic raw materials (silicon raw materials) and thereby reduce the cost of electricity production from this source.

- In the context of the sales market, to explore the possibilities of not only the domestic market, but also the external one. In particular, Afghanistan, which provides ample opportunities for the sale of our competitively high-quality renewable energy products. The Pamirenergi company, for example, sells surplus energy generated by the MSPP to border Afghan settlements.

- To stimulate financing and allocation of resources for R&D development and stimulation of domestic developments in public and private research institutes.

- To develop specialized training services for operators and service personnel (repair and maintenance), to provide engineering services at the stage of business planning, development of feasibility studies, installation supervision and commissioning, development of services of designers, builders, installers.

- To carry out an examination of the norms and provisions of legislation to support small businesses, in particular in the CBT sector, in the context of state support measures. Consider the possibility of using the existing infrastructure and support system for small businesses for the tourism sector.

- development of the structure of environmental impact on the development of entrepreneurship in the tourism sector using renewable energy. (subsidy from environmental Funds), use of financial resources (attraction of funds) and financing of special credit lines.

A quota for greenhouse gas emissions is allocated separately for each republic and it is determined how many greenhouse gases can be released into the atmosphere per year. The corresponding quota has been determined for the Republic of Tajikistan. According to the World Bank (A.Khaidarov – representative of the World Bank), Tajikistan currently uses about 30% of the allocated quotas for greenhouse gas emissions into the atmosphere, and the remaining 70% can be sold to other interested states. According to the forecasts of the World Bank, Tajikistan can receive from 70 to 80 million US dollars annually from the sale of quotas¹⁸. To do this, Tajikistan needs to keep greenhouse gas emissions at a certain level by:

- stimulating MSME subjects in the CBT to introduce RES, by allocating subsidies from the sale of quotas to other countries;

- stimulation based on the total remuneration of MSME subjects in CBT operating in remote mountainous areas and for the provision of services using renewable energy technologies from environmental funds (from the sale of quotas);

- stimulation based on the introduction of green environmental certification. Upon fulfillment of all the requirements of this certificate, MSME subjects in the CBT will receive a certain amount as a reward for their contribution to the green economy and environmental protection. Green environmental certification is a market tool aimed at rational use of natural resources.

Recommendations:

- To study the possibility of stimulating MSME subjects in the CBT to introduce renewable energy by allocating subsidies from the sale of GHG emission quotas to other countries.

- To study the possibility of incentives based on the total remuneration of MSME subjects in CBT operating in remote mountainous areas and for the provision of services using renewable energy technologies from environmental funds (from the sale of quotas).

- To introduce forms of incentives based on the introduction of green environmental certification.

4. Development and implementation of Green certification in the tourism sector

¹⁸https://www.kt.kz/rus/economy/vibrosi_parnikovih_gazov_v_tadzhikistane_sostavljajut_4_tis_gigatonn_vb_1153465399.html

**- description of the experience of various countries on the use of "Green certification"
Green Certificates**

- Renewable Energy Certificates (Renewable Energy Certificates) - a financial and regulatory instrument used in the world to implement the mechanism of quotas for renewable energy (RES) and support its development.

The certificate allows consumers to determine the standard and quality, the subject of tourism - to have a competitive advantage.

Certification is carried out to create conditions for the environmentally safe implementation of economic and other activities, as well as to participate in international economic cooperation. One of such common certificates is the **LEED certificate**.

LEED (Leadership in Energy and Environmental Design) — this is an internationally recognized certification system for environmentally friendly buildings, providing third-party verification that the building and the interior spaces in it were designed and built using strategies aimed at increasing productivity in all the most important indicators:

- energy saving,
- water efficiency,
- reducing CO2 emissions,
- improving the quality of the environment and indoor environment,
- rational use of resources.

LEED is an energy saving and environmental protection system using solar panels.

LEED depends on the level of solar energy use: basic is 0.8% of the original cost, silver is 3.5% higher, gold is 4.5%, premium and platinum are 11.5%.

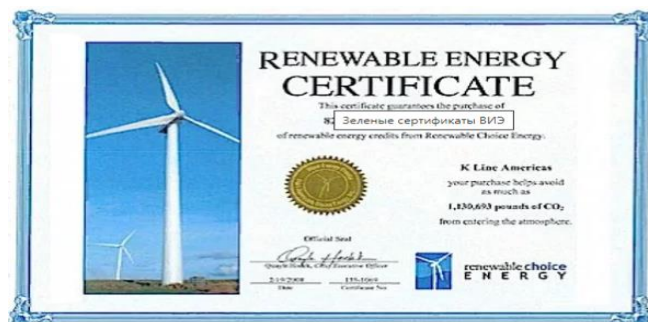
Advantages of LEED - use and support of clean energy production through green targeted loans

It should be noted that in developed countries, green certificates are very common and widely used to support the development of renewable energy. Here are examples of some developed countries on the application of Green Certification.

The UK uses "green certificates" called Renewables Obligation Certificates. This form of certification is a mandatory type and it supports a system of quotas established by the state. Electricity suppliers that have passed state licensing are obliged to transfer electricity to consumers, a certain share of which is given to energy obtained from renewable sources. If they are unable to fulfill the obligations imposed on them, then they can either purchase "green" certificates at the market price, or pay a penalty amount of 30 pounds for each megawatt-hour that is not delivered or not covered by the purchased certificate, which is a kind of limiter for speculating with "green" certificates, not allowing their market costs rise above a certain limit.

The United States of America uses its own version, Renewable Portfolio Standards, of renewable energy portfolio standards, which is supported in twenty-one states and the District of Columbia. In terms of the way "green" certificates are used, it resembles a quota system. In each state, in accordance with territorial and other features, appropriate goals are set for the use of energy from renewable sources, while consumers can purchase "green" certificates instead and do it independently of suppliers. "Green" certificates are provided to producers of energy from alternative sources in the form of grants, and suppliers must purchase them if they do not fulfill their obligations to supply energy from renewable sources in a specified amount.

In Japan, green certificates operate under the New Energy Certificates system, in which they are a confirmation of the production and supply of energy from renewable sources, and are designed to stimulate



and develop new alternative energy technologies. Obligations under this system are imposed on electricity suppliers, and power plants or installations using wind, solar, biomass, organic waste, geothermal installations, including steam recycling, and damless hydroelectric power plants with a capacity of less than one megawatt have the right to issue certificates. The validity period of such certificates is two years, and the penalty for non-fulfillment of obligations by supplying companies can reach up to one million yen.

In the European Union, Green Certificates are called Guarantees of Origin ("Guarantee of Origin"). Their release is regulated by the Renewable Energy Directive (Directive 2009/28/EC). To implement the directive, the European Energy Certification System (EECS), developed by the Association of Issuing Bodies, operates in the EU.

Table 14. Green certification in some European Union countries¹⁹

Countries and name of certificates	Application
Australia - Renewable Energy Certificates Italy - Certificati Verdi Belgium - Groenestroom Certificaat Netherlands - Green Certificates Sweden - Guarantees of Origin	Obligations for the production and consumption of "green" energy are distributed among all retail suppliers and wholesale buyers. Prices for "green" certificates are set on the basis of agreements between all participants of this market, while their validity period is not limited. The purpose of these certificates is to support the production of clean energy, the growth of the use of renewable energy technology in final consumption and the development of renewable energy technology

- creation of legal conditions for the development and implementation of "Green certification" in the tourism sector as a market tool aimed at rational environmental management, definition of the concept of "green environmental certification"

According to 44.4% of respondents, the development of "green certification" of tourist facilities will attract more tourists and increase the income of renewable energy suppliers, energy efficiency, improve environmental performance. 33.3% of respondents believe that "green certification" will create an additional barrier to tourism development and increase costs (additional investments of renewable energy, E/E) and reduce competitiveness.

Tajikistan is actively implementing a number of strategic, legal and organizational measures aimed at reducing the administrative burden and improving the overall "business environment". Among other things, these measures lead to significant changes in the organizational structure, and also relate to mechanisms for environmental regulation and enforcement of environmental legislation, such as the procedure for issuing environmental permits and conducting inspections. Undoubtedly, some changes have had a positive impact on the business environment of the country. Nevertheless, self-regulation in the production environment and voluntary compliance with environmental regulations by economic entities without effective state environmental regulation and law enforcement cannot provide favorable conditions for the life and health of the population and sustainable development of the country, including tourism.

In this regard, it is also worth noting that Tajikistan has not yet actively used such tools to promote voluntary compliance with environmental legislation as environmental audit, labeling and voluntary environmental reporting of business entities, green environmental certification and green certificates. When implementing these tools in practice, certain difficulties arise, primarily due to the lack of legal conditions in the legislation for the development and implementation of "Green Certification" in the tourism sector, as a market tool aimed at rational use of natural resources

In Tajikistan, the issues of ecology and environmental protection are regulated by the Law of the Republic of Tajikistan "On Environmental Protection" No. 485 of 22.06.11.

This Law defines the legal basis of state policy in the field of environmental protection and is aimed at ensuring sustainable socio-economic development, guaranteeing human rights to a healthy and favorable environment, strengthening the rule of law, preventing the negative impact of economic and other activities on the environment, organizing the rational use of natural resources and ensuring environmental safety.

In the relevant articles of this Law, definitions and norms of "Environmental certification", "Environmental expertise" are given, "Environmental requirements for the construction, reconstruction of enterprises, structures and other facilities" and "Environmental requirements for energy facilities" are given.

¹⁹ The experience of applying "green" certificates in foreign countries – on the example of the EU (nomitech.ru)

However, the law does not contain the concepts of "Green Standard", "Green Environmental Certification" and Green Construction, which corresponds to the introduction of a green economy.

"Green" environmental certification is a system for assessing compliance with environmental safety and efficiency requirements, which is applied to buildings. Several well-known Western certification systems for "green" standards are most actively used, including BREEAM, LEED and others, information about this is given in the previous section.

Green environmental certificates allow you to monitor and track the production, supply and consumption of renewable energy. ZS reflect the ecological value of the generated renewable energy.

In order to create legal conditions for the development and implementation of "Green Certification" in the tourism sector, it is necessary to introduce a definition of "green environmental certification".

At the same time, to determine that green certificates are a confirmation of the production and supply of energy from renewable sources, and are designed to stimulate and develop new technologies for alternative energy and energy efficiency of facilities in the CBT sector.

Relevant amendments and additions should be introduced into the current Laws "On the use of renewable Energy sources", "On Energy Conservation and Energy Efficiency", "On Tourism" and "On Environmental Protection".

Recommendations:

- Creation of regulatory and legal conditions for the development of a system for assessing the compliance of facilities and activities with environmental energy efficiency standards, green standards ("Green Certification") in the Law "On Tourism".

- To make the following relevant amendments and additions to the Laws of the Republic of Tajikistan "On Environmental Protection", "On the use of renewable Energy sources" and "On Tourism":

- the concept of "green environmental certification", in the context of monitoring and tracking the production, supply and consumption of renewable energy,

- determine the authorized body for issuing the green certificate,

- define the requirements and legal conditions for the development and implementation of the Green Certificate,

- The authorized body to develop Green Standards for the CBT sector, taking into account relevant international standards.

- To prepare an appropriate draft law of the Republic of Tajikistan "On Amendments to certain Legislative Acts", as well as relevant by-laws regulating the procedure for conducting environmental expertise, environmental certification"

- To develop a program document on the "green economy" taking into account all the processes of the country's ecosystem.

- To define in the Law the priority of the introduction and use of renewable energy as the most ecological resource.

- determination of the list of competitive advantages of the tourism entity from the use of renewable energy technologies

The Government has identified the development of renewable energy sources as one of the priorities within the framework of the SNR-2030. The Law "On the Use of Renewable Energy Sources" provides, among other things, the use of incentives for generating energy from renewable sources in the zones of decentralized energy supply, where most of the CBT facilities are located. It can be expected that the expansion of the use of renewable energy (solar, wind) will bring numerous benefits in terms of energy security, economic efficiency, new commercial opportunities and the creation of new jobs, as well as benefits for the health of the population as a result of reducing the use of fossil fuels. At the same time, there is no state strategy regarding the support schemes necessary to stimulate the development of renewable energy, which creates uncertainty for investors and MSPs in the CBT.

The factors of the advantages of renewable energy include huge resources of all types of renewable energy, many times exceeding the foreseeable needs of humanity, availability anywhere in the country (with the exception of geothermal) of one or another type of renewable resources or their combination.

An important factor is their ecological purity, already proven, at the demonstration level, the viability of technologies, and in some cases high competitiveness. The possibility of building both centralized and

decentralized (autonomous) local power supply systems for real estate and business activities on the basis of renewable energy sources.

- the procedure for obtaining a Green certificate by CBT entities, its conditions and significance

In general, in order to conduct environmental certification in various sectors of the country's economy, it is necessary to adopt a national standard and determine an authorized body that establishes environmental requirements for real estate. The certification procedure is carried out by examining the project documentation at the facilities with an on-site inspection of the building and structure itself for compliance with the certification requirements.

In the course of such work, the following parameters of the structure are determined:

- effectiveness of environmental management;
- quality and infrastructure of the external environment;
- building layout and quality of architectural solutions;
- environmental friendliness of the internal environment of the object;
- efficiency of the waste management and sanitary safety system;
- ensuring the rational use of water, electric energy from renewable energy sources and other resources;
- energy saving, water efficiency, reduction of CO₂ emissions
- overall energy efficiency of the building;
- ensuring environmental protection during the construction, operation and liquidation of the building;
- safety of human life during the operation of the facility.

The purpose of the certification is to characterize the consumption of energy resources by the building, identify the potential for energy saving and propose energy-saving measures to the owner of the building, as well as to present the evidence base for the use of renewable energy.

To obtain and issue a "green" certificate, you must submit an application to the authority, authorized to issue green certificates. At the same time, keep in mind that the certification of green tourism is not a mandatory procedure, and in order to obtain this certificate, customers need to undergo an energy audit.

So, in Russia, a Green tourism Certificate is issued in accordance with GOST R 56642-2015, that is, ecotourism certification is not a mandatory procedure, since this mechanism is intended only to increase competitiveness and attract customers.

A green environmental certificate can become a weighty argument when working and attracting foreign investors who can further contribute to the development of environmentally friendly CBT facilities, as well as tourists focused on eco-tourism. The advantages of such a tourist zone, designed and built according to "green standards", are the demonstrativeness of the resource-saving object, with zero emissions, well-being, environmental friendliness, harmony and non-aggressiveness towards the natural environment, and for its visitors - a comfortable, safe and favorable environment for living and recreation.

Certification provides opportunities for CBT entities to reduce heating and air conditioning costs by:

- conducting energy audit and certification of buildings;
- improving the thermal insulation of buildings and structures, reducing the thermal conductivity of walls (external enclosing structures);
- consideration of regulatory requirements and new technologies in the construction of new real estate and modernization of existing;
- additional use of alternative energy sources;
- attracting investments;
- environmental improvements and emission reductions.

Also important are the benefits of energy saving for households and MSPs in CBT, which are as follows:

- reduction of heating and hot water costs by 40-50%;
- reduction of electricity consumption;
- increase in the possible sale of surplus generated electricity;
- reducing the cost of maintenance and upkeep of the house;

- increase in the market value of the house;
- increasing the life cycle of the building.

The presence of the PO will allow the entrepreneur to become one of the first in the market of the "green" tourist zone and gain a strong position in this highly profitable segment.

Recommendations:

- To make amendments and additions to the Law "On Environmental Expertise" defining the procedure and conditions for obtaining a Green Certificate by MSME entities in the CBT sector.
- To define in the law that the certification of green tourism is not a mandatory procedure, in order to obtain this certificate, customers need to undergo an energy audit by an independent energy audit company.
- Develop and adopt relevant by-laws clarifying the procedure and conditions for obtaining a Green Certificate for MSME subjects in the CBT.

5. *Development and adaptation of green standards*

- determination of the necessary list and content of green standards and qualities as the basis for conducting Green certification, compliance with which creates conditions for environmentally safe economic and other activities

The meaning of the changes in this section of the RM is the competitive advantage of Green Tourism, as well as the provision of a new quality of tourist services. It provides for the development of tourism infrastructure, the creation of local energy supply systems for activities.

As previously recorded, the issue of a "green certificate" is proof of its carbon-free origin. When purchasing a green certificate, renewable energy is generated on behalf of the buyer. At the same time, it is necessary to legislatively determine which installed capacity of electricity generated using water, solar or wind energy corresponds to one Green Certificate.

It is necessary to develop a national Green certificate certifying the production and use of clean energy using appropriate systems, in particular energy conservation and environmental protection using renewable energy sources. Green certificates should include the following data:

- Information identifying the generating object;
- Type of renewable energy (solar, wind, small hydro, etc.);
- Location of the generating object;
- Installed capacity of the facility;
- Name of the object;
- Unique identification number;
- The period of time during which the energy was produced;
- Energy-efficient and energy-saving technologies used (list)

The requirements of this certificate should also be defined, including certain quantitative and qualitative indicators.

Upon fulfillment of all the requirements of this certificate, MSME subjects in the CBT will receive a certain amount as a reward for their contribution to the green economy and environmental protection. Green environmental certification is a market tool aimed at rational use of natural resources.

Renewable energy certificates do not fall under the securities legislation and are not.

Recommendations:

- To make amendments and additions to the Law "On Environmental Expertise", which should determine the following for a Green Certificate:
 - general status,
 - what data is included in it,
 - to determine that the PO is a proof without its carbon origin,
 - determine the norm and procedure for applying the payment of preferences (a certain amount) as a reward for contributing to the green economy and environmental protection, while fulfilling all the requirements of the Green Certificate
 - determine the source of payments preference for a Green certificate

- Develop and adopt relevant by-laws clarifying the content, data, requirements and conditions for obtaining a Green Certificate for MSME subjects in the CBT.

- determination of the legal basis for the establishment of independent energy audit companies, their powers and services provided

Currently, in accordance with the current legislation of the country, supervision of compliance with technical regulations and standards, norms and rules in the production, transportation, processing, transformation, storage, consumption of energy resources and products, operation of energy facilities, installations and equipment is carried out by the state energy supervision bodies, regardless of the types of energy resources. If necessary, an audit can be organized.

However, experts and specialists of interested parties involved in the activities of the first stage of the project persistently raised the issue of conducting an independent energy audit. At the same time, it was noted that the authorized state bodies block the introduction of appropriate amendments to the legislation. The energy audit should be independent, it will attract investors as well. There must be an alternative. Competent energy audit companies will play a significant role in the implementation of energy conservation and energy efficiency tasks by conducting an energy audit of facilities of institutions, including social, industrial facilities, tourist facilities, housing, of course, if there is a legislative settlement of this issue.

Examples of the use of energy audit in foreign countries can be given. Ekomark Company effectively conducts its activities in the field of green certification development. Basically, Ekomark conducts certification studies at the request of customers and after the audit allows customers to use the Ekomark © label, products with this label express the following:

- The damage to the natural environment is very low
- The product is made in accordance with natural conditions.
- The product disappears spontaneously in the natural environment.
- The packaging on the product does not have a negative impact on nature.

It should be noted that in [Mexico](#), 2 certification schemes are used:

1 scheme - "Clean" tourism destinations – which provides for certification to organizations working in the tourism sector in order to ensure integrated management of water resources and solid waste.

Scheme 2 - The Tourism Environmental Quality Program is a certification program addressed to organizations engaged in tourism activities (hotels and motels, restaurants, sports facilities, recreation centers, natural areas, theme parks, resorts, golf clubs, etc.) that have demonstrated compliance with environmental legislation and self-regulation requirements.

The certification process includes planning an environmental audit, performing an environmental audit and subsequent control.

Thus, taking into account the experience of various countries in the application of green tourism certification, it can be concluded that the experience of Russia, Bulgaria and Mexico is an acceptable experience for the Republic of Tajikistan. That is, their experience shows that certification of green tourism is not a mandatory procedure, and in order to obtain this certificate, customers need an energy audit.

The energy audit is carried out to identify the energy produced by RES and audit the energy efficiency of the building.

If we apply the experiences of these countries in Tajikistan at the CBT level, in this case MSME and CBT will be able to:

- increase the interest and trust of consumers of services;
- will increase the number of customers who choose hostels according to the certificate posted on the website;
- attract investors to invest in the development of the company.

Also, information that the company has a voluntary certificate can be used for advertising purposes, indicated when intending to conclude a contract, participate in the ongoing tender.



In connection with the above, it is necessary to make amendments and additions to the relevant legislation on the possibility of conducting an energy audit by independent private companies, determining the creation of their legal basis for conducting an Energy audit, powers and services provided.

Recommendations:

- To make amendments and additions to the Law "On Energy Conservation and Energy Efficiency" on the authorization of energy audits by independent companies, to determine the procedure for their registration, powers, responsibilities, duties and provision of services.

- To make appropriate amendments and additions to some legislative acts related to the registration of legal entities, licensing, the tourism sector and energy audit.

- creation of a market mechanism for conducting an independent energy audit to confirm the subject's compliance with green standards and the quality of services

In the course of the study, it was revealed that when using an energy audit, it is possible to reduce electricity costs by almost 30%, which allows us to understand in practice that saving fuel and energy resources (TER) can give a tremendous economic effect.

Since the energy survey (energy audit) is one of the activities of business entities, therefore, the goals that it pursues are determined by the customer. The customer is most often interested in the answer to some practically important questions or assistance in the development of a feasibility study of energy and/or resource-saving projects. The energy audit is used to assess the level of efficiency of the use of fuel and energy resources, comparing their specific consumption with current norms and regulations, and the development of energy-saving projects.

The purpose of the energy audit is to assess the efficiency of the use of renewable resources and develop measures to reduce the costs of tourism facilities.

As foreign experience shows, the main criterion for creating tourist complexes (owners of hotels, hostels, guest houses, motels, etc.) on the principles of green tourism is energy conservation. The confirmation document of green tourism is certification, and the main certification criteria are:

- energy generation from renewable energy sources;
- energy saving by conducting an energy audit.

To obtain a certificate, CBT entities need to conduct an energy audit, the results of which will confirm not only the ability to save energy, but also, accordingly, will reduce electricity costs and ensure the growth of ecotourism in the country.

The market mechanism for conducting an independent energy audit to confirm the compliance of the subject with the green standard includes the solution of the following tasks:

- a short introductory seminar and trainings for CBT entities (owners of hotels, hostels, guest houses, motels, etc.) and MSMEs to provide information on the need for an energy audit. After the training seminars, CBT and MSME subjects will have the desire to conduct an energy audit and receive a green certificate;

- to evaluate the system and prepare professional technical and financial reports;
- conduct consultations and trainings on system optimization for production personnel;
- to provide consulting services to CBT entities on the implementation of system optimization projects.

Recommendations:

Develop and create incentives for energy audit;

- Raise awareness of global initiatives based on voluntary energy audits;
- In cooperation with the Agency for Standardization, Metrology and Certification, to promote the implementation of green tourism standards, including the application of internationally recognized standards of green tourism and to raise awareness of CBT entities about energy audit.
- Provide training of certified specialists and accredited organizations for external evaluation.

6. Development of infrastructure for technical and technological support of CBT entities (services to MSME subjects)

- a brief overview of the technical equipment of the energy infrastructure of CBT facilities

The applied technologies of renewable energy conversion in all regions of the country are the same and represent the following:

- Hydraulic energy of rivers – electrical energy and mechanical drive (watermills and mechanisms)
- Solar energy – into thermal and electrical energy, food preparation
- Wind energy – into electrical energy (mechanical drive)
- Biomass energy is biogas as a special energy resource.
- Geothermal energy – hydrothermal energy heating, hot water.

Applied energy efficiency technologies:

- various waste heat (recovery) and low-potential heat sources in combination with heat pumps;
- energy saving technologies: reducing energy intensity, thermal conductivity, increasing energy efficiency.

There are no separate technologies on the Tajik market. The use of renewable energy in the energy balance of countries is determined by the competition of advantages and disadvantages.

The use of renewable energy in the Republic of Tajikistan mainly occurs through small hydroelectric power plants with a capacity of up to 5 MW. According to the IEVR data, 297 small-scale energy facilities have been registered in Tajikistan, including the Murghab solar power plant. The total installed capacity of all types of renewable energy power plants is 69.5 MW.

In the republic there are technological developments for the manufacture of solar water heating installations with a capacity of 0.1 to 1 ton of hot water (50-70°C) per light day. Thus, Sistemavtomatika OJSC and the Renewable Energy Association have established the production of single-circuit solar collectors and there are enough examples of its use. JSC Sistemavtomatika is engaged in the installation of solar panels and solar thermal technologies in various office and residential premises, the introduction of which has begun to spread in urban and rural settlements. During 2018-2020, Sistemavtomatika OJSC, with the financial support of development partners, commissioned 117 micro SES to provide electricity to more than 40 social and household institutions in 17 target cities and districts of the republic with a total capacity of 116.5 kW, and also installed solar panels in 44 social and household institutions in 15 target cities and districts of the country solar collectors for water heating with a total volume of 9600 liters.

The assembly of solar collectors has been organized in the free economic zone "Sugd". In addition, the State Unitary Production Enterprise "Tajiktextilmash", SUE "Vostokredmet" and CJSC "Energoremont" have the capacity to organize the technological process for the production of solar collectors. Appropriate investments are needed to realize these opportunities.

Technologiyahoi Sabz LLC supplies high-quality equipment of alternative energy sources (solar, rechargeable batteries, inverters, solar pumps, solar water heaters, etc.); produces hydro turbines and control systems for small hydroelectric power plants (up to 100 kW), and also designs and installs solar and wind energy systems and small hydroelectric power plants.

The company provides services for the design of power systems, the production and installation of hydraulic turbines and electric load control systems for small HPPs (up to 100 kW), the supply and sale of equipment in the field of alternative energy. These are solar pump systems, wind turbines, hybrid power systems for the office and solar power systems for the home. Its staff consists of domestic and foreign specialists with many years of experience in the field of green (renewable) energy. Some of the company's specialists have been involved in the implementation of many projects, both locally and internationally (in Germany, Afghanistan, Iraq, Sri Lanka, etc.) since 1996. The company has been operating in Tajikistan since 2016, and has won many tenders from international organizations such as Welthungerhilfe, ACTED, MSDP, IOM, UNDP, OSCE.

As mentioned above, an example of the construction of a power plant is a 35 kW power plant in the village of Rogich in the Penjikent district. It was designed and installed by specialists of Technologiyahoi Sabz LLC by order of the German Agroaction within the framework of the EU project.

In the republic there are developments of various solar furnaces based on a simple technology that can reach temperatures up to 130 ° C. In rural areas, Chinese-made solar kitchens have become widely used, mainly for boiling water.

The use of earth energy (heat pumps) has not been widely used today, there are isolated examples. There are some examples of the use of geothermal sources for heating a sanatorium in mountainous regions (Sanatorium "Obi Garm", etc.).

MicroGES are used in roadside canteens along mountain trails. There are individual cases of using solar collectors in sports complexes, educational and budgetary institutions.

In recent years, a number of national companies have been successfully operating in the field of production, installation and maintenance of renewable energy facilities in the country, which have made a certain contribution to the growth of the use of renewable energy.

Improper maintenance of district heating installations and the lack of thermal insulation of buildings causes low energy efficiency indicators. The energy efficiency of buildings in Tajikistan is three times lower than in Western European countries.

The use of firewood, coal and other heat sources in private furnaces and furnaces with low emission heights contributes to the deterioration of air quality due to emissions of fine particles. Emissions from furnaces and furnaces lead to exceeding air quality standards (for dust and SO₂) in winter.

Recommendations:

- Create conditions to support the development of infrastructure for technical and technological support of CBT entities (services to MSME subjects)
- To create conditions for attracting investments in the renewable energy sector for the manufacture of competitive renewable energy and E/E equipment on the market
- To stimulate local producers in the field of production, installation and maintenance of renewable energy facilities

- availability of technologies, the possibility of choosing technical solutions that bring benefits and public utility, ensure profitability, payback of costs and allow you to extract additional profit from the introduction of technologies; development of service engineering, technical, consulting services for CBT entities, especially in areas of decentralized energy supply

According to 67.4% of all respondents, the use of modern renewable energy and E/E technologies allows tourism service providers to effectively use energy resources and other factors of production. 14% believe that this allows them to receive more economic benefits. 14% of respondents note that this will significantly reduce the cost of energy production and increase EE, and only 4.7% of respondents expressed the opinion that this could increase the cost of acquiring high-tech facilities.

However, 75% of their respondents believe that the main barriers to the growth of the use of RES are their high cost and lack of own funds for the design, installation, purchase of equipment, RES, materials, E/E technologies. About 50% believe that RES equipment is technically complex devices and they lack the skills to maintain and operate such equipment, 50% confirm their low awareness of the benefits of using RES/EE, 16.7% believe that taxes and customs payments lead to a significant increase in the cost of RES and E/E, which reduces accessibility to these technologies

It should be noted that the use and implementation of modern renewable energy and E/E technologies in the tourism sector will require the development of specialized services. According to 61.1% of FGD participants, the use and implementation of modern renewable energy and E/E technologies in the tourism sector will require the development of training services for operators and service workers, the provision of engineering services, 44.4% of respondents believe that this will require the development of services of designers, builders, installers.

During the survey, 67.4% of respondents also noted the benefits of training users and service workers (repair and maintenance), 18.6% noted "the development of engineering services at the stage of business planning, feasibility study development, supervision and commissioning" and 14% noted "the development of design, construction and installation works for the construction of facilities". Also, 30.2% of respondents answered that they attract domestic specialists for the design, business planning, construction and operation of renewable energy installations and the use of E/E, 18.6% attract specialists from abroad. At the same time, 27.9% of respondents noted that there are no specialists in this field, and only 23.3% have their own specialists. There is a shortage of design engineers, specialists in the maintenance and installation of renewable energy equipment, builders of small energy and renewable energy facilities, managers and marketers

According to the practice of implementing a number of projects on small hydroelectric power plants, the problems are not only in the quality of the current legislation, but also in ignorance and low awareness of the current regulatory legal acts on renewable energy and E/E, both investors and owners of the MSPP. Many small hydroelectric power plants were built without appropriate permits, compliance with approval procedures, which subsequently affected the acceptance of these hydroelectric power plants, their

connection to the grid, calculation and setting of tariffs. Therefore, knowledge and strict compliance with the requirements of the current legislation should be the basis of entrepreneurial activity.

Thus, one of the problems is the lack or poor development of service engineering, technical, consulting services for CBT entities, especially in areas of decentralized energy supply. The need for appropriate personnel is also acute.

Recommendations:

- To ensure the availability of technologies, the possibility of choosing technical solutions that bring benefits and public utility, ensure profitability, payback of costs and allow you to extract additional profit from the introduction of technologies

- To introduce into the relevant NLA a norm on the provision of state support to service, engineering, technical, consulting organizations for the provision of services for CBT entities in areas of decentralized energy supply

- Develop the following specialized services:

- ✓ repair and maintenance companies, service services;
- ✓ development of engineering services at the stage of planning, feasibility study development, supervision and commissioning;
- ✓ development of design, construction and installation works for the construction of facilities.

- Take the necessary measures to create repair shops, service centers for the maintenance of microgeneration facilities in tourist areas in remote mountain regions

- To consider the possibility of training specialists in the installation and maintenance of renewable energy generation facilities under special quotas

- In order to coordinate, institutional and financial support and development of renewable energy sources, accelerate the creation of a Fund for the Development of Renewable Energy Sources and Energy Efficiency

- To interest design and research institutes, private firms and agencies in providing service engineering, technical, consulting services for CBT entities, especially in areas of decentralized energy supply.

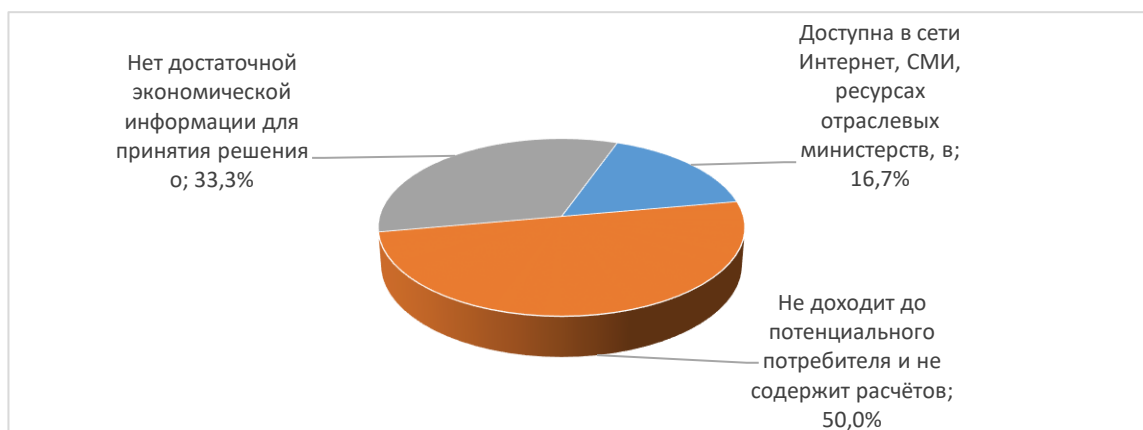
- formation of open databases (information portals) of experts, cadastres and catalogs of applied technologies and equipment, services, the best available technologies (demonstration zones) for participants of the renewable energy and tourism market; providing access to energy-efficient, energy-saving technologies

During the FGD, participants noted the need to raise awareness of all stakeholders using a differentiated approach.

Despite the fact that back in 2011, the necessary by-laws were adopted to enable the formation of open databases, in particular, a Catalog of technologies and Equipment and a RES Cadastre, however, they have not yet been implemented.

Regarding the availability of information on the use of technologies, materials, generating equipment, devices that ensure energy efficiency, 50% of respondents said that the information does not reach the potential consumer and does not contain calculations, 33% indicated that there is insufficient economic information to make a decision. Only 16.7% note in their responses that the information is available on the Internet, the media, and the resources of line ministries.

Figure 15. Availability of information on the use of technologies



When asked whether the completeness and accuracy of information will allow entrepreneurs to make a choice and get additional income (benefits) or save on expenses, 61.1% of respondents replied that the lack of complete and reliable information will lead to unjustified costs without achieving E/ E or RES production, 22.2% confirmed that the production of funds, materials, goods will not find it will not allow its consumer to increase sales volumes, and only 16.7% think that a conditional lack of information allows suppliers, producers of RES, E/E to extract more benefits.

The participants of the FGD and the Round Table noted that most often small hydroelectric power plants are not put into operation due to non-compliance with energy standards, which is why it is important to introduce the microelectric power plant acceptance procedure into the legal field. In addition, the awareness of stakeholders about the accepted standards is very low.

Taking into account the above, it is necessary to accelerate the creation of appropriate databases on special equipment, pilot projects, types of stations for the tourism sector.

Recommendations:

- Accelerate the implementation of previously adopted NLA on the creation of a RES Cadastre and a Catalog of equipment using RES and launch the appropriate sites

- To stimulate the creation of open databases (information portals) of experts, applied technologies and equipment, microgeneration services from renewable energy sources, the best available existing technologies (demonstration zones) for interested participants of the renewable energy market and tourism

- *providing access to existing energy-efficient, energy-saving technologies; providing access to documents of the national standardization system and regulatory and technical acts on the use of equipment for the production of clean energy, as well as renewable energy services*

Existing tourist facilities (hotels, hostels, motels) are extremely inefficient. The country has made changes to building codes and introduced new requirements for energy efficiency. These standards apply only to new construction projects, so there are no requirements for improving the energy efficiency of existing buildings. A number of studies and the implementation of pilot projects in the construction of rural homes have demonstrated the advantages of introducing energy-efficient and low-carbon solutions in the construction of housing in rural areas. The use of solar thermal collectors for heating water and photovoltaic cells, both in new and existing buildings, is not so widespread. The country has not implemented certification systems that comply with international standards, such as methods of efficient use of energy and compliance with environmental standards in design (LEED) or the method of environmental assessment of the effectiveness of buildings (BREEAM).

Interested parties are not provided with access to the documents of the national standardization system and regulatory and technical acts on the use of equipment for the production of clean energy, as well as renewable energy services.

At the same time, the development of the entire necessary package of regulatory and technical documents of standardization has not been completed, which hinders the proper and qualitative development of the sphere of renewable energy use, energy conservation and E/E.

According to ACTED Tajikistan, the working group formed by them to study standards in the field of tourism revealed that the existing standards do not meet modern requirements, and Gosstandart employees have no idea what standards should be, there is no knowledge, approaches are not defined. Tourist organizations are certified, get a permit for a tourist product, but only in relation to the product.

Road vehicles used to provide services to tourists are still the main source of transport-related CO₂ emissions. Vehicles, in particular personal passenger cars and cargo vehicles, currently use low-quality fuel on a daily basis. Low-octane fuels pollute the environment to a greater extent and are less efficient when burned in internal combustion engines, which negatively affects the environment, as well as the efficiency of vehicles and their durability. In this regard, it is effective to introduce electric vehicles simultaneously with the production of electricity from renewable sources in order to help achieve the goal of reducing the total amount of vehicle emissions. The experience of using bicycle transport, which is actively used in the country's mountain tourism, is interesting and useful.

Recommendations:

- To provide state support to national manufacturers of equipment for facilities using renewable energy sources and renewable energy technologies.
- Develop and implement standards and requirements for the energy efficiency of existing buildings;
- Ensure compliance with new building standards on energy efficiency;
- Promote the application in the housing sector:
 - Market-based solutions to improve energy efficiency;
 - Geothermal systems;
 - Solar thermal collectors for heating water and air, as well as for generating electricity.
- To stimulate the implementation of energy efficiency measures in residential buildings, for example, to increase the attractiveness of energy-efficient measures by guaranteeing a reasonable payback period and creating conditions for better maintenance of heating systems.
- Encourage the use of low-carbon technologies and environmentally friendly fuels (heat pumps, renewable energy sources - solar panels, microelectric power plants, wind turbines) in individual households.
- To use the introduction of electric vehicles simultaneously with the production of electricity from renewable sources in order to help achieve the goal of reducing the total amount of vehicle emissions
- To fully support and expand the experience of using bicycle transport for eco-mountain tourism.

7. Ensuring quality education and awareness of communities and CBT entities

Studies show that for every 30 new tourists, one workplace is created at the facilities. In 2019, it was recorded in the country that the total contribution of the tourism sector to the employment of the population is 182.1 thousand people, taking into account the jobs created in the provision of various services for tourists in other sectors of the economy (for example, handicrafts)¹⁹. Based on the strategic goals of the Tourism Development Committee under the Government of the Republic of Tajikistan, employment in the tourism industry should increase by 5% by 2025. Employment of the population associated with the provision of tourist services to tourists in 2030 should be 30%, which in turn requires the training of specialists in the tourism sector.

With the introduction of renewable energy technology in the community based tourism sector, there is also a need for qualified specialists related to the development and operation of energy infrastructures.

A behavioral survey revealed that the lack of specialists in the field of providing services for the use of renewable energy technologies and their maintenance is becoming a barrier in the development of this area. During the FGD, it was revealed that the containment of the use of renewable energy is largely due to the lack of awareness of both producers/suppliers and consumers of energy based on renewable energy.

It should be noted that a sufficient system of personnel training for the energy sector has been created in the country, a national system of personnel training for the tourism sector is being formed, both at the level of higher, secondary, and primary vocational education. In recent years, retraining in short-term courses has become a practice in Adult retraining Centers and modular centers specially created in the regions of the country. New standards are being developed for professions in demand on the labor market, including renewable energy and tourism services.

At the same time, the participants of the Focus Group Discussion (FGD) held on April 2, 2021, and the Round Table held on May 4, 2021, confirmed the conclusion based on the results of the survey about

the low provision of the RES sector with personnel. They noted the need not only to train specialists of engineers with higher education, but also specialists of the middle technical level.

It was also noted that the containment of the use of renewable energy is largely due to the lack of awareness of both producers/suppliers and consumers of renewable energy. At the same time, it should be noted that some attention is paid to awareness issues. A number of international organizations, together with public authorities and civil society, are doing some work to raise awareness of the population, stakeholders on the use of renewable energy and E/E, including in the tourism sector.

However, to date, the level of business literacy of the population of remote and hard-to-reach mountainous areas regarding the organization of entrepreneurial activities in the field of renewable energy use, the benefits of E/E growth at the CBT level is insufficiently developed. 95% of all respondents answered in the affirmative to the question "Is it necessary to conduct propaganda campaigns and post special training materials, online calculators for calculating benefits, costs, costs, independent safe operation of power plants?". There is a low level of legal awareness, technical and financial literacy. There is no adequate and complete information about existing technologies and generating equipment, devices that provide E/E. There is also limited access to the necessary data for the preparation of feasibility studies, the development of pricing policy and preferences.

Thus, in order to ensure high-quality education and awareness of communities and CBT entities, the following is recommended:

Recommendations:

- Analyze the need of the tourism system for qualified specialists related to the development and operation of energy infrastructures for CBT;
- To ensure coordination of the activities of tourism authorities with professional educational institutions for the preparation and provision of personnel in demand in the tourist labor market of the country, including the use of RES and E/E;
- Develop retraining courses for specialists and managers in the field of renewable energy and EE
- To organize the retraining of personnel on the use and maintenance of renewable energy and E/E technologies, for employees of travel companies (owners of hotels, hostels, guest houses, motels, etc.) in the existing adult retraining Centers, modular centers and industry training courses and retraining of personnel of the country;
- To practice attracting foreign experts and volunteers to share the experience of employees of travel companies (owners of hotels, hostels, guest houses, motels, etc.).
- To promote the creation of an educational platform for the free exchange of experience and knowledge on the use of renewable energy and E/E in the tourism sector;
- To ensure the opening of specialized departments, the creation of scientific laboratories in specialized universities, to improve educational standards and programs of higher education institutions and vocational schools in the relevant specialties in RES and E/E,
- Organize and conduct internships in order to study foreign experience, improve qualifications, carry out personnel training and postgraduate studies in advanced foreign countries,
- To create new in-demand specialties in universities and vocational schools related to the profile field of activity, additional training programs for the most popular professions and specialties of the RES and E/E market in the CBT sector,
- To expand public access to educational and educational information and materials via the Internet,
- Develop professional networks and associations,
- To practice organizing and conducting thematic trainings and seminars on capacity building in the field of renewable energy and other knowledge management activities.

1.3. Description of existing restrictions

In accordance with the NSR-2030, it is expected that changes in the energy sector will occur, including through the development of renewable energy sources. Moreover, by 2030, the share of alternative energy sources, including renewable energy sources (especially solar energy) in the national electricity balance will increase to 10%. Tajikistan is rich in renewable resources. However, at the current stage, a significant expansion of renewable energy generation has a number of technological, operational

and physical limitations for the introduction of both large and small capacities of renewable energy sources into the existing energy system of the country.

The development of renewable energy requires a significant level of government support over a long period of time. Currently, Tajikistan does not apply traditional schemes to support renewable energy using fixed tariffs and competitive bidding/auctions, reducing import duties on renewable energy technologies, etc. To date, support schemes are limited to the provision of preferential loans and the possibility of purchasing electricity generated from renewable energy sources at cost from the authorized body.

Technological limitations are caused by the lack of developments of scientific and technical institutes and high-tech production structures aimed at designing and manufacturing equipment for electric power plants using renewable energy sources (solar collectors, wind farms, microgenerators, etc.). Insufficient state support for innovative proposals and projects also refers to technological limitations in the country.

The country continues to maintain a high dependence on the import of equipment of foreign technologies, as well as the complexity and problems in their operation and maintenance.

The availability of technologies, the possibility of choosing technical solutions that bring benefits and public utility, ensure profitability, payback of costs and allow you to extract additional profit from the introduction of technologies are problems in the development and application of modern technologies in the field of entrepreneurship using renewable energy.

Technological limitations are due to:

- Low level of technology development in the field of RES and E/E.
- Underdevelopment of applied scientific research in public and private research institutes
- Weak level of borrowing and import of technologies from other countries
- High technological dependence in the use of equipment, production methods, energy generation from renewable energy sources, the use of materials, E/E systems;
- The underdevelopment of technological consulting, the high cost of developing individual projects (feasibility studies), business plans, technical projects.
- The practical lack of involvement of specialists in the management of new technologies
- Lack of measures of state support for R&D.
- Underdevelopment of institutions and infrastructure to support innovation, lack of budgetary resources for the practical implementation of state support measures.
- The lag of the technical regulation system and unreasonable barriers in the form of standards, approved types of measuring instruments, ensuring conformity assessment and safety confirmation of engineering systems being put into operation, generating equipment units.
- The presence of a stereotype about the difficulties of such technologies in maintenance and their high cost.
- The complexity of the choice, independent design, technical and economic calculations of the validity of the choice of equipment, equipment and technologies for the energy supply of tourism facilities and the production of individual services based on renewable energy.

The use and implementation of modern renewable energy and E/E technologies in the tourism sector will require the development of specialized services such as:

- repair and maintenance companies, service services;
- development of engineering services at the planning stage, feasibility study development, supervision and adjustment;
- development of design, construction and installation works for the construction of facilities.

Financial constraints. To date, there is a predominantly conservative point of view in Tajikistan on the possibility of using other renewable energy resources other than hydropower. For the most part, this is due to the insufficient number of pilot implementations implemented, as well as the lack of widespread practice of correctly assessing the economic effects obtained. As a result, regulators, as well as infrastructure (and utility) companies often take a conservative position regarding the direction of investment funds in the development of renewable energy and E/E technologies, and, accordingly, the growth in the pace of data implementation remains insufficient. It is important to implement pilot projects that provide pilot testing and demonstration of solutions for the use of RES and E/E in the CBT sector.

Legislative, regulatory, technical and methodological limitations: the technical regulations and standards in force in the energy sector of Tajikistan were mostly developed in the Soviet period, and for renewable energy more than 10 years ago and do not take into account the current level of technology development. At the same time, a number of necessary regulations and standards are completely missing.

Therefore, it is advisable to develop new regulations and standards, including in land legislation, on environmental protection and environmental requirements, as well as in the tourism sector. The legal status of renewable energy entities in the energy markets has not been determined, which does not allow them to act as full-fledged market participants.

The removal of these barriers will require the development of legislative regulation, theoretical, methodological and regulatory study of the use of renewable energy in the CBT sector, the development of new standards. This is one of the priority areas of the work of this "roadmap".

Access to information on the use of RES and EE is limited in the country. In addition, the quality and reliability of the data does not meet the needs of users in the development of investment plans and significantly reduces the quality of the developed policies in the field of RES and EE use. The competence of both civil servants and business entities in the CBT sector is insufficient. It is necessary to solve the issues of building up some competencies, raising awareness and awareness of stakeholders. Accordingly, during the implementation of the Roadmap, it is necessary to decide which data, information and statistics it is necessary to increase access to and focus attention to improve their quality.

Recommendations:

- To conduct a study on the development of renewable energy technologies, which will consider their current state, trends, economic analysis, as well as institutional and legislative obstacles in the field of renewable energy technologies, especially microgeneration in the tourism sector;
- Take appropriate measures to achieve targets for increasing the share of renewable energy in the total volume of electricity production, including in the tourism sector;
- To ensure the further development of renewable energy support schemes in the CBT.

1.4. Assessment of the socio-economic effects of the implementation of the roadmap

The implementation of tasks within the framework of this project is aimed at the possibility of improving the welfare of the population, organizing jobs, reducing poverty through sustainable access to electricity through the widespread introduction of renewable energy and energy efficiency growth in remote, mountainous regions of the country, etc.

It is assumed that the implementation of the action plan ("roadmap") will ensure a number of effects, primarily socio-economic.

Socio-economic effects of the implementation of the roadmap

- Increasing the production potential of MSME subjects for the CBT sector through the introduction of RES. It is assumed that by the end of the target period, the number of MSMEs in the CBT sector will increase, providing services to tourists based on renewable energy technologies, microgeneration in decentralized zones, which ultimately contributes to the increase in the profitability of MSMEs.
- Strengthening the positions of tourism companies (CBT) in the tourist markets through the introduction of renewable energy technology, the expansion of green tourism, contributing to an increase in the influx of eco-tourists.
- Development of relevant areas of science in key areas of knowledge and practices for RES maintenance.
- Development of the provision of new services, for example, for the installation and provision of consultations on the use of renewable energy and E/E technologies, which allows to increase the creation of new jobs.
- Formation of a generation of specialists in the field of renewable energy technologies, as well as specialists with the skills of consulting work in domestic markets.
- Creation of highly qualified and in-demand workers on the labor market for RES and tourists.
- Strengthening trade cooperation with "target countries".

Also, the introduction of renewable energy gives Tajik tourism a unique opportunity to radically increase its competitiveness and thereby make a significant contribution to the economy in the next 10 years through:

- increasing the influx of tourists by increasing the growth of ecotourists (at the level of more than 1 million and 6% annual growth) until 2030 by significantly increasing the use of green energy technologies (RES and energy efficiency);

- increase in employment in the tourism sector (by 10%);
- increase in the generation and consumption of energy from renewable energy sources in the CBT sector (by 10%);
- sustainable energy supply to new consumers (households without access to electricity);
- improving the quality of life through the development of consumer services, the use of renewable energy.

1.5. Market assessment.

- forecast of the state of the market for the production and consumption of electricity, including in the tourism industry for the period up to 2030, in the context of microgeneration

The total electricity consumption in the Republic of Tajikistan during the year will be used to predict electricity production. Using time series, the trends of electricity consumption in the sectors of the country's economy were revealed. This takes into account the forecast for 5 years. To predict electricity consumption by consumers, a time series model was used, that is, an auto-regression model (AR):

$$X_t = c + \sum_{i=1}^p a_i X_{t-i} + \varepsilon_t$$

Or

$$Y_t = a + Y_{t-1} + \varepsilon_t$$

where, a_1, a_2, \dots, a_p are model *parameters* (autoregression coefficients), c is a constant (often assumed to be zero for simplification), and ε_t is white noise or a random component.

Based on the developed econometric model, a scenario for the development of the electric power industry is constructed. The following econometric equation was used for modeling and forecasting electricity consumption, the parameters of which were estimated based on an autoregressive model (AR):

$$PPS_t = 1.05409237021 * PPS_{t-1}$$

$$PSX_t = 0.776657838438 * PSX_{t-1} + 0.22577128639 * PSX_{t-2}$$

$$MON_t = 1.02050455576 * MON_{t-1}$$

$$PT_t = PT_{t-1} + (PT_{t-1} - PT_{t-2})$$

$$Rubbed_t = 0.522906735832 * Rubbed_{t-1} + 1222.66671665$$

where,

MON_t - electricity consumption by the population in the period t ;

PDO_t - electricity consumption in other industries in the period t ;

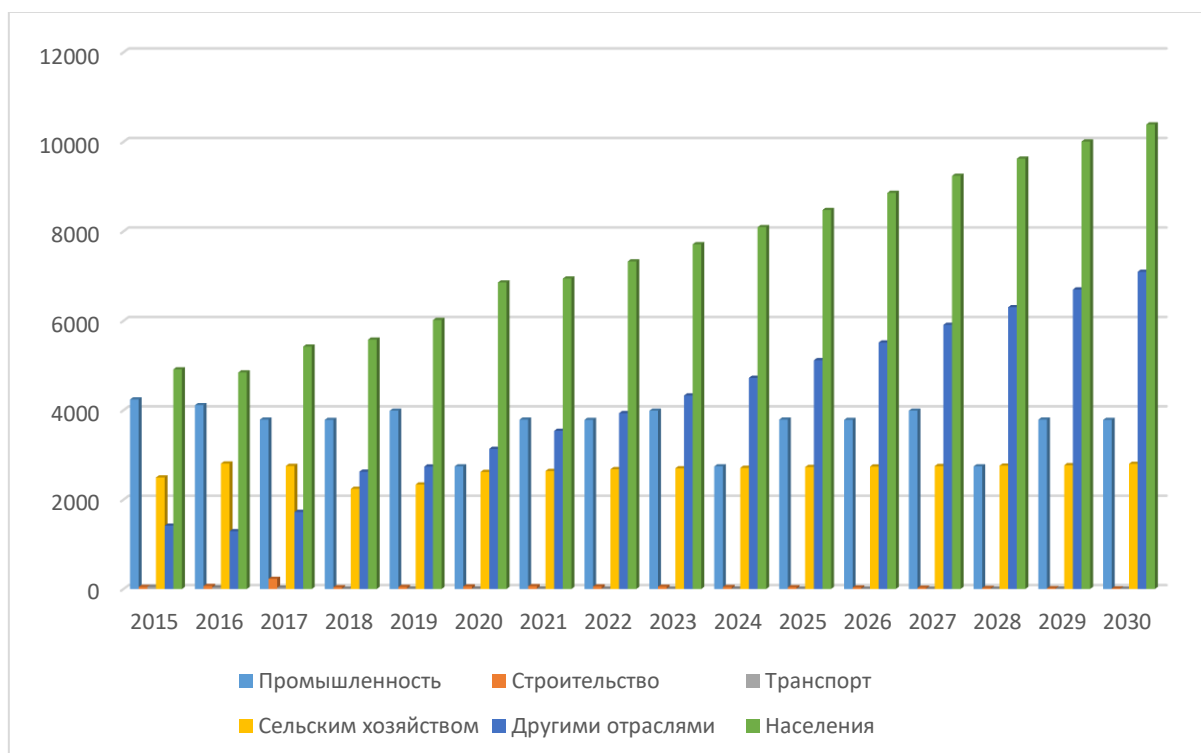
PPP_t - electricity consumption in industries and construction in the period t ;

PSC_t - electricity consumption in agriculture in the period t ;

PT_t - electricity consumption in the transport industry in the period t ;

$Lost_t$ - loss of electricity in the period t ;

Figure 16. Electricity consumption in the republic



The total electricity consumption in the republic is estimated based on the following formula:

$$OPE_t = PPP_t + PSC_t + PT_t + MON_t + PDO_t + Rubbed_t$$

The production of electricity at the HPP is estimated according to the following formula:

$$Produced\ by\ t = Prodeges_{t-1} * ROP$$

where,

Production of HPP_t - generation of HPP electricity in the period t;

Production of HPP_{t-1} - generation of HPP electricity during the t-1 period;

ROP - the growth of total consumption.

The calculations show that electricity consumption by the population will increase by 50% compared to 2020.

Along with the increase in consumption, the production of electricity at the HPP will increase. It should be noted that in the NSR-2030, the production of electricity at HPPs by 2030 according to the industrial scenario is projected to be 40.7 billion kW.an hour, which is 2 times more electricity production compared to 2020. The growth of production makes it possible to fully meet the population's demand for electricity by 2030. However, for 10% of the population living in remote mountainous areas, where the minimum population density in some places is 2-3 people per 1 sq. km, in order to meet their needs, the state needs to create conditions for diversifying methods and methods of electricity production through the use of alternative energy sources (RES).

These indicators are the main factors for the development of the renewable energy market in mountainous areas.

The demand for products and services from end consumers and beneficiaries is determined by the development of the following factors:

1. Provision of electricity from RES MSMEs in the CBT sector. The driver of this trend is the growth of the population in remote regions, an increase in the number of tourists, including an increase in the number of ecotourists and an increase in the quality of life.

2. An increase in objective environmental restrictions on the development of "traditional" (burning coal, wood and other combustible) energy while simultaneously increasing the effective demand for energy that meets higher requirements - environmentally friendly, high-quality, reliable, affordable energy. Important qualitative changes in demand characteristics:

- increased requirements for renewable energy from ecotourists

- a significant increase in consumption, especially on the part of the population and tourists, which leads to the need to provide them with electricity, primarily electricity from renewable energy sources.

The stage of development of the renewable energy market is determined by the order of distribution of renewable energy technologies. In this regard, the following stages of market development can be distinguished:

Suppliers and manufacturers. The number of ecotourists is growing every year in the world (an annual growth rate of 6%), along with this, the tourism sector is replacing its traditional methods of providing services to meet their needs (combustible energy was used to provide services) with more suitable ones, such as energy generation from renewable energy sources. Based on this, the number of campaigns that are interested in the supply of renewable energy technology is increasing. This approach increases the level of competitiveness in the market, which further stimulates domestic companies producing renewable energy technologies. In turn, such an approach can significantly develop the renewable energy market

Infrastructures and services. When RES technologies are supplied, there is a requirement for the development of services for the placement and maintenance of RES technologies. This approach contributes to the development of the RES services market

Based on the expected stage of development of the renewable energy market, the general logic of the implementation of the "roadmap" was formed, which includes:

- amendments to the NLA on the introduction of renewable energy in the community based tourism sector;
- provision of benefits under customs tariffs for the import of renewable energy technologies;
- stimulation of domestic producers for the production of renewable energy technology;
- increasing the share of renewable energy in the final consumption of the community based tourism sector;
- reduction of greenhouse gas emissions into the atmosphere at the national level.

2. A list of the road map targets and their values.

Table 15. Target indicators

Name of the target indicators	Unit of measurement	Medium-term period	Long-term period
		2025	2030
Target 1. Revenue of travel companies and other entities in the priority segments of the renewable energy and E/E sector.	% of the total cost of equipment	5	10
Target 2. Increasing the revenue of travel companies by building their own power plants using renewable energy sources	in %	2,5	5
Target 3. Increasing the share of renewable energy in the final energy consumption of CBT entities	in %	5	10
Target 4. The growth of investment in the development of microgeneration for CBT facilities from clean energy sources, (solar energy, wind energy and thermal energy)	in %	5	10
Target 5. Sustainable development, green tourism (growth in the number of tourists visiting the country)	Thousand people	1600	2500
Target 6. Employment of the population in the tourism industry	in %	5	10

3. Proposed changes

Table 16. Proposed changes in regulated relationships and the benefits of their changes

	Problem map	Map of changes	Benefits of changes
Goal 1. Land and Land Use			
	The absence of legal norms on the placement of small-scale energy (microgeneration) facilities based on renewable energy on land plots that are part of residential buildings and their certification	Amendments and additions to the Land Code of the Republic of Tajikistan, as well as to the relevant by-laws on the placement of small-scale energy (microgeneration) facilities based on renewable energy on land plots that are part of residential development and their certification.	The possibility of increasing the number of microgeneration facilities located on lands and plots increases the level of tourist attractiveness by increasing the number of tourist service points.
	Placement of microgeneration facilities using renewable energy sources within local territories and consumers	Making additions to the SNiP - territorial planning norms, taking into account the placement of microgeneration facilities.	A legal possibility has been created for the installation of renewable energy microgeneration facilities (solar, wind power plants) within local territories and near consumers
	High administrative barriers (the procedure and procedures for obtaining permits, approvals by analogy with the construction of urban development facilities, in particular for microgeneration).	The creation of a "Single Window" and the development of a mechanism for procedures for an accelerated and simplified version of obtaining permits for microgeneration.	The creation of companies to provide turnkey services (provision of services to end users), starting from the purchase of renewable energy equipment to obtaining all permits and installing equipment, provide an accelerated and facilitated option for obtaining permits for microgeneration.
	Lack of mechanisms to support and stimulate land use and water use for microgeneration (RES) facilities	Preparation of proposals on mechanisms to support and stimulate land use and water use for microgeneration (RES) facilities	The removal of environmental barriers will increase the attractiveness of the use of renewable energy in remote mountain regions for CBT
	Unavailability of land resources (land plots) for the placement of generation, transmission, storage facilities.	Legislative definition of standards for the area of land plots reserved (used) for the placement, construction, construction of small-scale energy facilities. Development of standards regulating (space-planning conditions, technical requirements, standards based on the parameters of the required (augmented) capacity of installations based on renewable energy (microgeneration).	The legal regulation of this problem will entail an increase in electricity production from renewable energy sources, an increase in the income of MSMEs in CBT due to the sale of surplus electricity.

	The dominance of one category of land over industrial and energy lands and the difficulties in the transformation of micro-land plots.	Use of lands without changing their legal status and category (Formation of a land plot for microgeneration objects without changing the status and category). "Multifunctionality"	Barriers for entrepreneurs to obtain land for microgeneration facilities are being reduced, on the one hand, on the other hand, the state's income from rent is increasing.
	The procedure and procedures for determining the (functional and target) purpose of a land plot, regulation of the placement of microgeneration facilities in cities and towns and beyond: a) using solar energy b) using water energy c) biogas d) wind energy.	Development and adoption of regional programs for the development of engineering infrastructure, master plans of PDP, taking into account the need for microgeneration facilities.	The effect of their use is manifested in other spheres of production, economic, natural resource activities in a social form, increasing the quality of life of the population, respectively, labor productivity and competitiveness.
	Lack of information about the status and category of lands on which microgeneration facilities are allowed to be located. Formation of a land plot at the expense of applicants' funds and provision on a competitive basis.	Development of changes and promotion of proposals for land reform.	When developing changes and promoting proposals for Land reform, the number of microgeneration facilities in remote mountain regions will increase, which ultimately contributes to the receipt of additional income, the development of remote mountain regions.
Goal 2. Microgeneration			
	There is no concept of "microgeneration" based on renewable energy sources in the legislation and, accordingly, there are no mechanisms of state support for the development of microgeneration, in particular in the tourism sector based on CBT;	Introduction of the concept of microgeneration based on renewable energy sources into the Law of the Republic of Tajikistan "On the Use of Renewable Energy sources", development of a mechanism and implementation of measures of state support for the development of microgeneration, in particular in the tourism sector based on CBT	"Microgeneration" has been given a legal status, as well as measures of state support have been identified, which contributes to the interest of MSMEs, including in the CBT sector, in the large-scale use of microgeneration.
	The absence of the status of renewable energy entities in the legislation of the energy sector as an "energy supply organization".	Amendments and additions to the Law of the Republic of Tajikistan "On the Use of Renewable Energy sources" and to the Civil Code of the Republic of Tajikistan to determine the legal status of renewable energy entities as an "energy supply organization".	The legal status of renewable energy entities has been determined as an "energy supply organization", these entities are subject to the relevant legal norms of the Civil Code, in particular, they have the right to conclude a contract for the sale of generated electricity
	Non-working and unregulated mechanism of connection of renewable energy facilities to centralized electric networks in their absence and	Make appropriate amendments and additions to the Law of the Republic of Tajikistan "On the Use of Renewable Energy Sources" and to the "Regulation on the procedure for connecting (connecting)	Making a profit from the sale of surplus electricity directly to microgeneration consumers will make it possible to recoup the costs of building the station,

	(supply) sale of such electric energy to the power system. Legislative permission to sell electricity from renewable energy sources (microgeneration) directly to consumers in decentralized power supply zones	installations for the use of renewable energy sources to common energy networks" on the possibility of selling electricity (microgeneration) directly to consumers in decentralized energy supply zones	maintain its staff, increase the capacity of the station and generate electricity.
	Implementation of standards for the use of microgeneration of RES, E/E and the development of regulations and rules	Develop standards for microgeneration using RES.	Promotes the development of microgeneration among MSME subjects in the CBT sector, the use of high-quality technologies and the stimulation of local producers
	Difficulties in obtaining a license for the production, distribution and sale of electric energy for microgeneration in remote mountain conditions.	Legislatively review the procedure for obtaining a license for microgeneration facilities, in the context of facilitating or canceling this procedure for microgeneration entities up to 15 kW	Promotes the development of microgeneration among MSME subjects in the CBT sector.
	Difficulties in commissioning and acceptance of microgeneration facilities due to non-compliance with state equipment standards.	Make changes to the State Standards for microgeneration facilities using renewable energy for non-standard equipment.	Promotes the development and large-scale use of microgeneration among MSME subjects in the CBT sector.
Goal 3. Green Certification			
	The lack of legal conditions for the development and implementation of "Green Certification" in the tourism sector, the definition of the concept of "green environmental certification", the procedure for obtaining a green certificate and describing the benefits of their use for tourism entities;	To develop regulatory and legal regulations for the development and implementation of "Green Certification" in the tourism sector, the definition of the concept of "green environmental certification", the procedure for obtaining it for tourism entities, as well as determining the assessment of compliance with green standards, green certification.	The use of green certification in the CBT sector will allow: - increase the interest and trust of consumers of services; - will increase the number of customers who choose hotels according to the green certificate posted on the website; - attract investors to invest in the development of the company.
	There is a low level of understanding of how to obtain benefits from investing in green technologies (environmental projects) and tools that allow creating competitive advantages.	Organization of demonstration zones to demonstrate the benefits of investing in green technologies (environmental projects) and tools to create competitive advantages.	Demonstrating the benefits of investing in green technologies (environmental projects) and tools will create competitive advantages.

	Lack of funds for certification of real estate objects and applicability of norms and regulations for individual houses, micro-hotels	Support and stimulation, including from the state, of the use of environmentally friendly technologies and certification of real estate with the adoption of norms and regulations for individual houses, micro-hotels	Due to the certificate received, the owners of real estate objects will be able to increase their status and increase the influx of ecotourists.
	The lack of quick benefits for business entities from the use of high environmental standards.	Contribute to increasing the financing of green projects with a green certificate	A one-time increase in capital expenditures - if there is availability of traditional heat sources, energy supply facilities.
Goal 4. Independent energy audit			
	The need for an Energy Audit by an independent company to confirm the compliance of the CBT subject with green standards and the quality of services	Adoption of legal norms for the creation and organization of work of independent companies specializing in Energy Audit to confirm the compliance of the subject with green standards and the quality of services	When using an energy audit, it is possible to reduce electricity costs by almost 30%, which makes it possible to understand in practice that saving fuel and energy resources (fuel and energy resources) can give a tremendous economic effect
	Lack of certified specialists and accredited organizations to conduct an external assessment.	To provide training of certified specialists and accredited organizations for the organization and conduct of external evaluation.	Accredited competent energy audit companies <i>and</i> certified specialists will play a significant role in the implementation of energy conservation and energy efficiency tasks.
	The lack of a legal basis for conducting an Energy Audit, powers and services provided.	Make amendments and additions to the Law "On Energy Conservation and Energy Efficiency" on the authorization of energy audits by independent companies, determine the procedure for their registration, powers, responsibilities, duties and provision of services.	The possibility of conducting an independent and independent Energy Audit will attract investors to invest in the development of the company.
	The survey conducted by Gosenergonadzor is of a control nature	Make appropriate amendments and additions to some legislative acts related to the registration of legal entities, licensing, the tourism sector and energy audit.	An independent energy audit is carried out to identify the generated environmental energy from renewable energy sources and audit the energy efficiency of the building.
	High risks of the parties when lending without sound business plans and feasibility studies and the lack of identification of business entities as producers of clean energy based on RES.	Assessment of the quality of clean energy produced based on RES and assistance in the development of business plans and feasibility studies for producers of clean energy based on RES.	To improve the literacy of the population to apply for grants for the use of renewable energy, which further contributes to the development of renewable energy based on grants received from financial sources.

4. Risk assessment of the implementation of the action plan ("roadmap") and information about the tools to minimize them

During the implementation of the gift card for the introduction of renewable energy technology in the community based tourism sector, some risks may appear. These risks are divided into the following categories:

Behavioral risk. This is the lack of social acceptability to the introduction of renewable energy technologies in the community based tourism sector.

Many of the products and solutions proposed for implementation under the roadmap differ from traditional practices. As a result, the introduction of new technologies will face the psychological inertia of technical personnel, end users.

The factors influencing the occurrence of this risk are as follows:

- behavioral risk of society, which is associated with the negative impact of the public position "just not with us" on renewable energy projects,
- lack of awareness about the positive effects of using renewable energy sources,
- when the community opposes the construction of a renewable energy generation facility close to the place of residence.
- it may arise due to an increase in renewable energy costs paid by end users.

In general, the risks of social acceptability are defined as the risks of rejection of the construction of renewable energy projects by civil society or its part.

To effectively overcome this barrier, active educational activities are required, as well as the implementation of measures regarding the "formation" of new values.

Financial risk. The risks that arise due to a shortage of available capital are called financial risks.

The creation of electricity production facilities from renewable energy sources is a capital-intensive process. Renewable energy projects require the availability of capital, both own and state financing, in particular, subsidies and concessional loans to ensure investment. If they are not available, then this can lead to a shortage of capital. The main reasons for the capital shortage are: an underdeveloped or unhealthy local financial sector or a general critical financial situation. In addition, limited experience in implementing renewable energy projects combined with higher bank loan interest rates, which may lead to the inability of owners to provide financing for their projects.

The way to reduce this risk is to take measures to interact with executive authorities in terms of using existing sources of financing, to include measures for the use of renewable energy in the investment programs of state-owned companies, to popularize and stimulate demand for E/E technologies, to create new financing mechanisms and other forms of state support for business, including with the involvement of institutions development.

Technical and managerial risks – Technical and managerial risks relate to the availability of local knowledge and experience, as well as the maturity of the technology used. Uncertainties arise due to the lack of an adequate assessment of the energy potential of VI resources or the use of new technologies. The probability of losses that may be incurred due to insufficient local experience, the inability of equipment to work, inadequate maintenance of equipment, as well as infrastructure limitations are factors that form technical and managerial risks.

To solve and minimize risks, it is proposed:

- To increase the access of the population living in remote mountainous areas, MSME subjects in the CBT sector to information about the benefits and profits of the introduction of renewable energy technology. It is also important and effective to conduct advisory trainings and seminars on the benefits of implementing renewable energy technology. This approach will significantly reduce behavioral risk.
- To increase the knowledge of the owners of renewable energy technologies in the search for sources of financing from foreign donors, it is also necessary to increase the financial literacy of the population.
- To promote the training of specialists in the field of installation and maintenance of renewable energy technologies, which minimizes technical risks.

Regulatory risk is the risk arising in the event of the development and adoption of a regulatory act regulating actions that have negative financial or other consequences. Appropriate changes to existing regulatory documents and standards may meet resistance from regulators and industry players.

In order to build an effective regulatory risk management process, it is necessary to use internal regulatory documents regulating this process, which ensure the minimization of regulatory risk for key draft regulations. In order to manage regulatory risk, the authorized body creates a working group. To minimize regulatory risk, a consolidated position is prepared, proposals are recorded, amendments, justifications, and the implementation of other measures are recorded. The application of risk management measures means bringing the consolidated position to the interested state structures and coordinating them with the state authorities. The process of internal interaction is organized when preparing proposals to create a comfortable legal environment for doing business, as well as to minimize the consequences of the identified regulatory risk.

It should be noted here that a collegial advisory body has been created and operates under the IEVR R – an interdepartmental working group on improving legislative regulation and creating a favorable legal environment to ensure the implementation of the strategy for the development of the use of renewable energy in the tourism sector. The Interdepartmental Working Group is tasked with developing a consolidated position on regulatory initiatives and draft laws bearing regulatory risks.

Possible risks and potential difficulties that may arise during the implementation of the draft law under consideration;

- contradiction with other normative legal acts;
- lack of benefits in the implementation of this position;
- lack of financial resources to implement the terms of the act;
- low literacy in decision-making;
- opposite approaches to the attitude of government institutions to the problem and ways to solve it.

The way to reduce this risk is to work out and demonstrate the effects within the framework of pilot projects, close interaction with regulators, and the involvement of progressive industry players. In addition, it is assumed that an effective mechanism for resolving issues will be the presentation of problems in the IEVR and the CRT, as well as at meetings of the Interdepartmental Working Group on the development of the RM.

II. Implementation plan of the action plan ("roadmap")

Action plan

to achieve the goals of changes, improve policies aimed at increasing the generation and consumption of energy based on renewable energy, the widespread introduction of E/E in the community based tourism sector and reducing emissions.

Table 17.

№	Main tasks and directions of the action plan	Mechanisms for the implementation of measures	Deadlines for execution	Responsible performers	Sources financing	Expected result
<i>Development and improvement of regulatory and legal regulation</i>						
1	Amendments and additions to the legislation on determining the legal status of renewable energy entities, the concept of microgeneration based on renewable energy, mechanisms for implementing measures of state support for the development of microgeneration, in particular in the CBT sector	<p><u>Legal status of renewable energy entities</u></p> <ul style="list-style-type: none"> - Make the following changes and additions to the relevant NLA: - To introduce the concept of "energy supply organization" into the Civil Code. - To introduce the concept of "energy supply organization" into the Law of the Republic of Tajikistan "On the Use of Renewable Energy". Define in the Law the legal status of renewable energy entities as an "energy supply organization" and equate electric power plants, including microgeneration, to energy supply organizations that produce, distribute and sell electric and thermal energy using renewable energy. <p><u>Microgeneration based on renewable energy sources</u></p> <ul style="list-style-type: none"> - To make the following amendments and additions to the Law "On the Use of Renewable Energy": 1. To introduce the concept of "microgeneration" in addition to the Law. 2. Determine that microgeneration includes electric stations of no more than 15 kW. 3. To supplement the scale of power plant capacities in the relevant articles of this law using the concept of microgeneration with a capacity of up to 15 kW. 4. Determine the conditions that support the functioning of microgeneration. 	During twothousand twentythree	MEVR MU OAHK "BT" JSC "Distribution Networks"	Budget financing Financing of international institutions	<p>The legal status of renewable energy entities as an energy supply organization is legally defined.</p> <p>The concept of Micro generation, its legal status is legally defined, and the Rules for the qualification of a generating facility operating on the basis of the use of renewable energy sources have also been developed.,</p>

		<p>5. To determine that the technological connection of microgeneration facilities can be carried out to electric facilities of no more than 1 kW.</p> <p>6. Determine that the law applies to citizens of the Republic of Tajikistan and legal entities registered in the territory of the Republic of Tajikistan.</p> <ul style="list-style-type: none"> - To develop Rules for the qualification of a generating facility operating on the basis of the use of renewable energy. - To study the issue of adopting a program for the development of microgeneration (development of the engineering infrastructure of tourism facilities of CBT) on the basis of a decentralized model and submit it to the authorized body for consideration. 				The procedure for obtaining a license for micro generation facilities has been revised.
2	Improvement of the legal framework for the development of a decentralized model of the energy sector (local production and consumption of electricity generated from renewable energy sources)	<ul style="list-style-type: none"> - To make appropriate amendments and additions to the Law "On the Use of Renewable Energy", which would determine the mechanism for the purchase of electricity produced from renewable energy directly by the consumer in the absence of an electric distribution network in the zones of decentralized power supply. Allow the producer of electricity (thermal) from renewable energy sources to conclude direct contracts directly with electricity consumers for the sale of electric energy, indicating the approved tariff. - To make an addition to the "Regulation on the procedure for connecting (connecting) installations for the use of renewable energy sources to common energy networks" on the exclusion of the owner of microgeneration from the list of recipients of technical specifications from network organizations when using the generated energy only for their own needs. - To amend the Law of the Republic of Tajikistan "On the Use of Renewable Energy" and the Civil Code of the Republic of Tajikistan on the contract of sale, to establish the procedure and obligations for all producers and subscribers of renewable energy facilities, including for microgeneration. 	During two thousand twentythree	MEVR KRT OAHK "BT" JSC "Distribution Networks" nk LC ASMST	Budget financing Private financing Financing of international institutions	The legislation defines the mechanism for the sale of electricity by micro generation entities directly to consumers on the basis of a purchase and sale agreement. - Amendments have been made to the "Regulation on the procedure for connecting (connecting) installations for the use of renewable energy sources to common energy

						networks" on the exclusion of the owner of renewable energy facilities, microgeneration, from the list of recipients of technical specifications from grid organizations when using the generated energy only for their own needs. A new form of purchase and sale agreement for renewable energy entities has been developed
3	Development and implementation of standards for microgeneration using RES, E/E, relevant regulations and rules	<ul style="list-style-type: none"> - To study the issue of inclusion of renewable energy efficiency indicators in technical regulations, standards and other technical regulations of the Republic of Tajikistan. - To consider the issue of putting into effect technical regulations, standards and other technical regulations of the Republic of Tajikistan, establishing the methodological, organizational and technical basis for the effective use of renewable energy, including microgeneration facilities. - To study the issue of inclusion in the technical regulations and standards of the Republic of Tajikistan of energy quality parameters brought into line with international standards 	2022- twothousand twentythree	MEVR MU KRT OAHK "BT" JSC "Distribution Networks" ASMST	Budget financing Private financing Financing of international institutions	Technical regulations, standards and technical regulations have been developed for RES, including for microgeneration facilities.

		<p>recognized by the Republic of Tajikistan for microgeneration.</p> <ul style="list-style-type: none"> - Analyze the issue of the need for mandatory certification of energy and products produced from renewable energy sources, including microgeneration. - Develop standards for the use of low-power units and determine the conditions for the quality of energy produced from renewable energy sources. 				
<i>Development of regulatory and legal regulation of the placement of microgeneration facilities based on renewable energy sources</i>						
4	<p>The absence of legal norms on the placement of small-scale energy (microgeneration) facilities based on renewable energy on land plots that are part of residential buildings and their certification.</p>	<ul style="list-style-type: none"> - To develop regulatory and legal regulations for the placement of microgeneration facilities, based on renewable energy sources, on land plots that are part of residential development facilities and their certification; - Allow the use of land without changing their legal status and category (The formation of a land plot for microgeneration facilities without changing the status and category); - To make amendments and additions to the relevant NLA in order to create legal conditions for CBT entities, producers of clean energy, for their placement within local territories and consumers; - To make additions to the SNiP - norms of territorial planning, taking into account the placement of microgeneration facilities; - Identify mechanisms to support and stimulate land use and water use of renewable energy microgeneration facilities; - Provide mechanisms to reduce the financial and time costs of entrepreneurs when they receive the right to allocate land, increase equity and competitiveness in the distribution of land; - Create a "Single Window" scheme for the interaction of local executive authorities and state organizations involved in the preparation of permits for the installation of renewable energy facilities; 	twothousand twentythree	MEVR MU MIOGV GKZ CAS	<p>Budget financing</p> <p>Private financing</p> <p>Financing of international institutions</p>	<p>Developed by</p> <ul style="list-style-type: none"> - the mechanism of an accelerated and facilitated option for obtaining permits for the construction of microgeneration facilities - mechanisms to support and stimulate land use and water use for microgeneration (RES) facilities - the mechanism of land use without changing their legal status and category for microgeneration facilities <p>Amendments and additions have</p>

		<ul style="list-style-type: none"> - To improve the normative legal acts of legal relations between local executive bodies and entrepreneurs in the direction of ensuring a greater balance of their rights and obligations. - Determine the procedure and procedures for the functional and intended purpose of the land plot, the regulation of the placement of microgeneration facilities in cities and towns and beyond: a) using solar energy b) using water energy c) biogas d) wind energy. - To improve the mechanism of work of authorized bodies in the direction of greater objectivity of decisions, expanding access of the applicant and the entrepreneur to information about his work; - Legislatively determine the standards for the area of land plots reserved (used) for the placement, construction, construction of small-scale energy facilities; - To develop standards regulating (space-planning conditions, technical requirements, standards, based on the parameters of the required (augmented) capacity of renewable energy (microgeneration) installations; - To develop and adopt regional programs for the development of engineering infrastructure, master plans of PDP, taking into account the need for microgeneration facilities; - To make an addition to the "Land Code" on the allocation of a land plot for the construction of microgeneration on the territory of residential quarters with appropriate preferences for installations from renewable energy micro-stations up to 15 kW; <p>in particular,</p> <ul style="list-style-type: none"> - when installing solar equipment up to 15 kW, it is not necessary to undergo the procedure of the State Environmental Assessment (SEE) 				<p>been made to the General Plans of cities for the development of engineering infrastructure, taking into account the need for microgeneration facilities.(RES)</p>
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		<ul style="list-style-type: none"> - when installing solar equipment up to 15 kW, it is not necessary to undergo an Environmental Impact Assessment (EIA) procedure. - to resolve the issue of the need to obtain a certificate for a generating station for its own needs up to 15 kW. 				
<i>Improvement of tariff regulation and measures of tax and customs regulation for state support of microgeneration from renewable energy sources.</i>						
5	Analysis of the establishment of tariffs for electricity produced during microgeneration from renewable energy sources, taking into account current legislation, foreign experience, including fixed tariffs	<ul style="list-style-type: none"> - When developing a new tariff policy in the field of energy production using renewable energy, especially solar energy, to study and use international experience in national legislation. - To develop and adopt the Resolution of the PRT "Rules for determining fixed tariffs and marginal auction prices". - To provide for the annual indexation of fixed tariffs taking into account inflation and to approve by resolution the Government of the Republic of Tajikistan. - Before switching to a system of fixed tariffs, in accordance with the current legislation, when calculating the electricity tariff using RES, apply the European Methodology for calculating the tariff based on the benefit of the investor (owner of RES) and legislatively allow the establishment of these tariffs for microgeneration facilities by the antimonopoly Committee. 	2022- twothousand twentythree	MEVR OAHK "BT" JSC "Distribution Networks" Antimonopoly Committee	Budget financing Private financing Financing of international institutions	A new system of setting fixed tariffs for small-scale energy facilities has been adopted, taking into account the experience of foreign countries.
6	Development of financing measures, including on the basis of development institutions, companies with state participation in the tourism sector, Green financing	<ul style="list-style-type: none"> - IFIs and the banking sector to strengthen work on the development of new banking products. Taking into account the digitalization of the economy, expand remote customer service (taking into account the COVID-19 pandemic), improve customer service, increase the level of practical knowledge of employees. - To contribute to improving the level of financial literacy of MSMEs in the CBT/RES sectors/EE in the development of business plans for obtaining credit resources in MFIs, as well as to establish closer cooperation with credit organizations, to increase the level of theoretical and practical knowledge. 	2023-2024	MEVR KRT mf MRG MFOs NB Development Partners	Budget financing Private financing Financing of international institutions	<p>The National Strategy of Financial Inclusion of Tajikistan has been adopted</p> <p>The mechanism of green loans "leasing" for the purchase of generating equipment based</p>

		<ul style="list-style-type: none"> - To provide financial support to international financial institutions, international and non-profit organizations to the National Strategy on Financial Inclusion, the implementation of which will improve access to MSME lending, raise financial literacy of all sectors of the economy to a higher level. - To study the issue of reducing the average interest rate on loans for MSMEs in the CBT and RES/EE sector, while increasing the size of the loan issued and the term of its repayment. 				<p>on renewable energy has been developed.</p> <p>Measures have been implemented to increase the level of financial literacy in the development of business plans for obtaining credit resources in MFIs</p>
7	Development of measures to stimulate demand for products of national manufacturers-suppliers of equipment, systems of new energy-efficient technologies and services using renewable energy sources, including in the tourism sector	<ul style="list-style-type: none"> - To provide state support to national manufacturers-suppliers of equipment, systems of new energy-efficient technologies and services using renewable energy sources by making changes and additions to the relevant NLA. - Launch industrial production of solar panels and equipment at manufacturing plants using domestic raw materials (silicon raw materials) and thereby reduce the cost of electricity production from this source. - In the context of the sales market, to explore the possibilities not only of the domestic market, but also of the external one. In particular, Afghanistan, which provides ample opportunities for the sale of our competitively high-quality renewable energy products. The Pamirenergi company, for example, sells surplus energy generated by the MSPP to border Afghan settlements. - To stimulate financing and allocation of resources for R&D development and stimulation of domestic developments in public and private research institutes. - To develop specialized training services for operators and service workers (repair and maintenance), to provide engineering services at the stage of business planning, development of feasibility studies, installation supervision 	Before two thousand twentythree	MEVR KRT mf MPNT GEEK NAN Research Institutes Universities Associations	<p>Budget financing</p> <p>Private financing</p> <p>Financing of international institutions</p>	<p>Specialized services were provided to train operators and service workers (repair and maintenance), to provide engineering services at the stage of business planning, development of feasibility studies, installation supervision and commissioning, development of services of designers, builders, installers.</p>

		and commissioning, development of services of designers, builders, installers. - To carry out an examination of the norms and provisions of legislation to support small businesses, in particular in the CBT sector, in the context of state support measures. Consider the possibility of using the existing infrastructure and support system for small businesses for the tourism sector.				
8	Development of the structure of environmental impact on the development of entrepreneurship in the tourism sector using renewable energy. (subsidy from environmental Funds), use of financial resources (attraction of funds) and financing of special credit lines.	- To study the possibility of stimulating MSME subjects in the CBT to introduce renewable energy by allocating subsidies from the sale of GHG emission quotas to other countries. - To study the possibility of incentives based on the total remuneration of MSME subjects in CBT operating in remote mountainous areas and for the provision of services using renewable energy technologies from environmental funds (from the sale of quotas). - To introduce forms of incentives based on the introduction of green environmental certification.	two thousand twentyfour	MEVR KOOS KRT MRG	Budget financing Private financing Financing of international institutions	Amendments and additions have been made to the Law of the Republic of Tajikistan "On Environmental Protection" on the introduction of a form of incentives based on the introduction of green environmental certification.
<i>Development and implementation of Green Certification in the tourism sector</i>						
9	Creation of legal conditions for the development and implementation of "Green certification" in the tourism sector as a market tool aimed at rational environmental management, definition of the concept of "green environmental certification"	- Creation of regulatory and legal conditions for the development of a system for assessing the compliance of facilities and activities with environmental energy efficiency standards, green standards ("Green Certification") in the Law "On Tourism". - To make the following relevant amendments and additions to the Laws of the Republic of Tajikistan "On Environmental Protection", "On the use of renewable Energy sources" and "On Tourism":	2023-2024	MEVR KOOS KRT Development Partners MU Associations Entrepreneurs	Budget financing Private financing Financing of international institutions	The concept of "green environmental certification" is legally defined, the authorized body for issuing a green certificate is defined, A by-law has been prepared

		<ul style="list-style-type: none"> the concept of "green environmental certification", in the context of monitoring and tracking the production, supply and consumption of renewable energy, determine the authorized body for issuing the green certificate, define the requirements and legal conditions for the development and implementation of the Green Certificate, The authorized body to develop Green Standards for the CBT sector, taking into account relevant international standards. To prepare an appropriate draft law of the Republic of Tajikistan "On Amendments to certain Legislative Acts", as well as relevant by-laws regulating the procedure for conducting environmental expertise, environmental certification" To develop a program document on the "green economy" taking into account all the processes of the country's ecosystem. To define in the Law the priority of the introduction and use of renewable energy as the most ecological resource. 				regulating the procedure for conducting environmental expertise and environmental certification"
10	The procedure for obtaining a Green certificate by CBT entities, its conditions and significance	<ul style="list-style-type: none"> To make amendments and additions to the Law "On Environmental Expertise" defining the procedure and conditions for obtaining a Green Certificate by MSME entities in the CBT sector. To define in the law that certification of green tourism is not a mandatory procedure, in order to obtain this certificate, customers need to undergo an energy audit by an independent energy audit company. Develop and adopt relevant by-laws clarifying the procedure and conditions for obtaining a Green Certificate for MSME subjects in the CBT. 	2024-2025	MEVR KOOS KRT Development Partners MU Associations Entrepreneurs	Budget financing Private financing Financing of international institutions	The procedure and conditions for obtaining a Green Certificate by MSME subjects are legally defined.
<i>Development and adaptation of green standards</i>						

11	Determination of the necessary list and content of green standards and qualities as the basis for Green certification, compliance with which creates conditions for environmentally safe economic and other activities	<ul style="list-style-type: none"> - Make amendments and additions to the Law "On Environmental Expertise", which should determine the following for a Green Certificate: <ul style="list-style-type: none"> • general status, • what data is included in it, • to determine that the PO is a proof without its carbon origin, • determine the norm and procedure for applying the payment of preferences (a certain amount) as a reward for contributing to the green economy and environmental protection, while fulfilling all the requirements of the Green Certificate • determine the source of payments preference for a Green certificate - Develop and adopt relevant by-laws clarifying the content, data, requirements and conditions for obtaining a Green Certificate for MSME subjects in the CBT. 	Before twothousand twentyfive	MEVR MPNT KOOS KRT Development Partners MU Associations	Budget financing Private financing Financing of international institutions	The list and content of green standards and qualities are defined as the basis for Green certification
12	Determination of the legal basis for the establishment of independent Energy Audit companies, their powers and services provided	<ul style="list-style-type: none"> - To make amendments and additions to the Law "On Energy Conservation and Energy Efficiency" on the authorization of energy audits by independent companies, to determine the procedure for their registration, powers, responsibilities, duties and provision of services. - Make appropriate amendments and additions to some legislative acts related to the registration of legal entities, licensing, tourism sector and energy audit. 	Before twothousand twentyfive	MEVR MU Gosenergonad zor KRT ASMST Associations Travel companies	Budget financing Private financing Financing of international institutions	Legally. the legal basis for the creation of independent energy audit companies, their powers and the services they provide are defined
13	Creation of a market mechanism for conducting an independent energy audit to confirm the subject's compliance with green standards and the quality of services	<ul style="list-style-type: none"> - To develop and include in the relevant NLA incentives for energy audit; - Raise awareness of global initiatives based on voluntary energy audits; - In cooperation with the Agency for Standardization, Metrology and Certification, to promote the implementation of green tourism standards, including the application of 	2025-2026	MEVR MU Gosenergonad zor KRT ASMST	Budget financing Private financing Financing of international institutions	A mechanism has been developed and incentives have been created for voluntary energy audit

		internationally recognized green tourism standards and to raise awareness of CBT entities about energy audit. - Provide training of certified specialists and accredited organizations for external evaluation.				
<i>Development of infrastructure for technical and technological support of CBT entities (services to MSME subjects)</i>						
14	Improving the technical equipment of the energy infrastructure of CBT facilities	<ul style="list-style-type: none"> - Create conditions to support the development of infrastructure for technical and technological support of CBT entities (services to MSME subjects) - To create conditions for attracting investments in the renewable energy sector for the manufacture of competitive renewable energy and E/E equipment on the market - To stimulate local producers in the field of production, installation and maintenance of renewable energy facilities 	Before two thousand twentythree	MEVR KRT mf MPNT NAN Universities Research Institutes GEEK	Budget financing Private financing Financing of international institutions	An economic incentive mechanism has been developed to support the development of infrastructure for technical and technological support of CBT entities (services to MSME subjects)
15	Availability of technologies, the possibility of choosing technical solutions that bring benefits and public utility, ensure profitability, payback of costs and allow you to extract additional profit from the introduction of technologies; development of service engineering, technical, consulting services for CBT entities, especially in areas of decentralized energy supply	<ul style="list-style-type: none"> - To ensure the availability of technologies, the possibility of choosing technical solutions that bring benefits and public utility, ensure profitability, payback of costs and allow you to extract additional profit from the introduction of technologies - To introduce into its relevant NLA a norm on the provision of state support to service, engineering, technical, consulting organizations for the provision of services for CBT entities in areas of decentralized energy supply - Develop the following specialized services: <ul style="list-style-type: none"> • repair and maintenance companies, service services; • engineering services at the stage of planning, feasibility study development, supervision and commissioning; • design, construction and installation work on the construction of facilities. 	Before two thousand twentysix	MEVR, KRT mf MPNT ASMST NAN Universities Research Institutes GEEK Private sector	Budget financing Private financing Financing of international institutions	The legislation introduced a norm on the provision of state support to service, engineering, technical, consulting organizations for the provision of services for CBT entities in areas of decentralized energy supply Quotas have been determined for

		<ul style="list-style-type: none"> - Take the necessary measures to create repair shops, service centers for the maintenance of microgeneration facilities in tourist areas in remote mountain regions - To consider the possibility of training specialists in the installation and maintenance of renewable energy generation facilities under special quotas - In order to coordinate, institutional and financial support and development of renewable energy sources, accelerate the creation of a Fund for the Development of Renewable Energy Sources and Energy Efficiency - To interest design and research institutes, private firms and agencies in providing service engineering, technical, consulting services for CBT entities, especially in areas of decentralized energy supply. 				training specialists in the installation and maintenance of microgeneration facilities
16	Formation of open databases (information portals) of experts, cadastres and catalogs of applied technologies and equipment, services, the best available technologies (demonstration zones) for participants of the renewable energy and tourism market; providing access to energy-efficient, energy-saving technologies	<ul style="list-style-type: none"> - Accelerate the implementation of previously adopted NLA on the creation of a RES Cadastre and a Catalog of equipment using RES and launch the relevant sites - To determine the sources of financing for the organization of information portals with the opening of the RES Website, maintaining a cadastre and a RES catalog. - To stimulate the creation of open databases (information portals) of experts, applied technologies and equipment, microgeneration services from renewable energy sources, the best available existing technologies (demonstration zones) for interested participants of the renewable energy market and tourism 	Before twothousand twentysix	MEVR KRT MPNT ASMST KOOS	Budget financing Private financing Financing of international institutions	A catalog of equipment and a RES Cadastre have been created and are functioning The sources of financing for the organization of information portals with the opening of the RES Website have been identified Open databases of experts, applicable technologies, etc. have been created..

17	Ensuring access to existing energy-efficient, energy-saving technologies; providing access to documents of the national standardization system and regulatory and technical acts on the use of equipment for the production of clean energy, as well as renewable energy services	<ul style="list-style-type: none"> - To provide state support for imported goods and equipment in the field of renewable energy, as well as national manufacturers of equipment for facilities using renewable energy and renewable energy technologies. - Develop and implement standards and requirements for the energy efficiency of existing buildings. - Ensure compliance with new building standards on energy efficiency. - Promote the application in the housing sector: <ul style="list-style-type: none"> • Market-based solutions to improve energy efficiency; • Geothermal systems; • Solar thermal collectors for heating water and air, as well as for generating electricity. - To stimulate the implementation of energy efficiency measures in residential buildings, for example, to increase the attractiveness of energy-efficient measures by guaranteeing a reasonable payback period and creating conditions for better maintenance of heating systems. - Encourage the use of low-carbon technologies and environmentally friendly fuels (heat pumps, renewable energy sources - solar panels, microelectric power plants, wind turbines) in individual households. - To use the introduction of electric vehicles simultaneously with the production of electricity from renewable sources, which will contribute to achieving the goal of reducing the total number of vehicle emissions - To fully support and expand the experience of using bicycle transport for eco-mountain tourism. 	Before twothousand twentysix	MEWR CRT MF MPNT ASMSTI KOOS	Budget financing Private financing Financing of international institutions	The mechanism is defined implementation of state support for imported goods and equipment in the field of renewable energy, as well as the procedure for stimulating national manufacturers of equipment for facilities using renewable energy and renewable energy technologies.
<i>Ensuring quality education and awareness of communities and CBT entities</i>						
18	Ensuring quality education, training of specialists and awareness of communities and subjects of CBT,	- Analyze the need of the tourism system for qualified specialists related to the development and operation of energy infrastructures for CBT;		MEWR CRT MES HEIs	Budget financing Private financing	A forecast of the tourism sector's need for personnel related

		<ul style="list-style-type: none"> - To ensure coordination of the activities of tourism authorities with professional educational institutions for the preparation and provision of personnel in demand in the tourist labor market of the country, including the use of renewable energy and E/E; - Develop retraining courses for specialists and managers in the field of renewable energy and EE - To organize the retraining of personnel on the use and maintenance of renewable energy and E/E technologies, for employees of travel companies (owners of hotels, hostels, guest houses, motels, etc.) in the existing Adult retraining Centers, modular centers and industry training and retraining courses of the country; - To practice attracting foreign experts and volunteers to share the experience of employees of travel companies (owners of hotels, hostels, guest houses, motels, etc.). - To promote the creation of an educational platform for the free exchange of experience and knowledge on the use of renewable energy and E/E in the tourism sector; - To ensure the opening of specialized departments, the creation of scientific laboratories in specialized universities, to improve educational standards and programs of higher education institutions and vocational schools in the relevant specialties in RES and E/E, - Organize and conduct internships in order to study foreign experience, improve qualifications, carry out personnel training and postgraduate studies in advanced foreign countries, - To create new in-demand specialties in universities and vocational schools related to the profile field of activity, additional training programs for the most popular professions and specialties of the RES and E/E market in the CBT sector, - To expand public access to educational and educational information and materials via the Internet, 	2023-2027	NAS Associations SSUZ MTMZN MON	Financing of international institutions	to the development of renewable energy has been prepared A system of coordination of tourism authorities with professional educational institutions has been created to train and provide personnel in demand in the tourist labor market of the country, including the use of renewable energy and E/E; A number of thematic trainings and seminars on capacity building in the field of renewable energy and other knowledge management activities were held. Professional networks and associations have
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		<ul style="list-style-type: none"> - Develop professional networks and associations, - To practice organizing and conducting thematic trainings and seminars on capacity building in the field of renewable energy and other knowledge management activities. 				been created, the platform
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III. Financial plan for the implementation of the Roadmap for 2022 - 2030.

The main source of financing for the introduction of renewable energy in the community-based tourism sector is MSME's own funds. In the course of the development of the tourism sector and improving the quality of tourist services, owners become prominent investors in the field of renewable energy, as CBT entities are interested in switching from the use of traditional energy sources (coal, wood and other fuels) to renewable energy, to preserve the flow of tourists and attract ecotourists.

Also, different groups of investors are actively working in the field of renewable energy, which can be classified depending on their attitude to risks, expected profits and the degree of their participation. With this in mind, the following sources may be used for financing:

➤ Public funds – it is assumed that during the gradual improvement of the regulatory framework in order to eliminate barriers to the use of advanced technological solutions and create a system of incentives for their implementation, the state itself will play a significant role. The state's investment is to develop and implement a program of state support for the development of public-private partnerships in order to stimulate the development of tourism industries at the community level. That is, on the basis of targeted subsidies and the allocation of grants for the gradual improvement of the regulatory framework for the introduction of renewable energy technology in CBT entities.

➤ Private funds – own funds of CBT entities and owners. It is assumed that a significant share of the costs for the purchase and installation of renewable energy technology will be borne by the participants themselves.

➤ Funds of companies with state participation - it is assumed that a significant share of the financing of pilot projects will be carried out by companies interested in the implementation of these projects with state participation.

➤ MSME funds of various forms of ownership interested in the introduction of renewable energy on the basis of pilot projects. In this case, we are talking, first of all, about MSMEs interested in the practical use of renewable energy technologies. It is assumed that these MSMEs will be financed from their own funds (primarily as investment projects) with possible co-financing with climate funds.

➤ Funds of institutions to support the development of the green economy and innovative development - it is planned to attract funds from institutions to support the development of the green economy and innovative development. In particular, based on the proposal of pilot projects.

➤ The use of funds from international financial organizations (the World Bank, etc.), projects and programs – it is planned to attract funds from international organizations, systematically search for opportunities to implement some initiatives within the framework of participation in various international projects and programs.

➤ Funds from various funds – it is assumed that for the introduction of renewable energy technology in the tourism sector, it is necessary to attract funds from various funds, in particular, a large amount is allocated from climate support funds for the development of renewable energy.

➤ Credit organizations – it is assumed that credit organizations, including MFIs, become the main source for the purchase and installation of renewable energy technology.

International partners play an important role in the development of the energy sector in Tajikistan. The key international organizations in the energy sector that promote sustainable development, including the development of renewable energy sources, are:

- Asian Development Bank (ADB);
- European Bank for Reconstruction and Development (EBRD);
- United States Agency for International Development (USAID);
- The World Bank;
- United Nations Development Programme;
- German Development Bank KfW;
- International Monetary Fund;
- International Development Association (IDA);
- KOIKA Agency, South Korea

IV. Managing the implementation of the Roadmap

In order to successfully implement this roadmap, the following organizational mechanisms will be created:

1. The Interdepartmental Working Group consists of representatives of the public sector, non-governmental organizations, importers and exporters of RES equipment, equipment manufacturers, organizations generating RES and EE, CBT entities (owners of guesthouses, hostels, private community hotels and representatives of tourism campaigns). The main task of the Interdepartmental Working Group is to develop a roadmap, make decisions on the feasibility of making amendments and additions to existing laws and regulations within the framework of the roadmap, interact with the Government of the Republic of Tajikistan, MIOGV to coordinate the implementation of individual initiatives developed by the IWG.

2. Associations uniting key participants in the implementation of the IWG roadmap: suppliers and manufacturers (finished goods, equipment, appliances, devices, components using RES/EE); travel companies; owners of RES facilities (generation and sale of electricity using RES), associations and non-governmental organizations. The key functions of associations are:

- identification of the main and priority proposals for inclusion in the activities of individual initiatives of the roadmap;
- expert support on new technologies and equipment, participation in discussions aimed at the implementation of the main tasks;
- formation of tasks for the development and support of the coordination of regulatory legal acts;
- formation of requirements and discussion at trainings on the acceptance of the results and initiatives of the IWG;
- ensuring interaction with the innovation ecosystem and infrastructure;
- formation of a knowledge base (catalog of solutions).

3. Research consortia uniting research and scientific laboratories: Academia, universities, Research institutes, development partners. The key functions of research consortia are:

- development of joint programs and research projects in the priority areas of the RM proposed by the IWG;
- assistance in obtaining funding from various sources for research;
- monitoring the implementation of research by individual research groups, third-party scientific groups;
- organization of communication (seminars, trainings) of participants of research projects among themselves, as well as with interested participants of the IWG.

4. Design consortia uniting business companies, small technology companies (design bureau), research groups for the purpose of developing and launching new commercial products and services to the market, design institutes at the IEVR "Nurofar", "Electrosetproject" "Special Automation". The key functions of the project consortium are:

- development of a joint program for the development and market launch of MRG solutions;
- assistance in obtaining financing from various sources for the work;
- monitoring of the implementation of works;
- organization of communications (seminars, trainings) of the project consortium participants among themselves, as well as with other interested participants of the IWG.

5. Existing national platforms of public-private dialogue to stimulate the production and implementation of RES and E/E in the tourism sector. The key functions are:

- assistance in organizing and conducting propaganda campaigns in order to improve the regulatory framework for increasing the production and consumption of energy based on RES, the growth of EE at the CBT level in order to adopt changes, amendments, improvements in the regulatory framework of the Republic of Tajikistan;
- assistance to stimulate the production and implementation of RES/EE in the tourism sector;
- assistance in strengthening the government's capacity to develop green tourism.

It is assumed that coordination, monitoring and interaction of participants in the implementation of the roadmap with structural units of the Ministry of Energy and Water Resources of the Republic of Tajikistan and the Committee for Tourism Development will be implemented on the basis of the coordination center being created.

It is planned that this "road map" will be updated regularly (at least once a year).

List of terms and definitions used

State regulation is the reasonable establishment of rights and obligations, requirements and conditions for conducting certain types of entrepreneurial activity.

Decentralization of energy is a type of sectoral policy aimed at the development of small-scale energy.

Household is a form of economic and economic activity, the use of the property complex, uniting people by labor relations, the smallest and most massive unit of the national economy, a completely independent subject of market relations.

Engineering services – specialized services for technical support of certain types of activities from the design stage, the creation of the object to the operation of the object.

Local energy systems based on renewable energy sources are autonomous complexes of generation, transmission, storage and consumption of energy.

Small energy is a segment of the energy (market) sector that includes small generating plants and small generating complexes, including those not connected to centralized power grids, operating on the basis of traditional fuels and on the basis of renewable energy sources (RES).

Microgeneration is the production (generation) of electricity, heat energy by objects of very low power. (According to the WADE classification, small or microgeneration is the production of electricity at or near the place of consumption, regardless of size, technology or fuel - both off-grid and in parallel with the grid).

Tourism infrastructure facilities are engineering support systems that consume energy resources, generate, transmit and store energy.

Tourism objects – buildings, structures, engineering infrastructure.

Suppliers – firms, companies, organizations, individual entrepreneurs, manufacturers of goods, works, services.

Consumers are private entrepreneurs of the tourism sector based on communities that intend to use technologies, equipment, resources to produce clean energy based on renewable energy sources and apply technologies and materials for energy efficient resource use.

Distribution energy is a model of the functioning of a unified energy system that allows small-scale energy entities to supply the energy produced to distribution companies.

CBT entities – individuals, legal entities, citizens engaged in economic and economic activities for the provision of tourist services in local territories using their property in order to obtain entrepreneurial income

Community-based tourism is an activity that encourages two-way communication between visitors and local communities to share knowledge about cultures and traditions.

Tourist services are the activities of an entrepreneur aimed at generating income and extracting profit by meeting the needs of a tourist (citizen).

Energy audit is a type of specialized activity for providing expert consulting services, conducting an external energy efficiency assessment.

Energy efficiency is the rational use (consumption) of energy resources with the same quality of tourist services and maintaining (increasing) the level of comfort in compliance with the necessary standards and regulations.

List of abbreviations used

RIA	Regulatory Impact Analysis
ASMCTI	Agency for Standardization, Metrology, Certification and Trade Inspection under the Government of the Republic of Tajikistan
AS	Antimonopoly Service under the Government of the Republic of Tajikistan
RES	Renewable energy sources
GDP	Gross domestic product
HES	Higher education institution
SCLMGC	State Committee for Land Management, Geodesy and Cartography of the Republic of Tajikistan
SCIPA	State Committee for Investment and Public Administration of RT
GW	gigawatt is a unit of power measurement
CC RT	Civil Code of the Republic of Tajikistan
SUE	state unitary enterprise
PPP	public-private partnership
HPP	Hydroelectric power station
RM	Road Map
LC RT	Land Code of the Republic of Tajikistan
kV	kilovolt is a unit of voltage measurement.
kWh	kilowatt-hour is a unit of measurement of electrical energy
CTD	Committee for Tourism Development under the Government of the Republic of Tajikistan
CAC	Committee on Architecture and Construction under the Government of the Republic of Tajikistan
CEP	Committee on Environmental Protection under the Government of the Republic of Tajikistan
MW	megawatt is a unit of power measurement
MJ	megajoule – a unit of energy measurement
PL	power transmission line
MHPS	small hydroelectric power station.
MIOGV	local executive bodies of state power
MSME/(B)	micro, small, medium-sized entrepreneurship or business
MFOs	microfinance organizations
MEWR	Ministry of Energy and Water Resources of the Republic of Tajikistan
MINT	Ministry of Industry and New Technologies of the Republic of Tajikistan
MLME	Ministry of Labor, Migration and Employment of the Republic of Tajikistan
MON	Ministry of Education and Science of the Republic of Tajikistan
MF	Ministry of Finance of the Republic of Tajikistan
MJ	Ministry of Justice of the Republic of Tajikistan
IWG	Interdepartmental Working Group
NAS	National Academy of Sciences
VAT	value added tax
R&D	research and development work
TC	Tax Committee under the Government of the Republic of Tajikistan
TC RT	Tax Code of the Republic of Tajikistan
NLA	regulatory legal acts
NDS-2030	National Development Strategy of the Republic of Tajikistan on the period up to 2030
OJSC "BT"	Open Joint Stock Holding Company "Barki Tojik"
CSO	civil society organizations

UN	United Nations
GG	Greenhouse gases
UNDP	United Nations Development Programme
MDSP	Medium-term Development Strategy Program until 2025
RT	Republic of Tajikistan
Media	mass media
CIS	Commonwealth of Independent States
CC	Customs Committee under the Government of the Republic of Tajikistan
CC RT	Customs Code of the Republic of Tajikistan
CBT	community-based tourism
FEC	fuel and energy complex
TPP	thermal power plant
TS	Technical specifications
FGD	focus group discussion
FT	fixed tariffs
EE	energy efficiency