

REPORT

on the Analysis of the Energy Sector and Renewable Energy Production in the Community Based Tourism Industry in the Republic of Tajikistan



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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 programme aims at reducing the carbon footprint of the tourism sector in Kyrgyzstan, Uzbekistan and Tajikistan. The project aims to create an enabling environment for increased energy efficiency (EE) and sustainable energy consumption and production based on renewable energy sources (RES) by micro, small and medium enterprises (MSMEs) in the community-based tourism sector.

As part of this project, an Energy Sector Analysis Report has been prepared by the National Expert Group and presented to a wide range of stakeholders, private sector actors, the public, government officials, decision makers and development partners.

The analysis has been carried out to provide a basis for the development of a roadmap and improved policies for increased renewable energy generation and consumption, widespread introduction of EE in the tourism sector, and reduced emissions.

The publication and presentation of the report and analysis is intended to engage the parties in a country and regional dialogue - discussing the results of the analysis of the economic problems of the sector and assessing the impact of the implemented policies on the development of clean energy production and consumption in the tourism sector.

The main objective of the first phase of the Project promoting increased renewable energy generation and consumption, and energy efficiency in the community-based tourism (CBT) sector is to determine the actual state of the small-scale energy sector and to inform the public about the results of this analysis.

The Report provides background and analytical information on the state of the energy sector. The publication presents the methodology of the study, the results of the economic analysis of the components of growth and development of clean energy production (generation) based on RES, the utilization of EE potential and the assessment of the business environment, and identifies gaps in the implemented policies.

Based on this problem study and the results of the discussion, the Inter-ministerial Working Group will start developing a draft roadmap.

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ABBREVIATIONS

CBT	Community Based Tourism
CC RT	Civil Code of the Republic of Tajikistan
CC RT	Customs Code of the Republic of Tajikistan
CHP	combined heat and power plant
CIS	Commonwealth of Independent States
CSO	Civil Society Organizations
EE	energy efficiency
FEC	fuel and energy complex
FGD	focus group discussion
GW	gigawatt - a unit of power
HPP	hydroelectric power plant
IWRM	integrated water resources management
kV	kilovolt is a unit of voltage measurement
kWh	kilowatt-hour - unit of measure for electrical energy
LC RT	Land Code of the Republic of Tajikistan
LEGU	local executive government units
MEWR	Ministry of Energy and Water Resources of the Republic of Tajikistan
MFI	Microfinance institutions
MJ	megajoule - unit of measurement of energy
MSMEs/(B)	micro, small, medium entrepreneurship or business
MW	megawatt - power unit
NDS-2030	National Development Strategy of the Republic of Tajikistan till 2030
NLA	normative legal acts
OJSHC	Open Joint Stock Holding Company
PPP	public-private partnership
RES	renewable energy sources
RT	Republic of Tajikistan
SHPP	small hydroelectric power plant.
SUE	state unitary enterprise
Tajikstandart	Agency for Standardisation, Metrology, Certification and Trade Inspection under the Government of Tajikistan
TC GRT	Tax Committee under the Government of Republic of Tajikistan
TC RT	Tax Code of the Republic of Tajikistan
TPP	thermal power plant
UN	United Nations
UNDP	United Nations Development Programme
VAT	value added tax

THE CONTEXT AND OBJECTIVES OF THE ANALYSIS

This analysis was carried out during Phase 1 of the Project to assess the legal, institutional and policy framework for renewable energy production and consumption and for increasing EE in the CBT sector, to identify gaps in implemented policies in order to develop measures to overcome them.

The main tasks of the analysis are:

- Identification of a list of normative legal acts (NLA), sectoral strategies and programmes that need to be developed or amended to ensure their positive impact on increasing renewable energy consumption and EE growth in the CBT sector in Tajikistan;
- Identification, analysis and preliminary assessment of NLAs and policy documents of the Republic of Tajikistan (RT) with impact on development of RE, EE, CBT industries, micro-generation and local energy supply development of tourism facilities, and their systematisation by regulatory area and sector;
- Identification of existing gaps and conflicts in NLAs that have a negative impact on RE, EE, CBT industries development; preparation of an identified list of problems arising from regulatory and policy implementation, covering cross-sectoral issues;
- Conducting a preliminary assessment of the NLAs and policy documents in the field of RES use, increasing EE in the CBT sector through questionnaires, focus group discussions, round table discussions, individual consultations with stakeholder representatives and Project beneficiaries.

In order to carry out the analysis, identifying the regulatory problems arising from the policies implemented, the regulatory framework (legislation), methods of desk research and sociological research (surveys and questionnaires), a focus group discussion and a stakeholder roundtable on the issues and problems studied were used, the results of which are set out in the following documents:

- List of normative legal acts, strategic and programme documents of the Republic of Tajikistan having impact on the growth and development of the RE sector, EE, tourism development at a community level, micro generation and development of local energy supply of tourism facilities - Annex 1;
- Survey on Renewable Energy and Energy Efficiency Opportunities in Community Based Tourism in Tajikistan - Annex 2;
- Overview of the outcome of the Focus Group Discussion on Renewable Energy and Energy Efficiency Opportunities in Community Based Tourism in Tajikistan - Annex 3;
- Overview of the Round Table on the presentation of the results of the analysis of the energy sector and the challenges of increasing energy production from RES, EE growth in the tourism sector at community level - Annex 4.

The analysis and assessment of the impact of NLAs and policy documents on the development of the RES, EE and CBT sectors has been hampered by the fact that there are no up- to-date statistics and indicators (for 2019-2020) in the public domain for Tajikistan reflecting the status of the MSME sector, sectoral small-scale energy and self-generation (micro-generation), renewable energy consumption and the EE of properties, engineering systems, used equipment, household appliances, appliances in the CBT sector.

INTRODUCTION

Ensuring energy security and efficient use of electricity in the National Development Strategy of the Republic of Tajikistan for the period until 2030, approved by the Decree of the Majlisi Namoyandagon Madzhlisi Oli of the RT, dated 1 December 2016, № 636 (hereinafter - NDS-2030), has been placed first among the strategic goals of the country. The ambitious goal is to make Tajikistan a leader in the efficient development and use of the country's energy potential and, on this basis, to promote national energy interests in foreign markets, both through appropriate energy diplomacy and through the use of market mechanisms.

It should be noted that Tajikistan has 4% of the world's hydropower potential and is one of the world leaders in renewable hydropower resources, which can theoretically generate up to 527 billion kWh of electricity per year. Tajikistan ranks first and second respectively in terms of specific hydropower potential per square kilometre of territory and per capita, and sixth in the world for the use of "green energy" production resources.

Hydropower resources are so far the most highly efficient among renewable energy sources, and the electricity generated by hydropower plants is the cheapest of all existing modes of energy generation in Tajikistan. More than 91% of the country's total electricity production is generated by hydropower plants, and regions of the country are mainly covered by centralised electricity supply.

Thanks to the use of hydropower, which produces clean electricity, Tajikistan's greenhouse gas emissions are less than one tonne per person per year, and the country's regional share is only 5%.

The country also has significant potential for other RES, such as solar, wind, biomass and thermal energy, which can practically provide about 10% of the country's energy needs.

73% of Tajikistan's population lives in rural areas, including more than 10% in remote mountainous areas, along valleys of small rivers and watercourses, which are widely dispersed. The minimum population density in such zones, in some places, is 2-3 people per square kilometre. There is limited access to infrastructure, as well as significant deterioration of power equipment and utilities, lack of capacity, resulting in periodic interruptions in power supply.

It is estimated that about 2.5% of the population of the republic, over 700 villages do not have access to electricity and networks. Most of these settlements are newly established settlements that are located in remote and inaccessible areas. The most difficult areas for electrification are the settlements in Khatlon oblast bordering Afghanistan. The remaining settlements are relatively close to the centralised grid and their connection depends on the financial situation of Barki Tojik¹.

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

According to the management of the country's main power supply company, Barki Tojik, it is not economically viable to pull power lines, install separate transformers and build substations in such areas. In addition, these works are the responsibility of the local executive authorities (LEAs), which do not have the necessary funds, and the best option for power supply of these villages is to install solar panels² and use other types of RES.

The issue of diversification of available energy sources is becoming increasingly relevant. The share of renewable energy generation in the final energy consumption of the country is 1.08% and is accounted for by small hydro power plants (SHPPs). There are no other official data on renewable energy generation by other entities, nor are there any data on the cost of renewable energy (micro-generation), except for isolated examples and model calculations of the cost and price of electricity from SHPPs.

¹ Blackout 2020 in Tajikistan. In whose hands should the electricity sector be handed over to make it work efficiently? TAJWEEK.TJ, 30.11.2020. http://news.taiweek.tj/view/blekaut_2020-v-tadzhikistane-v-chi-ruki-peredat-sektor-elektroenergetiki-chtoby-on-effektivno-rabotal/

² Tajikistan has counted more than 700 villages without electricity. STANRADAR, 16.02.2018 <https://stanradar.com/news/full/28465-v-tadzhikistane-naschitali-svyshe-700-sel-bez-elektrichestva.html>

Widespread use of RES in Tajikistan (especially in rural and mountainous areas) will not only improve the energy supply of the population, raise living standards and preserve the environment, but also contribute to the development of new modern technologies and the creation of knowledge-intensive production in the country.

For the successful implementation of this task, it is important to establish an appropriate legal framework, a developed package of legal, regulatory and technical documents that would not create unreasonable obstacles for producers/suppliers and consumers of renewable energy in the form of complicated administrative and permitting procedures, high taxes and fees, unnecessary interference in economic activities, numerous duplicate inspections.

In this regard, the analysis conducted, taking into account the synthesis of stakeholder opinions gathered through their survey, focus group discussion and round table, will contribute to the development of recommendations and necessary actions for the increased use of RES, increasing EE in the CBT sector in Tajikistan.

1. ANALYSIS OF THE STATUS OF RENEWABLE ENERGY PRODUCTION AND ENERGY EFFICIENCY IN THE COMMUNITY-BASED TOURISM SECTOR IN TAJIKISTAN

1.1. An overview of the country's main indicators. The energy sector and its importance for the national economy.

Tajikistan is a mountainous country. The country borders Afghanistan, China, Kyrgyzstan and Uzbekistan. At the beginning of 2020, the country's population reached more than 9.3 million, with an average annual growth rate of about 2-2.2%. The country's gross domestic product in 2020 was 82.5 billion somoni and its real growth was 4.5%. During the last 20 years the level of poverty in the country decreased from 83% in 2000 to 26.3% in 2020.

The republic's economy is quite dependent on external factors. Fluctuations in world prices for raw material exports affect the country's solvency and budget revenues. The Republic of Tajikistan does not possess significant explored reserves of oil and gas, the main modern sources of energy, and is an importer of almost half of the oil and gas consumed in the country. The country has substantial reserves of coal, the main deposits of which are located in inaccessible mountainous areas.

At the same time, Tajikistan is one of the regional and world leaders in terms of potential reserves of hydropower resources. Moreover, in terms of specific reserves per capita (56,600 kWh per person per year), the republic ranks second in the world. By specific reserves per unit of territory - 3.62 mln kWh per 1 sq. km per year - it is the first in the world. The structure of energy resources, as of today, shows that Tajikistan has no other alternative in energy sector except for use of hydro-energy resources. But these reserves are currently being used at less than 5%.

Tajikistan has a rather extensive centralised electricity supply system from Soviet times, covering more than 90% of the country's inhabited territory, and by 2011 a unified national energy system was in place, connecting the country's southern energy system with the northern one.

Due to the construction of new and the modernization of old HPPs and TPPs, the production capacity of the country's energy system has increased to 1,900 megawatts in the last 10 years. Twelve substations and 1,390 km of 220-500 kV high-voltage transmission lines have been commissioned.

All of this has significantly increased the ability of the entire population of Tajikistan to access the electricity.

Inter-country electricity exchange ties have been established. A total of 1.42 billion kWh of electricity was exported to the Republic of Uzbekistan in 2019, 1.46 billion kWh to Afghanistan and 44 million kWh to the Kyrgyz Republic. Electricity export and import volumes in 2020 and 2021 depended on the level of water inflow into the Nurek HPP reservoir. The share of electricity in the foreign trade turnover of Tajikistan in 2020 was 2.3%, and in the export of goods and services - 3.7%.

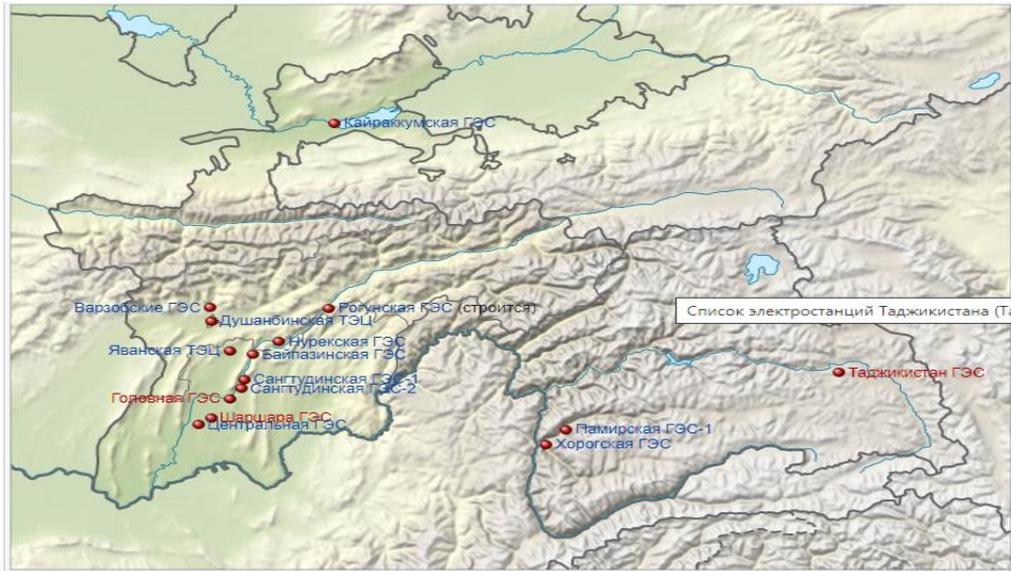
The peculiarities of the mountainous terrain and the presence of numerous medium and small rivers allow the country to develop small-scale hydropower to provide electricity to rural areas in inaccessible mountainous regions. The National Progress Report on Implementation of the Country's Strategic Documents in the context of the Sustainable Development Goals notes that hydropower

should be considered not only as a basis for achieving energy security and environmental sustainability, but also as a prerequisite for achieving "green" growth³.

Tajikistan also has significant opportunities for solar energy, as well as some opportunities for other renewable energy sources.

The energy sector occupies a special place in Tajikistan, being the main component and backbone of industrial and agricultural production, an integral part of citizens' life support systems, as well as of education, transport and telecommunications, and the tourism sector. Tajikistan's energy sector is a platform for a civilised way of life for its citizens and visitors.

Figure 1. Map of hydro and thermal power plants in Tajikistan⁴.



Generation. Two companies, Barki Tojik and Pamir Energy, are involved in power generation in the Tajikistan power system. Barki Tojik controls the power plants and networks, electricity generation, transmission and distribution in the country, except for the territory of Gorno-Badakhshan Autonomous Oblast (GBAO). In December 2002, the GBAO power grid was transferred from Barki Tojik to a private company, Pamir Energy, under a 25-year Concession Agreement. The GBAO electricity system operates in isolation and has no connection to the main electricity system of Tajikistan.

Production. Currently, 6 large, 5 medium and 16 small HPPs, and 3 thermal power plants, which are on the balance sheet of the State Joint Stock Holding Barki Tojik, produce electricity in Tajikistan. As of January 1, 2021, total available capacity of the power system, excluding Rogun HPP, which is under construction is 6,484.119 MW, including 5,766.119 MW capacity of HPPs, and 718 MW capacity of TPPs.



Construction of Roghun HPP with a total capacity of 3,600 MW is underway. Currently 2 units with a design capacity of 760 MW have been commissioned, which will be achieved after the completion of the dam. Thus, HPPs account for 88.92% of all installed capacity and TPPs for 11.08%. The main producer of electricity is the Nurek HPP, which, even during the ongoing modernisation of individual units, generated more than half of the country's electricity. Pamir Energy operates 13 small and mini hydropower plants with a total

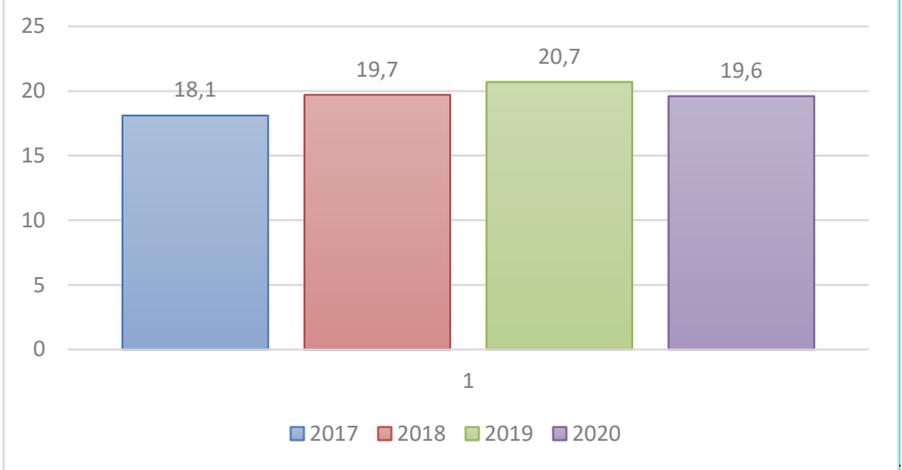
³ [https://www.medt.tj/documents/main/strategic_national_programm/NationalReportV10\[RU\]18.pdf](https://www.medt.tj/documents/main/strategic_national_programm/NationalReportV10[RU]18.pdf)

⁴ <https://ru.wikipedia.org/wiki/>

installed capacity of 44.79 MW and 35/10/0.4 kV transmission lines with a total length of 2609 km. The company also has one solar power plant with an installed capacity of 200 kW.

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

Figure 1: Total electricity production in RT in 2017-2020 (billion kWh).



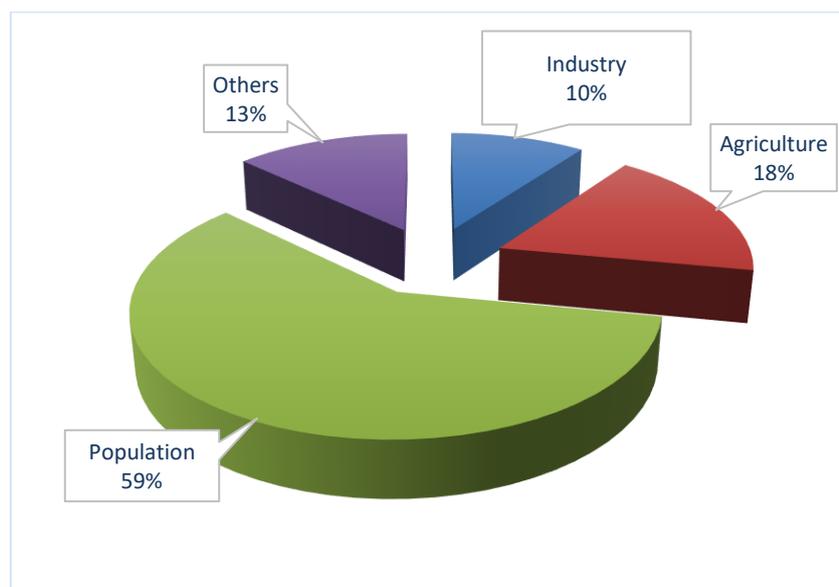
The electricity generated by hydropower plants is seasonal and depends on the flow of water in the rivers. There are large variations in water flows between spring-summer and autumn-winter, resulting in an overproduction of hydropower in summer and a shortage in winter. The lowest level of electricity generation is in the autumn-winter period (October to April/May), while the demand for electricity is the highest at that time. At the same time, electricity supply is most reliable in summer, during which time there is a surplus of 3-5 billion kWh of electricity.

The availability of operating HPPs in Tajikistan no longer adequately meets the country's growing demand for electricity, as their electricity generation depends on climatic conditions (water availability of the year) and the seasonal nature of river flows, as well as the limited capacity of HPPs to meet peak demand for electricity in the autumn-winter period. This situation is also related to the fact that Rogun HPP is still under construction.

Betting on the construction of coal-fired thermal power plants is not always justified due to the high cost of their construction, as well as the high cost of coal production. In addition, environmental problems and high requirements for air emissions of harmful substances and greenhouse gases from the combustion of coal fuel, primarily CO₂, require a special approach, in terms of the use of environmentally friendly technologies when expanding the use of coal-fired thermal power plants.

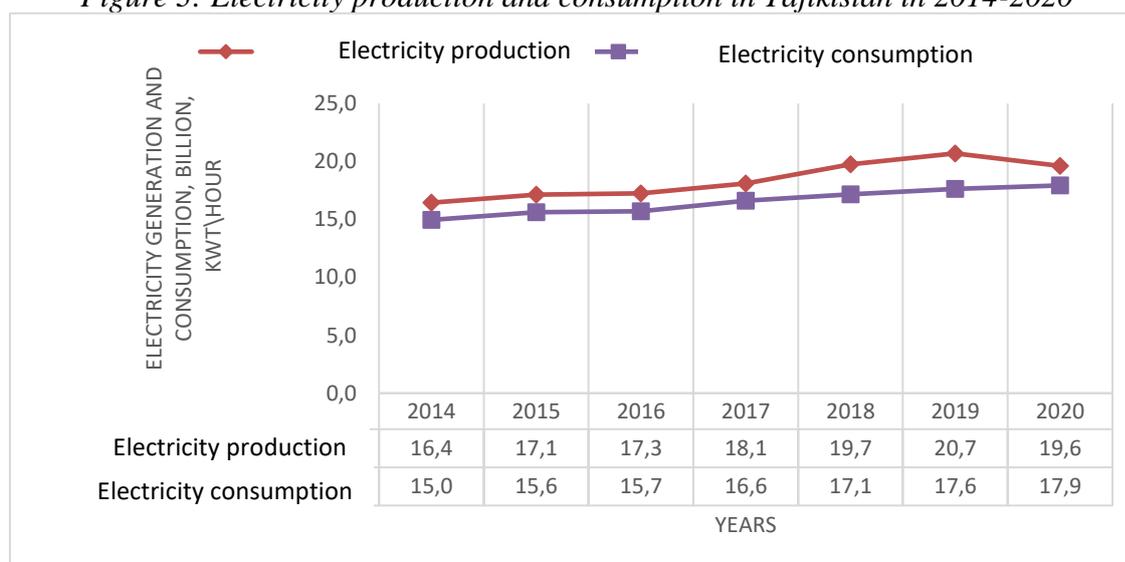
Consumption. Data on electricity consumption by sectors of the economy of Tajikistan shows that the main consumer of electricity at present is the population, which accounts for 59% of the total consumption in the country. The second largest consumer of electricity is the agricultural sector, accounting for 18% of total consumption. Industrial enterprises account for 10% of consumption and other sectors for 13%. Statistics on electricity consumption by MSMEs and CBT are not currently available.

Figure 2: Electricity consumption in the Republic of Tajikistan in 2018



The analysis has shown that with the increase of electricity production in the country, its domestic consumption increases. In 2020, the country consumed 2.9 billion kWh more than in 2014, which is a consequence of demographic processes and the development of the country's economy.

Figure 3: Electricity production and consumption in Tajikistan in 2014-2020



Import and export. Export and import of electricity play an important role in the commodity nomenclature of foreign economic activity. The main importers of Tajik electricity are Afghanistan, Uzbekistan and Kyrgyzstan. During the autumn-winter season, Tajikistan partially purchases electricity from Uzbekistan and Kyrgyzstan during the low-water season. For export- import supply of electricity between the RT and neighbouring countries, there are 13 power transmission lines (PL) of different voltage. At the same time, 3,500 MW are between Tajikistan and Uzbekistan, 500 MW between Tajikistan and Kyrgyzstan, and 570 MW between Tajikistan and Afghanistan.

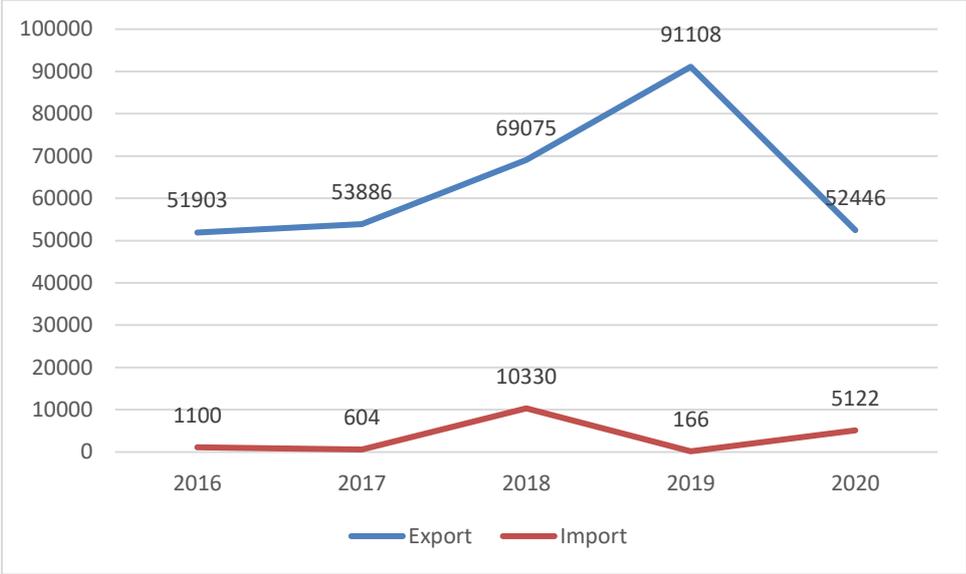
Of these lines, the 220 kV Sangtuda-1 - Puli Khumri (Afghanistan) and 110 kV Herani - Kunduz (Afghanistan) lines, the 220 kV Kanibadam - Aigultash (Kyrgyzstan) and the 110 kV and 35 kV lines in Kyrgyzstan are currently partly in use.

Due to the limited capacity to export electricity in winter, due to the lack of surplus electricity within Tajikistan itself, these lines are currently partially utilised. For example, the 220kV transmission line "Sangtuda-1 - Puli Khumri (Afghanistan)" is loaded with more than 300 MW in summer, while in winter it hardly reaches 50 MW.

At the level of the Central Asian governments, an agreement was reached on the mutual supply of electricity after the restoration of parallel operation of the Tajik electricity system with the Central Asian integrated electricity system. Between Barki Tojik and Uzbekenergo, within the framework of the Central Asian UPS, electricity exports to Uzbekistan have resumed since 1 April 2018, and a contract for the export of 1.5 billion kWh of Tajik summer electricity has also been concluded.

MEWR data show that the country's electricity exports have declined significantly over the past year amid a slight increase in electricity imports, a consequence of low water and lower reservoir levels this year.

Figure 4: Electricity exports and imports (thousand USD)⁵



Energy saving and energy efficiency. Development of hydropower, as the main direction of sustainable development in Tajikistan, is associated with the need to increase energy efficiency and energy saving as an effective, less capital-intensive and quickly feasible way of solving energy problems. Energy losses in Tajikistan at production and transportation stages amount to 14.1%, and in the consumption sector - up to 30%. The energy saving potential in the country is about 3.8 billion kWh.

Tajikistan's energy policy attaches great importance to energy efficiency along with construction of new energy sources. The Law on Energy Saving and Energy Efficiency and the Decree of the President of Tajikistan on Additional Measures for Economical Use of Energy and Energy Saving were adopted. In order to implement the requirements of the said law and decree, the Program of standardization in the area of energy saving and energy efficiency for 2010-2012 was adopted and implemented. Also, 8 standards were developed based on directives and standards norms of the European Union, Russia, Ukraine and Kazakhstan.

Industry: The industrial sector accounts for 10% of consumption. The potential for technological efficiency and energy savings growth in this sector is estimated to be in the order of 25-30%.

Fuel and energy sector: The existing hydro power plants have been in operation for more than 30 years and their technical capacity has been fully exhausted. The transmission and distribution system is largely old and inefficient, compounding the problem of seasonal variability and access to energy in rural areas. More than 50% of the equipment, distribution networks and substations are in need of systematic and major repairs. Grid losses are 14.1%, although they should normally be 8-

⁵ Exports and imports of the Republic of Tajikistan by TN VED item

10%. In addition, the existing heat supply networks are obsolete and in a dilapidated state due to poor maintenance and, together with the thermal power plants, are in need of modernisation.

The high level of depreciation of the main production assets requires serious investment in the sector to continue to implement projects for the modernisation and reconstruction of the main power system facilities, which, along with rehabilitation, should ensure an increase in the capacity of hydroelectric units, which will increase the installed capacity of hydropower plants.

Agriculture: The agricultural sector is one of the main consumers of electricity in Tajikistan and is the second largest consumer. Given the mountainous terrain of the country, most of the irrigated areas depend on pumping water to supply them, thus creating a large, constant load on the energy system. The equipment of most of the pumping stations supplying water for irrigation is 90% deteriorated and consequently low energy efficiency and high energy losses are observed everywhere. This is reflected in an increase in the cost of agricultural production, although Barki Tojik has introduced preferential electricity tariffs (from 7.78-22.66 dirams) for machine irrigation of farmland. There are large debts of farms to electricity producers due to their inadequate financial condition and unsustainability, which leads to systemic problems in the area of energy supply. The country has great potential to reduce energy losses in agricultural production through introduction of drip, sprinkler and other irrigation technologies. RES could also be effectively used in greenhouse farming (lighting, microclimate creation, heating, etc.).

Household Consumers: In order to use electricity efficiently, the Government of Tajikistan has adopted a decree banning the use of traditional incandescent bulbs and switching to energy-saving bulbs. In order to implement this requirement, 4 factories for the production of energy saving bulbs have been constructed in the country and recycling points have been established. Two laboratories for testing the quality and safety of fluorescent lamps have been established in Dushanbe and Khujand⁶. The standard ST RT GOST R 51388-2010 "Energy saving, informing consumers about the energy efficiency of household and communal appliances. General requirements" is developed taking into account the growing demand for electrical household appliances for the efficient use of electrical appliances. There is also great potential for reducing energy consumption in households associated with improving energy efficiency and thermo-modernization of buildings. For example, the practice of improving the thermal insulation of one four-storey residential building in Dushanbe has reduced its energy consumption by 28%.

During the implementation of a loss reduction project in Khujand in Sughd region in 2017, the level of technical losses was reduced to 10% through the implementation of the Automated System of Commercial Electricity Metering (ASKUE). The level of cash collection for electricity supplied to consumers has been brought to 100%. Negotiations with development partners are underway to implement similar projects in other major cities and districts of the country.

Economic affordability and social support.

Electricity pricing is also a problem. Electricity tariffs for the population in Tajikistan are socially oriented. Thus, starting from September 1, 2019, the Government of Tajikistan approved a tariff at the rate of 0.02 USD (22.66 dirams) per 1 kWh for the population⁷. The current tariffs are set below the level required for the financial viability of the sector and are not conducive to its development. However, an increase will be painfully perceived by the population.

The social tariff is set based on the average household income for a given period, partially subsidising the tariff for households by increasing the tariff for other categories of consumers. The tariff for industry and equivalent consumers (commercial entities) is US\$0.048 (RSD 55.14) per kWh,

⁶Official website of the Ministry of Energy and Water Resources of the Republic of Tajikistan. https://www.mewr.tj/?page_id=569

⁷http://www.barqitojik.tj/upload/iblock/c27/%D0%9F%D1%80%D0%B5%D0%B9%D1%81%D0%BA%D1%83%D1%80%D0%B0%D0%BD %D 1%82_2019.pdf

which is 2.4 times higher than the tariff for households. Also, the Government of the country additionally subsidises electricity consumption of low-income families from the national budget.

However, low tariffs severely limit the development and modernisation of the energy sector, as well as its investment attractiveness.

On the other hand, the problems of non-payment for electricity consumption, including by large real sector entities, have not been fully addressed. This is also due to insufficient implementation of modern technologies for the collection of electricity bills

The importance of the energy sector for the national economy.

Hydropower is a key source of energy supply for the population and national economy of Tajikistan. Development of hydropower of large capacity in Tajikistan can be significant in the future, there are more than 80 already selected and surveyed sites for the construction of large HPPs. This primarily concerns the completion of Roghun HPP, which will not only eliminate the problem of the electricity deficit, but will also solve a number of social problems, primarily those related to inclusive access to electricity, creation of jobs, development of production and tourism services, generation, consumption and export of environmentally clean electricity.

Tajikistan's energy development objectives, which include the construction of both large and medium and small hydropower facilities, are not only economically relevant but also vitally important. They play a key role in preserving the country's independence and reducing poverty, and create conditions for human development through access to well-functioning economic sectors, housing, utilities and sanitation services. On this basis, Tajikistan attaches utmost importance to ensuring energy security through the development and expansion of large, medium-sized and small hydropower plants. Taking into account geo-economic and geopolitical trends of modern development, the Government of Tajikistan considers further development of hydropower not only as a tool of key importance for sustainable development, but also as a factor on which security and stability in the Central Asian region largely depend.

The concept of "energy security" has not yet been introduced in the legislation of Tajikistan. The only thing worth mentioning in this regard is Article 18 of the Law of RT "On Security", dated 28 June 2011, No. 721, which links "preservation and strengthening of the resource and energy basis of the country's economy" with "economic security" and states that "No decisions and actions contradicting the interests of formation and uninterrupted functioning of unified and independent communication and energy systems of the country shall be allowed". Based on the analysis of the measures envisaged in NDS-2030 and programme documents in the field of energy security, studies and scientific works of national experts, it can be concluded that the country adheres to the definition of the concept used by the World Energy Council: "confidence that energy will be available in the quantity and quality that is required under the given economic conditions".

Public administration inertia and "monopoly thinking"

The structure and patterns of national energy development in the system of planned socialist economy were based on the dominant role of the state, which could pool all necessary economic resources (factors of production) to create a centralised energy system in Central Asia. This predetermined the development policy of the sector for many years, which is how the natural monopolists emerged.

Barki Tojik restructured into three business units (production, distribution and transmission) starting in 2012 in order to effectively manage the country's fuel and energy sector. Guidelines have been developed for the implementation of various activities, assets and liabilities, financial reporting systems and dispatch management have been unbundled. All these efforts resulted in the adoption of Decree No. 234 by the Government of Tajikistan in 2018, which provides for the establishment of

two new legal entities (JSC Transmission Electric Networks and JSC Distribution Electric Networks) on the basis of the existing legal entities within Barki Tojik⁸.

As part of the functional and legal transformation of Barki Tojik, on 15 April 2019 the Government of Tajikistan approved the State Financial Rehabilitation Programme of Barki Tojik Energy Company, aimed at improving its operational efficiency and financial position through the introduction of a cost-recovery tariff methodology. This programme is also aimed at restructuring Barki Tojik's debts, writing off fines and penalties for servicing overdue debts, increasing electricity payment collection rates, and reducing technical and commercial losses of electricity.

To date, significant progress has already been made in the implementation of the Programme, including reform of the electricity tariff structure, regular tariff increases in line with Government commitments and the implementation of the listed priority measures to improve the operational and financial performance of Barki Tojik⁹. These activities have resulted in increased collection of electricity usage.

1.2. The Energy Progress

Over the years of the previously adopted programmes for the development of the fuel and energy sector in the country, 29 major energy projects have been implemented for a total of TJS 2.6 billion. As a result of these projects, Tajikistan has made significant progress in the development of the energy sector. In particular, a number of large hydro power plants in the country have been reconstructed: the Nurek, Sarband and Kayrakkum hydro power plants. The first two units of the Rogun hydroelectric power station, which now operate at a minimum capacity depending on the level of the reservoir, have been put into operation and by November 2020 they had produced over 1.2 billion kWh of electricity. CHP-2 with a design capacity of 400 MW, 1.4 billion kWh of electricity and 396 Gcal of heat energy was commissioned in autumn-winter period, which significantly reduced the load on the electricity grid and increased the reliability of electricity supply in Dushanbe. As a result, Tajikistan's electricity production has reached 20 billion kWh, over 90 per cent of which is generated by small, medium and large hydropower plants.

As part of ensuring diversification of energy sources, the objective was to continue the development and efficient use of hydropower potential through the construction of new and modernisation of existing HPPs and TPPs in compliance with environmental requirements. According to the MEWR, about 475,133 million USD were spent on reconstruction of the existing HPPs, and 2.1 million Somoni were spent on construction of small HPPs.

As part of the implementation of the Small Hydropower Development Programme and the monitoring of previously built small hydropower plants in remote villages of the Republic, 9 small hydro power plants with a total capacity of 2.925 MW were commissioned, providing regular electricity supply to the population of these villages. By the end of 2019, more than 5.0 million kWh of electricity had been generated at these power plants, which had a significant impact on electricity supply in remote and mountainous areas.

The power supply to selected villages through the implementation of the "Renewable Energy and Small Hydropower Development Programme 2016-2020" provided electricity to 1,550 households, six schools, five health centres and 109 other public facilities. Three more small hydro power plants with a total capacity of 11,375 MW are under construction and design. A prefeasibility study has been developed for 6 SHPPs with a total capacity of 26,870 MW.

The construction of new power plants (801.5 MW) and rehabilitation of existing facilities (8 MW) increased the capacity of the power system, which increased electricity production and removed

⁸ Official website of the Ministry of Energy and Water Resources of the Republic of Tajikistan. https://www.mewr.tj/?page_id=542

⁹ World Bank. Increasing fiscal risks in Tajikistan. Report on the Economy. Autumn issue. 2019. c.19-20.

restrictions on electricity consumption by the population with access to the centralised electricity supply network.

1.3. Investment and feasibility of achieving strategic development goals

In order to ensure a reliable energy supply to the economy, a number of investment projects are being implemented in the country to increase the development of hydropower potential through the construction of large and small hydropower plants, reduction of electricity (capacity) losses, implementation of energy saving and EE improvement programmes, both in energy production and consumption. In order to ensure guaranteed access to energy sources for the population in remote areas, a small hydropower development programme is being implemented, which also promotes the development of small and medium-sized businesses. Measures have been taken to improve the regulatory framework for the domestic energy sector. A transmission line project (transmission line 500) has been successfully implemented, linking the energy-deficient northern part of the country into a single power system with the southern part, which has considerable potential for hydropower resources, thus contributing significantly to reducing energy poverty in the northern parts of the country.

An Investment Fund has been established at Barki Tojik to renew fixed assets and develop the energy sector. Modernisation and reconstruction of existing energy facilities has been carried out.

Positive experience has been gained with public-private partnerships in the energy sector in the form of a concession agreement. Pamir Energy represents an innovative partnership between the Government of Tajikistan and the international community to help Tajikistan meet the challenge of a reliable energy supply. The company employs about 600 engineers and technicians. They have implemented effective measures to improve metering and reduce energy losses.

Attempts are being made to involve the country in international projects aimed at realising the export potential of the domestic hydropower industry, one of which is the construction of a new transmission system called CASA-1000. Implementation of this project will make it possible not only to maximise the use of environmentally friendly hydropower resources in the Central Asian region, but also to export summer surplus electricity (capacity) to energy-deficient countries in South Asia. In addition, the CASA-1000 project is an effective measure in the creation of a regional energy market and the development of integration processes in Central Asian countries for the efficient use of natural water and energy resources.

With the participation of financial institutions and various levels of experts, the safety of the impact of the Rogun HPP project on downstream countries has been publicly recognised, including at the international level, and its economic efficiency and financial viability have been substantiated. The installation of the first and second units of the Rogun HPP has been completed.

The development of hydropower resources is associated with the attraction of substantial financial resources from various sources, including both private and public sources. International financial institutions such as the Asian Development Bank (ADB), the World Bank (WB), the Islamic Development Bank (IsDB) and the Eximbank of China have contributed significantly to the development of domestic hydropower. However, a significant part of the financial resources is provided by the partners on a loan basis.

Barki Tojik's Financial Rehabilitation Programme has been developed and adopted.¹⁰ The Programme for Achievement of Results (PB) has been developed. In the course of implementation of the project on financial recovery of energy enterprises the environmental and social systems have been assessed¹¹.

¹⁰ <http://documents.worldbank.org/curated/en/619491570808619549/text/Central-Asia-Water-and-Energy-Program-Annual-Report-2018.txt>

¹¹ <https://www.mewr.tj/?p=969&lang=ti>

As part of the cooperation between the Government of Tajikistan and ADB, a TVET project was implemented in 2016, in which solar installations with a total capacity of 10 kW were installed on the premises of the Energy Institute in the Kushoniyon district. In addition, in 2016, the German company DPU Investment installed solar installations with a total capacity of 30 kW at the Institute's premises. In 2018, a pilot project "Off-grid Solar Kits" was implemented with ADB funds, under which 90 off-grid solar kits with a total capacity of 27 kW were installed in the Murgab district. In 2017, 40 units were imported.

1.4. Renewable energy and energy efficiency solutions

Review and assessment

In Tajikistan, as elsewhere in the world, the development and use of renewable energy sources is a strategic priority for energy development. They are environmentally friendly, require relatively low overall costs and time, and can be built in almost any area, including remote and inaccessible areas. Tajikistan has a sufficient amount of RES, including small hydro, solar, wind, thermal and biomass energy, which can practically meet about 10% of the country's energy needs.

Small hydropower. The most comprehensive assessment of Tajikistan's shared hydropower potential was carried out in the 1960s¹², where their design study and feasibility were noted.

Table 1: Energy resources of small hydropower in Tajikistan

Districts	Potential		Industrial	
	N MW.	∅ TWh.	N MW.	∅ TWh
Sogdian 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 Oblast	3713,0	32,53	742,6	6,51
TOTAL for Tajikistan	21057,0	184,46	6813,0	59,69

As shown in Table 1, the hydropower potential of small hydropower in Tajikistan is 184.46 billion kWh/year.

For settlements located in valleys of small rivers and streams, it is advisable to use small hydropower plants for decentralized power supply of settlements located in close proximity to consumers to avoid construction of costly transmission lines and step-down transformer substations. In combination with other alternative energy sources, they can become more efficient sources of energy supply. According to experts' estimates, utilization of small rivers' energy can satisfy 50-70%, and in some cases 100%, of the electricity needs of about 500-600 thousand people living in remote regions of the country. And today, the population of mountainous regions itself is actively beginning to build micro and mini hydroelectric power plants, using both their own and donor funds.

¹² Petrov G. N., Akhmedov H. M., Karimov H. Proceedings of the Republican Scientific and Practical Conference "Economics and prospects of development of renewable energy sources in the Republic of Tajikistan". Khujand, November 12-13, 2015. <https://www.researchgate.net/publication/336056537> VIE i ih ochenka v Tadzikistane

A large number of SHPPs could also be built in Tajikistan on existing irrigation structures - fast-flowing streams, overflows, etc. This would make it possible, among other things, to use prefabricated structures for SHPPs and make their construction cheaper.

Solar energy. Tajikistan is located between 37 and 41 degrees north latitude, in the zone of the so-called "world sun belt". Tajikistan's climate is favourable for the use of solar energy. The number of sunny days varies from 280 to 330 days per year, the intensity of the total solar radiation varies during the year from 280 to 925 MJ/m² in foothill areas and from 360 to 1120 MJ/m² in mountainous areas. The use of available solar energy in Tajikistan can meet 10-20% of the energy demand. Tajikistan's solar energy potential is estimated to be around 25 billion kWh/year. This potential is practically untapped, except for some use for water heating.

The economic potential of solar energy in Tajikistan today is difficult to assess. Solar energy in the republic cannot economically compete with hydropower.

At the same time, its importance can be very great for the social sphere. The great advantages of solar energy for this sector are that there is no need to develop power lines, that it is quick to deploy and that it is targeted at individual consumers. In Tajikistan today, the potential of solar energy is primarily in demand in decentralised energy supply areas and in settlements without access to electricity supply.

Wind energy resources. There is little wind energy potential in Tajikistan. The strongest winds are in mountainous regions such as Fedchenko and Anzob, as well as around Khujand city and Faizabad. The average annual wind speed in these regions is around 5-6 m/s.

In the open plains and valleys, winds with an average wind speed of 3-4 m/s can be found. Economically, wind power in Tajikistan today as well as solar power cannot compete with existing hydro power. The use of wind power as a complement to mainstream hydropower is justified in some regions. Therefore, wind power today may be in demand primarily in the social sphere. Under these conditions, just as in the case of solar energy, we can not talk about economic efficiency, but about the socio-economic feasibility of using this resource.

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. Along with other RES, thermoelectric converters for generation of electric energy, as well as utilization of low temperature potential of land and watercourses using heat pumps can be promising for mountainous areas of Tajikistan.

Experience in a number of countries shows that thermal waters are of interest for power generation if their temperature is at least 150°C, and even 300°C. For heating, thermal water sources with temperatures higher than 60°C are of interest. The remaining sources can only be used for thermal water supply and heating. With modern technologies, e.g. heat pumps, the entire low-potential heat of geothermal sources with a water temperature above 15°C can be used in this case.

Biomass energy resources. Tajikistan has a sufficient number of cattle, horses, sheep, goats and chickens, which with some growth in the future could provide total energy resources from livestock and poultry production equal to 204.34 MW with an annual electricity production of 1790, million kWh.

Tajikistan has the potential to use agricultural waste as an energy source, in particular biogas from cattle manure and bird droppings. At the same time, it should be noted that the population itself uses livestock waste for heating and cooking. For this purpose, creation and use of biogas plants developed by scientists of the Academy of Sciences of the Republic of Tajikistan is promising. Several experimental biogas generators are currently working in Tajikistan. In addition, there is a potential for energy production through thermochemical method of conversion of biomass from industrial waste.

The potential of renewable energy resources in Tajikistan is shown in Table 2. Even a partial utilisation of this potential would significantly improve access to energy resources for the rural

population and stabilise the energy balance and the environmental situation in the country and the Central Asian region.

Table 2. RES resources of Tajikistan, Mtoe per year

Resources	Gross capacity	Technical capacity	Economic potential
Small hydropower	63.0	20.6	20.6
Solar power	4790.6	3.92	1.43
Biomass energy	4.25	4.25	1.12
Wind power	163	10.12	5.06
Geothermal energy	0.045	0.045	0.045
Total	5020.6	38.6	28.0

Priority areas and locations for the use of RES are, inter alia:

- Decentralised energy supply areas, where low population densities make it inefficient to build conventional power plants and high voltage transmission lines;
- Centralised energy supply areas, where unsatisfactory state of the energy networks or shortage of capacity or energy causes frequent customer outages, resulting in significant economic damage and negative social consequences;
- Residential and recreational areas where emissions from industrial and municipal fossil fuel-fired boilers create a difficult environmental situation;
- settlements, holiday homes and places of temporary residence where heating, electricity and hot water supply are a problem.

Human resources and capacity building. Engineers and specialists for the country's energy sector are trained at the Faculty of Energy of the Tajik Technical University named after M. Osimi, since 2012 at the Energy Institute in Bokhtar, the Branch of the Technical University in Khujand and the branch of the Moscow Energy Institute. The Faculty of Energy of the M. Osimi TTU offers special courses in RES, and the technical colleges and lyceums in Dushanbe, Vahdat and Khujand train electricians and electrical engineers. Currently, few local specialists support the installation and design of solar, wind and bioenergy installations. Several organisations and companies serve the RES sector and provide training, while small manufacturers (such as the solar thermal assembly in Dushanbe) train workers inside and outside the country in assembly and installation.

RES market survey and trends. In general, economic development and entrepreneurial activity are limited due to an irregular electricity supply as well as insufficient availability of investment capital. Loan interest rates are high (25-35%), making it difficult for private investment, especially at the community or locality level. The government has identified supportive policies and programmes to create financing opportunities for renewable energy development.

The development and implementation of an improved RES tariff policy is a priority activity for the sustainability of this electricity sector. An analysis of the utilisation efficiency of the commissioned SHPPs, carried out by the Association of Power Engineers of Tajikistan, has identified a number of problems. In particular, the problems involve the issues of purchasing the electricity generated by them by Barki Tojik, calculation and approval of justified tariffs by the relevant regulatory body of the country, obtaining technical conditions for connection of the MHPPs to the

operating networks of Barki Tojik, signing a power purchase and sale agreement. Currently, there are only sporadic examples of tariff setting for SHPPs and their connection to the electricity grid.

Grid-generated renewable energy and off-grid renewable energy sources

Electricity production with the use of RES. The use of RES in Tajikistan mainly takes place through small HPPs with a capacity of up to 5 MW. According to the MEWR, there are 297 registered small energy facilities in Tajikistan, which include the Murghab solar power plant. The total installed capacity of all types of RES power plants is 69.5 MW.

Most of the MHPPs operating in the country are owned by the private sector and local communities, with construction financed by UNDP, ADB and other organisations.

As noted above, the share of electricity generated from RES in the country's total electricity production is 1.08%.

According to MEWR operational data in 2020, only 211,206.4 kWh of electricity was generated by RES, including 211,164 thousand kWh by small hydropower plants and 42.4 thousand kWh by the Murgab solar power plant.

Table 3: Total renewable energy production for the year 2020¹³

A. Small HPPs of Barki Tojik and the private sector			
Region	Number of power plants	Power thousand kW	Electricity generation thousand kWh
Khatlon region	37	1654	186,816
Sughd province	76	9044,1	368,246
GBAO	42	5325	9699,684
EWS	129	8836,5	7335,691
Total	284	24859,6	17590,437
B. Small Power Plants of Pamir Energy JSC			
Pamir-1	1	28000	106135,2
Khorog	1	9000	56026,278
Namangut	1	2500	11550,132
Khujand	1	640	4388,939
Tajikistan	1	1500	4020,189
Siponm	1	160	679,25
Savnob	1	80	82,246
Techarv	1	360	2504,07
Andarbak	1	300	2420,094
Wange	1	1200	5689,43
The Humb	1	256	0
Hatfat	1	450	77,795
SES Murghob	1	200	42,372
Total	13	44646	193615,995
C. Total electricity generation			
Total for the republic	297	68917,6	211206,432

¹³ Data from the MEWR of Tajikistan for the year 2020

Tajikistan has a target to increase the share of renewable energy in total electricity production to 10% by 2030.

The need for alternative energy sources in Tajikistan is due to the fact that many settlements are excessively remote and not connected to the grid. It is not economically feasible to build transmission lines and transformers there. The construction and operation of renewable energy power plants in these areas could solve the problem of supplying electricity to the population in these areas. In addition, there are also areas in the plain part of the country where solar or wind energy is feasible. Due to the growing population, the possible increase in electricity prices, a certain part of consumers is forced to look for alternative energy sources.

In this regard, a shift to other forms of energy - autonomous small hydro, solar, wind, geothermal, biogas - could be considered as alternatives.

Use of RES for heat production (cooking/heating)

Tajikistan has good prospects for using solar energy and other RES for heat production. However, reliable information on the use of energy from RES for heating and cooking purposes is currently lacking.

Tajikistan has experience in the design and creation of solar water heating plants, solar kitchens have been developed and manufactured, mini-HPPs and portable microHPPs installed in mountain villages have been created, and biogas plants have been developed and installed in a number of areas of the republic.

There are sufficient conditions for the production of small-scale renewable energy devices in the republic. Many industrial enterprises of the Republic (Energoremont CJSC, Torgmash OJSC, TADES CJSC, Sistemavtomatika OJSC, TADAZ) can produce solar collectors, especially since aluminium is produced in the country, and photovoltaic cells, mini hydro and small wind power plants, and biogas plants.

The use of solar energy for heating and hot water supply is of great interest for the residential sector. The economically feasible potential of solar heat in Tajikistan is 4.1 million Gcal/year. Solar-thermal technologies have demonstrated high potential for displacing energy costs for space heating and relieving the burden on the country's electrical system.

There are technological developments in the republic for the production of solar water heating units with a capacity of 0.1 to 1 ton of hot water (50-70oC) per day. For example, OAO Sistemavtomatika and the RES Association have established the production of single-circuit solar collectors and there are sufficient examples of its use. The Sughd Free Economic Zone has organised the assembly of solar collectors. In addition, the State Unitary Production Enterprise "Tajiktekstilmash", State Unitary Enterprise "Vostokredmet" and CJSC "Energoremont" have possibilities to organize technological process for production of solar collectors. In order to implement these opportunities, appropriate investments are needed.

There are also developments of various solar furnaces based on uncomplicated technology that allow temperatures of up to 130°C to be achieved.

The analysis also shows that Chinese-made solar kitchens have become widely used in the villages, mainly for boiling water.

The use of ground energy (heat pumps) has not been widely used to date, with isolated examples. In particular, heat pumps have been installed for the heat supply system of the Republican Clinical Tuberculosis Hospital in Machiton settlement. There are some examples of using geothermal sources for heating (Obi Garm Sanatorium, etc.).

The use of renewable energy sources in manufacturing

The use of renewable energy sources for manufacturing can be illustrated by the application of SHPPs. In particular, a small hydropower plant in the village of Takob, with a capacity of 2x750 kW, operates in stand-alone mode to supply electricity to the Takob mining and processing plant. Micro HPPs are used in roadside canteens (Ayni district). There are individual cases of using solar collectors in sports complexes, educational and budgetary institutions.

Within the system of the Ministry of Land Reclamation and Water Resources for small capacity power generation on irrigation canals (swiftwater canals), there is the possibility of building mini hydropower plants. The total potential for electricity generation from these canals in the 1980s was estimated at 152 million kWh per year, which is about 10% of the total current energy consumption in irrigation systems. Therefore, in order to utilise renewable energy sources, it is necessary at this stage to investigate and clarify the number of points available on the irrigation canals for the construction of mini hydropower plants.

Examples of companies' activities in the use of RES

In recent years, a number of national companies have been successful in producing, installing and maintaining renewable energy facilities in the country and have contributed to the growth of renewable energy use, including:

Sistemavtomatika OJSC

<p>Частный дом в Душанбе</p> <ul style="list-style-type: none">• Мощность солнечной системы – 30 кВт/30 kW• Установлены – 01.06.2016		<p>Sistemavtomatika is installing solar panels and solar-thermal technology in various offices and residences, the introduction of which has begun to spread in urban and rural areas.</p> <p>As part of its activities, Sistemavtomatika has during 2018-2020, with financial support from development partners, commissioned 117 micro SES to provide power to over 40 social and domestic institutions in 17 target cities and districts of the country with a total capacity of 116.5kW, and also installed solar water heating collectors with a total capacity of 9600 litres in 44 social and domestic institutions in 15 target cities and districts (see Table 4).</p>
<p>Крыша 13-этажного здания в городе Душанбе</p> <ul style="list-style-type: none">• Мощность солнечных панелей -15 kW;• Место установки – Душанбе, проспект Радаки 158• Запуск системы – 23.04.2014		

Table 4: Number of micro SES and solar collectors, 2018-2020.

Regions	Number of SES micro-units	Volume of solar collectors installed (litres)
Dushanbe	35	500
Sughd province	27	2000
Khatlon region	36	4700
RRP	14	900
GBAO	5	1500
Total	117	9600

Green Technologies Ltd.

Green Technologies Ltd provides services for the design of energy systems, the manufacture and installation of hydraulic turbines and electrical load control systems for small hydropower plants up to 100 kW, and the supply and sale of alternative energy equipment. These include solar pump systems, wind turbines, hybrid energy systems for the office and solar energy systems for the home.

Although Technologyohoi Sabz Ltd. is a relatively young company, its staff consists of domestic and foreign specialists with many years of experience in green (renewable) energy. Some of the company's specialists have been involved in many projects both locally and internationally (in Germany, Afghanistan, Iraq, Sri Lanka, etc.) since 1996. The company has been active in Tajikistan since 2016 and since then has won many tenders from popular international organisations such as Welthungerhilfe, ACTED, MSDP, IOM, UNDP, OSCE. An example of such a hydropower plant is the 35 kW plant in the village of Rogich in the Penjikent district. It was designed and installed by Technologii Sabz LLC at the request of the German AgroAction as part of a European Union project. The company has installed 11 small hydropower plants, more than 200 solar home systems, 20 solar school electrification systems, 30 solar pumping systems for water supply and irrigation and others.

1.5. Energy Consumption in Community-Based Tourism Sector

Tourism and the Transition to a Green Economy

The transition to a green economy is now one of the global community's priorities on the road to sustainable development. Tourism is an important sector where transformation is both necessary and possible.

Tourism in the context of a green economy refers to tourism activities that take full account of current and future economic, social and environmental impacts as well as meeting the needs of service consumers (tourists), industry and local communities. It is not a separate form of tourism - all forms of tourism must become green and sustainable.

Challenges for tourism development. The tourism industry faces many major challenges related to 'greening' and sustainable development, including

- Energy and greenhouse gas emissions
- Water consumption
- Waste and waste water
- Loss of biodiversity

- Cultural heritage

As can be seen from the list above, one of the specific challenges to be addressed relates to energy and greenhouse gas emissions.

Tourism is an important source of global greenhouse gas emissions. Tourism development is associated with increased energy consumption (mainly based on renewable energy sources) for travel, including transport, accommodation and tourism services. All of this contributes to aggravating the problem of climate change.

According to various estimates, tourism currently contributes about 5.2-12.5% of all greenhouse gas emissions. All of this, in turn, negatively affects, among other things, the prospects for tourism development, increasing the uncertainty and risks for its development.

There is an urgent need not only to respond to the challenges described above and to reduce the negative impacts of tourism, but also to maximise the potential of green tourism for sustainable development, which is undoubtedly very large. At the same time, tourism development provides an incentive to develop other sectors of the economy (agriculture, food and processing industry, transport and infrastructure, construction, services, etc.). Research shows that tourist choices are being increasingly influenced by environmental considerations - more and more people are taking environmental health into account when planning their travels and prefer to stay in environmentally friendly hotels. Such consumer preferences provide further impetus to green tourism initiatives.

Tourism's ability to create jobs, stimulate economic growth, accumulate foreign exchange, improve infrastructure and promote environmental protection makes the industry an attractive tool for alleviating poverty and boosting local development.

Environmental considerations are often not sufficiently taken into account in the planning of tourism destinations, yet they are key to "greening" tourism. Studies show that many decisionmakers do not even think about it, and if they do, they often lack the knowledge and experience to put the principles of sustainable tourism development into practice. Capacity building and institutional strengthening in this area is needed to fully take into account the interrelationship of economic, environmental and social factors. The implementation of the European Union SWITCH Asia II project "Promoting Energy Efficiency and Renewable Energy Production in the Community Based Tourism Sector in Central Asia" will contribute to addressing these challenges.

Tajikistan with its distinctive culture, advantageous geopolitical location, diverse natural landscapes, flora and fauna, stability in the economy, prosperity and tranquillity in the society is a unique tourist attraction, which in recent years has become particularly popular among foreign tourists who prefer adventure, extreme, mountain and ecological tourism. The Government of the country, given the existing potential, considers tourism as one of the promising areas for the development of the national economy, the priority of which is outlined in NDS 2030, SDP 20212025 and the Tourism Development Strategy for the period until 2030.

As a result of the implementation of a systematic policy in this area, Tajikistan has been recognised by the world tourism community as one of the best tourist destinations and as a country with 4 Silk Road Trails. In order to attract more tourists to Tajikistan, the Government has introduced a simplified eVisa system for citizens of more than 80 countries, which has contributed to an increase in tourist arrivals in the country to 2.1 million tourists over the last five years. The decrease in tourist arrivals in 2020 was only due to the restrictions imposed by the COVID 2019 pandemic in countries around the world, which in turn reduced business activity in all sectors of the country's economy.

It should be noted that the current strategic policy documents on tourism development define the main directions of institutional development of the sector, increasing the efficiency of tourist resources use, infrastructure development, improvement of competitiveness and expansion of tourist services. However, these strategic documents do not sufficiently cover the development of CBT entities as a priority, nor do they specify measures to improve the quality of their services through the application of RE, EE technologies. Establishment of local networks and systems of heat, water, energy supply, production and consumption are not considered, which is considered to be the subject

of sectoral energy programmes, which reduces the synergistic effect. The programme documents do not link the planning of RES and EE consumption and production with the budgeting process.

One of the preferred tourist destinations among foreign tourists are eco and mountain tourism. The East Pamir (GBAO) and Fann Mountain (Zarafshan Valley) destinations are particularly popular among them. These destinations are mainly located in remote and inaccessible mountainous areas, where CBT entities provide tourism services.

According to GBAO information, as well as some remote mountainous settlements of Rasht and Zeravshan valleys are included in the zones of decentralized energy supply, which due to low population density and scattering of settlements over the territory cannot be supplied with energy from centralized energy production sources. The minimum population density in such zones is 2–3 persons per square km in some places. **Therefore, the development of non-conventional renewable energy in decentralised areas is now a perceived need**¹⁴.

In addition to the increasing number of tourist guesthouses in the mountainous regions of the country, other entrepreneurial initiatives to create community-based tourism services are becoming more active. This includes the establishment of catering and trading facilities, handicraft production, transport and other services, hotels and hostels within households and on holiday plots, particularly in Khorog, Rushan, Murgab, Ishkashim, Darvaz, Varzob and Ramit, Karatag and the Fann Mountains, etc. Accordingly, the need of MSME entities for alternative energy sources from RES and EE measures is increasing.

The most difficult areas for electrification are the settlements in Khatlon oblast bordering Afghanistan and in GBAO, given the topography and geographical remoteness from the grid. Especially important is the fact that small watercourses are almost evenly distributed over a large territory of Tajikistan, and their resources are huge. In this regard, projects for construction of small and mini HPPs located in close proximity to CBT facilities and potential consumers are given priority, which will allow to rationally use RE resources and avoid large investments in construction of expensive power transmission lines.

The possibility of efficient use of solar energy is available throughout the territory and can significantly (50%) reduce the unproductive consumption of electricity in the domestic and tourist sector. At present, when energy prices have risen sharply, the costs of using solar energy for domestic needs are becoming comparable to the costs of using electricity and other energy sources. Assessments show that 60-80% of the domestic needs of the population for 10 months of the year can be covered by solar energy. In terms of fuel, this is equivalent to about 400 thousand tons of fuel (tce), which is equivalent to 460 million m³ of gas or 528 thousand tons of fuel oil.

The wind energy potential in Tajikistan can be used in selected areas of the country and tourism facilities as autonomous or supplementary energy sources of small capacity. While not of great industrial importance, wind energy can solve important social problems by providing energy to farms, pastoral and beekeeping cooperatives, small tourist facilities for water lifting, grain milling, etc.

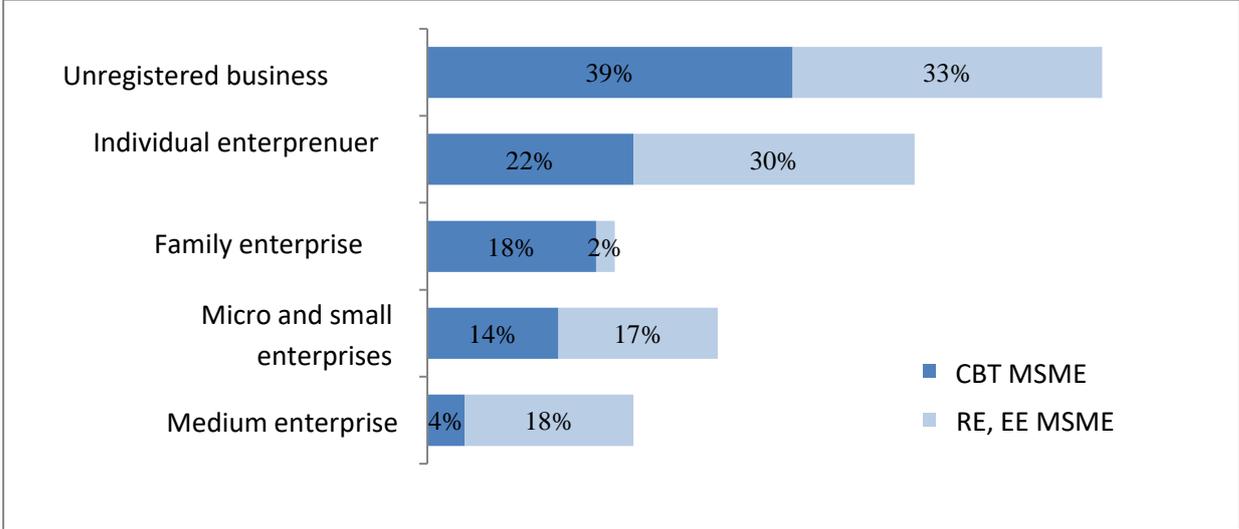
Another promising source of energy for the tourism sector is geothermal energy. Thermal waters are most widespread in the Pamirs, where more than 40 springs have been registered. Depths of thermal waters are relatively shallow (up to 2,000 km), and the maximum temperature at the wellhead reaches up to 98° C. Thermal waters with such a temperature are classified as low potential, which can be used mainly for heating municipal and industrial sectors, for heating greenhouses and livestock complexes, as well as for the recreational needs of the population. Thermal water sources in Tajikistan are mainly located far from economic centres. Therefore, it is most expedient to connect remote settlements in rural areas and tourist zones to geothermal heating systems on a priority basis. Calculations have shown that in the Pamir conditions, for example, this energy carrier is very

¹⁴ Peculiarities of energy security of the Republic of Tajikistan <https://cyberleninka.ru/article/n/osobennosti-energeticheskoy-bezopasnosti-respubliki-tadzhikistan>

competitive in comparison with coal and oil products imported into the region. The main advantage of geothermal developments is the renewability of these resources as well as the environmental safety.

However, the development of entrepreneurial initiatives in this direction is constrained by a number of reasons, including uncertainty of their legal status, as well as limited access of CBT and MSME entities to resources such as land, information, finance, labour, technology, which are discussed in the following sections of this report.

Figure 5: Legal status of MSMEs in the CBT and RE/EE sectors in Tajikistan in 2021



According to ACTED's¹⁵ 2020 market analysis of green finance for MSMEs in the CBT and RE/EE sectors, over 30% of MSMEs in the RE/EE sector and around 40% in the CBT sector are not legally registered when conducting business activities. This results in MSMEs being unable to take advantage of the specialised concessional financial products of MFIs designed for the business sector.

Energy consumption patterns and real needs of the CBT sector

Over the last 25 years, there have been significant changes in the country's energy consumption patterns. The geography of consumption has changed, and until 2018 the country had problems such as unstable energy supplies to rural settlements (4-5 hours per day), deteriorated and low energy efficiency of energy generating plants, and increased energy losses - over 12%.

The share of industry in energy consumption exceeded other categories (households, agriculture and others) until 2015, and then gradually began to decline due to falling production volumes, deteriorating financial condition of enterprises and other internal and external negative factors.

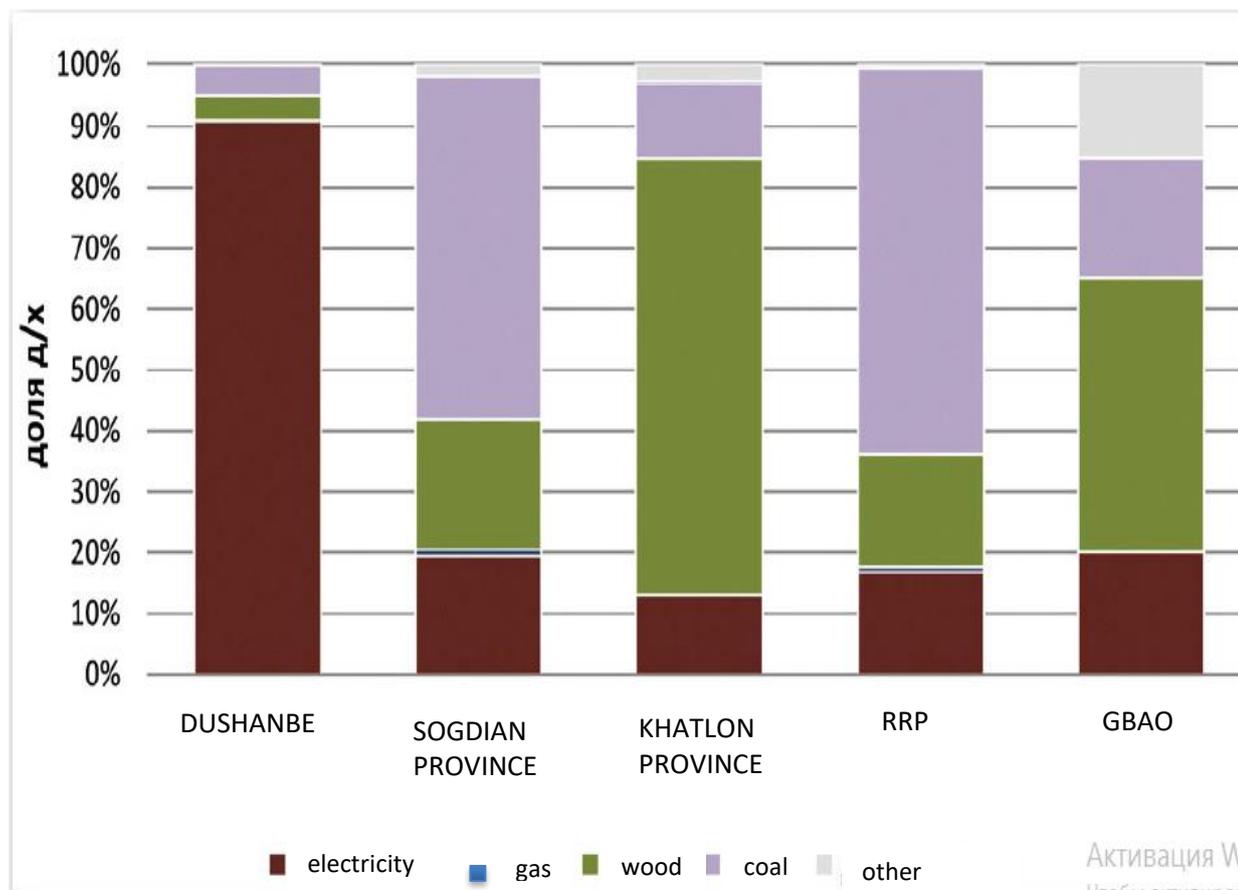
In recent years, the energy consumption structure has been growing in favour of the population due to the commissioning of new electricity and heat generation capacities, as well as an increase in the daily supply of electricity to the population (24 hour). At the same time, there has been an increase in consumers (MSME entities) in areas where capacity was not expected to be available to meet business (production) needs.

Data from the 2013 Central Asia Multi-Year Inclusive Social Survey (CALISS)¹⁶ show that there was a significant difference in energy consumption between urban and rural populations and territories. Populations in the country's densely populated and large cities mostly used electricity, while in rural areas, particularly in Khatlon and GBAO, wood was the main source of energy for heating, and in Sughd and RRP most families heated their homes using coal. Characteristically, the

¹⁵ in the framework of the "CBT Silk Road Initiative: Connecting Community-based Central Asian Tourism and European Markets" and "Promoting Energy Efficiency and Renewable Energy Production in the Community-based Tourism Sector in Central Asia", with the financial support of the European Union
¹⁶ Central Asia Multi-Year Inclusive Social Survey (CALISS) 2013. Final Report on the Assessment of the Energy Situation of the Population in Tajikistan, WB, June 2014.

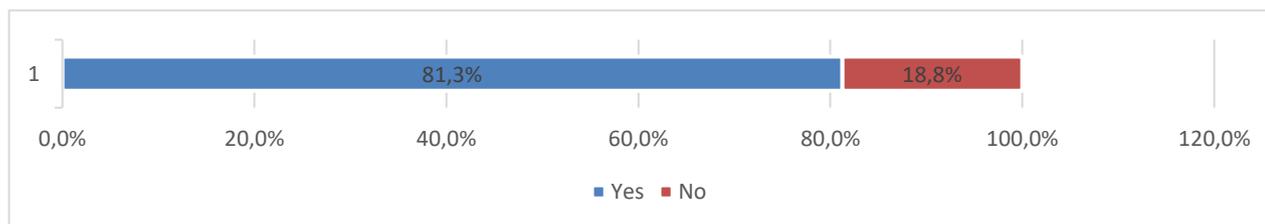
use of hydrocarbons and other fuels for heating prevailed over electricity consumption. Coal and agro-fuels accounted for the bulk of household energy expenditure.

Figure 6: Assessment of the energy shortage situation for the population in Tajikistan. WB, June 2014.



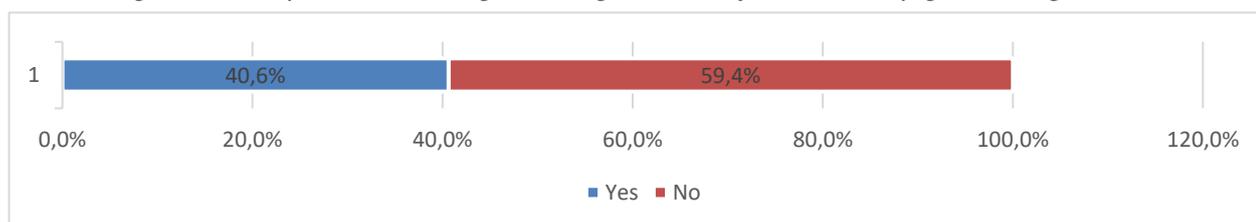
The questionnaire survey and focus group discussion of CBT subjects conducted by the project expert group in February-March 2021 also confirm the prevalence of hydrocarbon use for heating, cooking and hot water supply purposes. Thus, to the question "Do you use hydrocarbon fuels for heating, cooking, hot water supply" 80% of the respondents answered "Yes".

Figure 7. Do you use hydrocarbon fuels for heating, cooking and hot water?



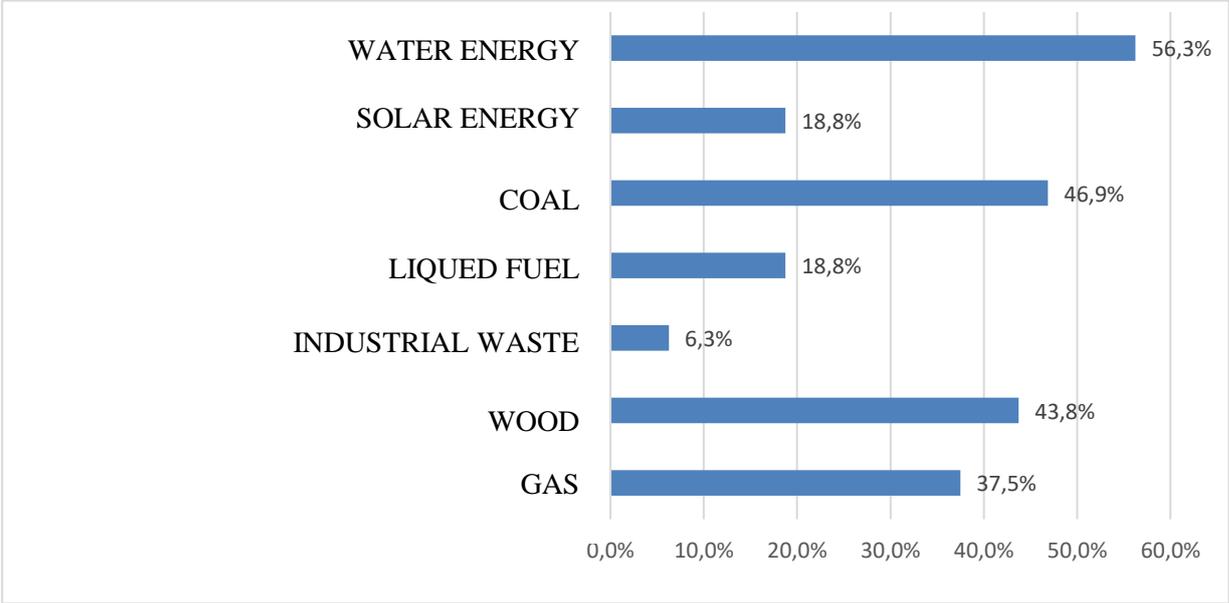
In addition, 40.6% of the CBT respondents indicate that they use diesel/gasoline generators for electricity production.

Diagram 8. Do you use diesel/gasoline generators for electricity generating?



The survey of the tourism sector actors also showed what percentage of energy use there is in relation to renewable energy, in particular.

Figure 9: Determining the ratio and actual use of energy resources to obtain the required energy



The country's tourism resources are divided into two main components:

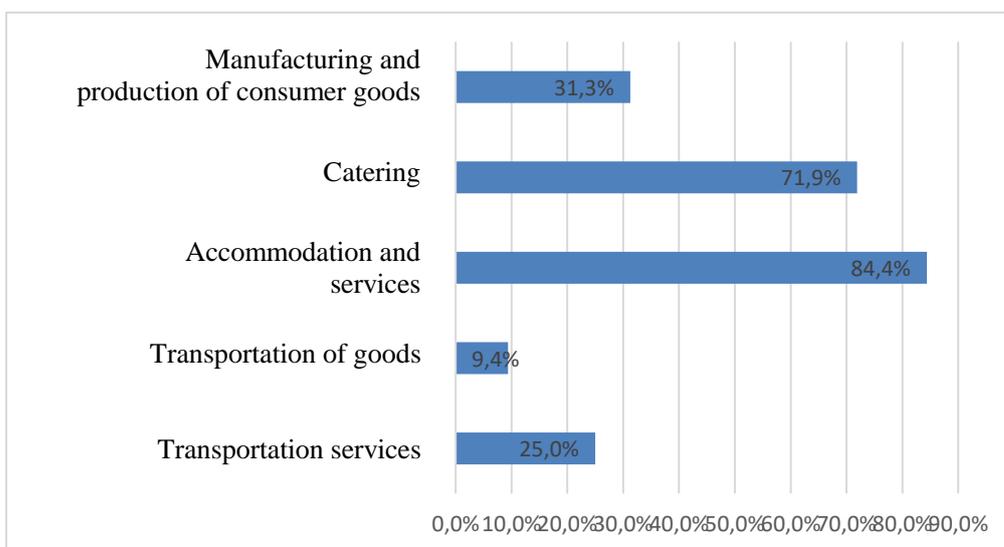
1) Tourism service providers that provide direct accommodation and catering services

2) Entities involved in the formation of tourism products. The performance of their economic activities contributes to the development of tourist destinations (entertainment, historical and cultural sites, national gardens, etc.).

In the future, with the development of tourism and increased stays of foreign and local tourists in the popular mountain tourist destinations of the country, an increase in entrepreneurial initiatives to create tourism products as well as the level of MSME demand for preferential financial products, legal services, and in particular for renewable energy and EE equipment is anticipated.

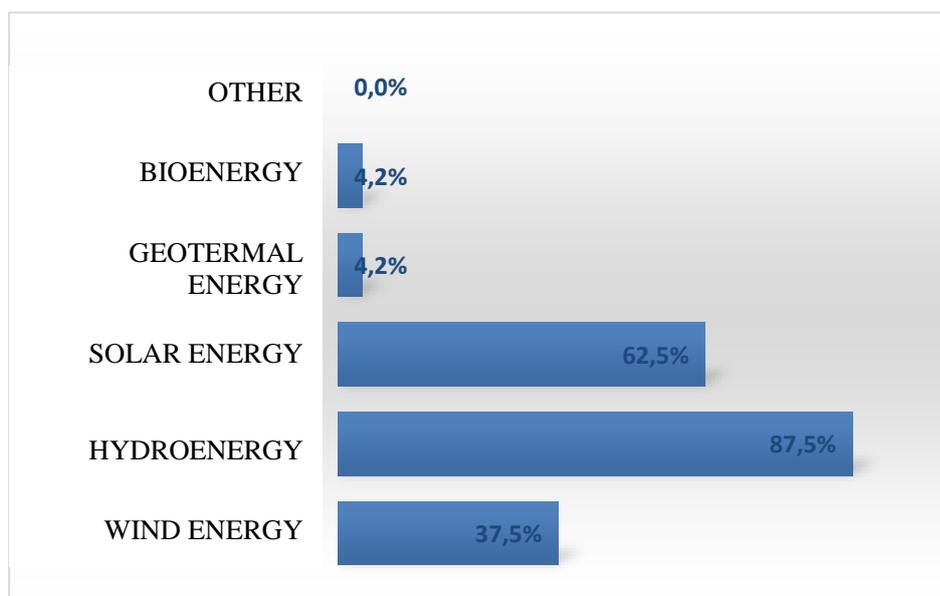
According to the results of the questionnaire and the FGDs, the energy needs of the MSMEs in the CBT industry are mainly generated for the provision of accommodation services for tourists, food provision (cooking, food storage - coal, wood, grid electricity, gas, liquid fuel), manufacturing and production of goods and handicraft products.

Figure 10. What energy sources do you use and for which services?



Analysis of the responses also showed that the majority of respondents from CBT entities know the main RES and indicated which RES types can be developed in their territories.

Diagram 11. Which energy carriers do you use?



However, to date, the level of business literacy of the population in remote and inaccessible mountain areas with respect to organising entrepreneurial activities in the use of RE, the benefits of increased EE at the CBT level is underdeveloped.

There is a low level of legal awareness, and technical and financial literacy. The majority of respondents and FGD participants consider that the main barriers to the growth of RES use by MSMEs in the CBT industry are their high cost and lack of own funds to design, install, purchase RE/EE equipment, materials, technologies. It is noted that RE equipment is technically complex, and CBT representatives lack skills in their maintenance and operation. In addition, they confirm their low awareness of the benefits of using RE/EE, the complexity of obtaining permits and locating generating facilities on lands and plots, and facilities.

Assessing the quality of the workforce

The shortage of specialists and their competence is a constraint to ensuring the design and operation of RES facilities, and the implemented state support measures in this area are insufficient. The existing human resource management system and the lack of a proper system for recruiting

specialists, based on the assessment of their qualifications and competence, does not adequately respond to current labour market requirements. According to the FGDs, the majority of respondents confirmed the availability of human resources, however, they expressed doubts about the provision of qualified specialists in RE production and EE.

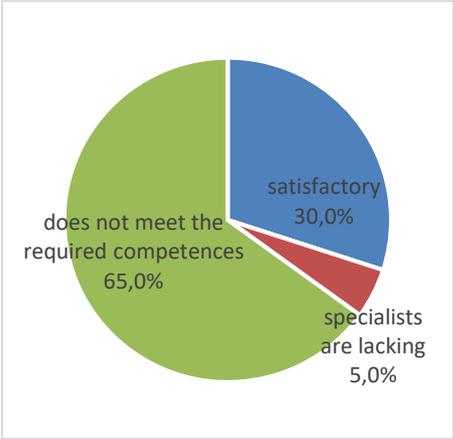


Figure 12. How would you assess the availability of specialists with the necessary competences in the RES and EE growth sector?

In addition, 65% of the respondents to the FGDs confirmed that the level of training of specialists in renewable energy and EE companies does not meet the required competences, while 30% of them believe that the provision of the renewable energy and EE sector is satisfactory and 5% believe that specialists are lacking and in some areas none at all.

The participants in the Focus Group Discussion (FGD) held on 2 April 2021 and the Round Table held on 4 May 2021 also confirmed the conclusion about the low availability of human resources in the RE sector. They noted the need to train not only engineers with higher education, but also mid-level technicians.

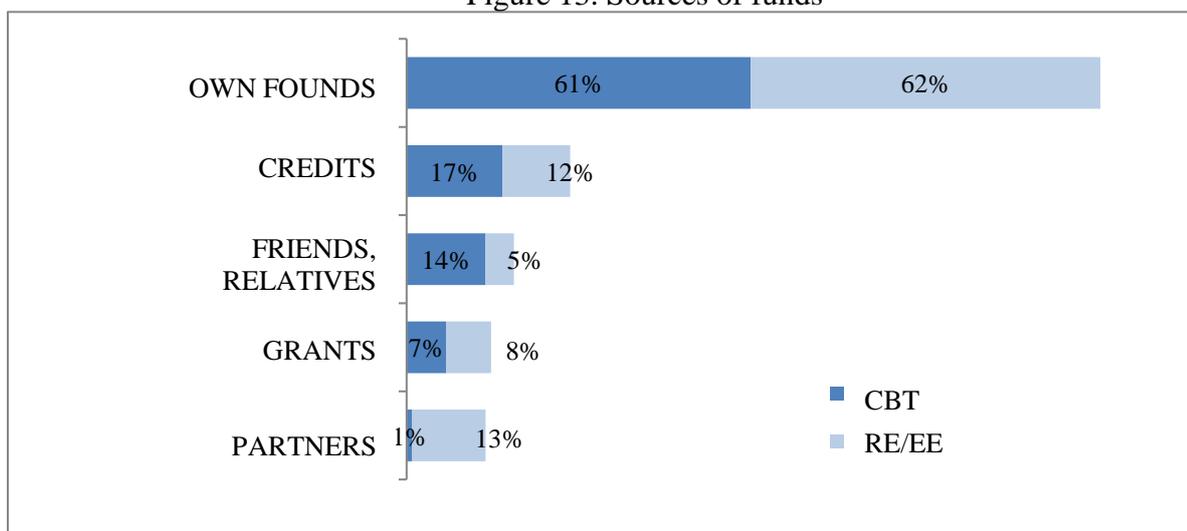
To the question, how do you assess the level of competence of specialists, officials of the authorised state bodies in RES, EE issues:

- 39% of respondents pointed to the lack of competence of individual specialists and authorised officials of public authorities,
- 34% of the respondents assessed the level of competence of specialists, officials of the authorised state bodies in RES, EE issues as satisfactory,
- 16.3% believe that the competence of specialists in all authorised state bodies is insufficient,
- 9.3% rate the competence of professionals as good, noting that staff have been trained.

1.6. Availability of financial resources for producers/providers of RES

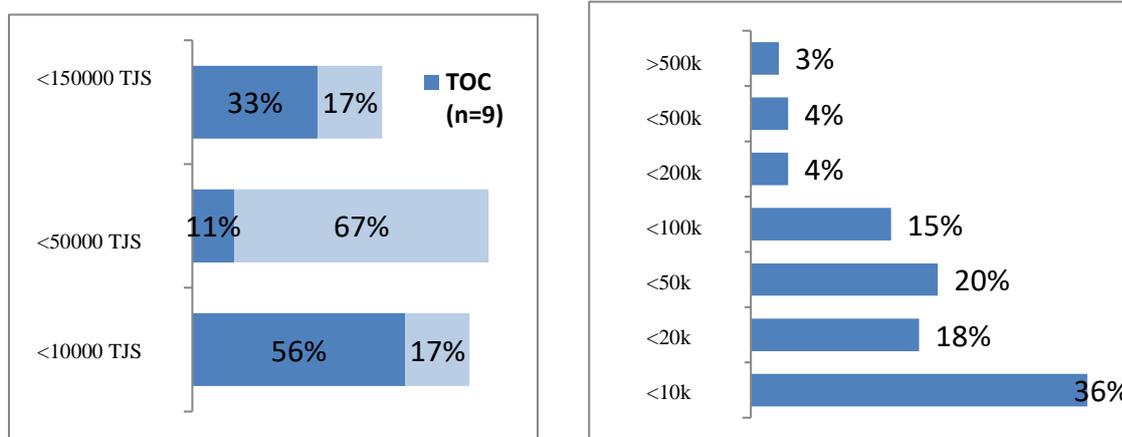
Regarding the possibilities of financing the construction of RES facilities and the implementation of EE measures, 50% of respondents of the survey (of which half are entities that import/export finished goods, equipment, manufacturers of finished goods, equipment, appliances, devices and organisations generating electricity) indicated that they mainly use grant funds from organisations and funds; 40% indicated the use of state grants and soft loans; 40% indicated using their own funds and 15% of them use borrowed funds; 39.5% said they would be prepared to invest if there were available funds and resources; 18.6% said they would not be prepared because consumption is limited and market institutions are not developed in this sector; 16.3% expressed willingness to invest if "cheap and long credit" at acceptable cost was available; 11.6% expressed willingness if legal and economic conditions allowing to make a profit were created.

Figure 13. Sources of funds



According to ACTED's 2020 market analysis of green finance for MSMEs in the CBT and RES/EE sectors, over 60% of MSMEs confirm that they have used their own funds to carry out their business activities. In addition, it was found that MFIs are not very popular among MSMEs and RES&EE due to **high interest rates and small loan amounts, as well as the lack of MFIs in the regions where MSMEs operate.**

The data confirms that only 7% of the MSMEs surveyed have experience of lending to MFIs. In addition, among the MSMEs that have used MFI loan products, 57% of respondents were from the CBT sector, indicating a higher demand for credit finance in this area.



Most of the loans received by CBT MSMEs are up to 10,000 TJS, while RES/EE MSMEs have a larger amount of up to 50,000 TJS. But for long-term investment in CBT and RES/EE such amounts are clearly insufficient. They do not cover the main commercial costs and can only be used to cover small operating costs. According to the results of this analysis, the average desired loan amount is 92,000 TJS. The difference between the real amount and the desired amount demonstrates significant limitations in the MFI sector and reduces its attractiveness to CBTs and RES and EE entities.

80% of the MFIs surveyed have specialised concessional, tourism-focused loan products. All tourism-focused loan products have preferential terms. The average interest rate for these specialised products is 24% per annum. Loan terms range from 6 months to 3 years. 70% of the MFIs have specialised, concessional, lending products for renewable energy and EE sectors. Most MFIs disburse these loan products in cooperation with various programs and international institutions, but 20% of the MFIs also have a loan product that they disburse from their own funds.

1.7. The role of information in the development of renewable energy production and consumption by CBT

The FGD found that the inhibition of renewable energy use is largely due to a lack of awareness of both producers/suppliers and consumers of renewable energy. It should be noted that sufficient attention has been given to awareness issues. A number of international organisations together with public authorities and civil society have carried out some work to raise awareness among the population and stakeholders on the use of RES, EE.

Information is the most important special resource for good decision-making and for improving its quality and relevance. Insufficient information, whether technical, legal, political, financial, environmental or not, equates to market failure. The multiplier effect of implementing green tourism policies by supporting increased clean energy production, renewable energy development, EE growth will benefit other sectors of the economy as well. The development will benefit the manufacturing, trade, hi-tech services, service, construction, small-scale energy and tourism end-user sectors. Therefore, the information factor in this case gets a wider and more important importance.

The Survey noted that access to information on RES and EE use in the country is limited and insufficient, even for a selected category of high-potential respondents.

This refers to the lack of awareness of the legal acts, especially those that are not in the public domain (the survey showed that 90% of the respondents are not aware of the bylaws that are not available). It is also the lack of adequate and complete information about the existing technologies and generating equipment, devices providing EE (even those that are already produced in the country today). Limited access to necessary data for feasibility study preparation, pricing policy development and preferences was noted (91% of respondents confirmed their ignorance of tax and other incentives provided by the Law of RT "On the Use of Renewable Energy Sources").

About 53.5% of the respondents indicated that the quality of statistics and data does not meet the needs of users in developing investment plans and significantly reduces the quality of developed renewable energy and EE policies. This was also confirmed in the presentations of the FGD and Roundtable participants to discuss the results of the analysis of the energy sector and the problems of increasing energy production from RES, the growth of EE in the tourism sector at community level. In addition, during the focus group, participants highlighted the need to raise awareness of all stakeholders through a differentiated approach. Moreover, it was clarified which information, data and statistics need to be better accessed and focused on in order to improve their quality.

95% responded positively to the question "Is it necessary to carry out propaganda campaigns and post special training materials, online calculators for calculating benefits, costs, expenses, safe operation of energy installations by yourself?".

At the same time, the majority of CBT respondents confirm their low awareness of the benefits of RES and EE, the difficulty in obtaining permits and locating generating facilities on lands and plots, and facilities.

The MEWR in cooperation with Barki Tojik has systematically carried out information and awareness raising activities through active involvement of mass media in order to reduce the use of energy inefficient household current receivers. In particular, in the first half of 2019, outreach work was carried out with coverage of 3952 business entities, 3000 pieces of information materials on "Practical Advice on Energy Saving" were distributed free of charge to the population, enterprises and institutions.



The economic dimension of renewable energy is key to understanding its potential role in the energy sector and the pace and cost of putting energy on a truly sustainable footing. However, most countries have not systematically collected the data needed to track trends in the evolution - or, as many rightly call it, the revolution - of the costs of deploying renewable energy technologies. As a result, policy effectiveness has been reduced due to a lack of awareness as well as a misunderstanding of cost structures or because of the use of outdated data.

To fill this gap and ensure sound policies based on accurate and timely data from a reliable source, the International Renewable Energy Agency has developed a world-class database that includes some 15,000 renewable energy projects for municipal energy supply and almost three-quarters of a million small-scale photovoltaic systems. The trends identified from this database show not only the success of policies to reduce costs, but also the basis for transforming the energy sector in the future.

It is very important to raise the awareness of the stakeholders in the process, to obtain accessible and up-to-date information on various issues of renewable energy use, in particular for specific households, local communities, private entrepreneurs, who are subjects of renewable energy use. There is also a need to strengthen the capacity of the specialists in the authorised state bodies on whom the decision-making, permitting and fiscal functions depend.

Entrepreneurs themselves are often not able to present adequate engineering designs, to choose the right location for the plants, they lack professionalism and competence in drafting a feasibility study, and they do not have the possibility to obtain relevant data. It is important for the private sector to be informed, to receive adequate visual and accessible information on the use of RES, their benefits and contribution to environmental protection, preservation of the ecosystem and health.

A powerful and yet unrealised resource is represented by specially prepared films and clips. After all, television covers more than 95% of the country and almost every home has a DVD resource.

In summary, the questionnaire survey and FGDs have identified challenges to the development of community tourism services companies related to the ability to produce renewable energy, to self-sustain and to sell the surplus energy.

Overall, it has been identified that the country is not effectively using RES and EE resources to meet the needs of the population, in particular MSMEs and TSIs living in remote and hard-to-reach regions of the country for a number of reasons, including

- lack of public awareness and education to decide on the use of RES and EE,
- limited access to information on the use of RES and EE,
- The existence of problems related to access to technology, in particular, imported technology and equipment for solar, wind, geothermal power generation is subject to taxation (VAT) and is not exempt from customs duty, unlike equipment and components for large hydro power plants and industrial facilities, which leads to higher costs and imports of cheap low-quality equipment from abroad,
- lack of a full market and reliable information on the sale of RES and EE equipment (mini-hydro generators, solar panels, solar collectors, heat pumps).
- financial barriers for local producers of RES and EE equipment, who face limited working capital, lack of soft loans, a clear system of state incentives, tax and administrative preferences,
- lack of grant support for both equipment manufacturers and energy generating MSMEs, -
- complicated land allocation procedures and administrative barriers,
- improved tax relations of MSMEs engaged in the production and use of RES and EE, -
- unresolved tariff problems in RES and EE production.

2. ASSESSMENT OF THE LEGAL FRAMEWORK AND IMPLEMENTED POLICIES OF THE REPUBLIC OF TAJIKISTAN IN THE CONTEXT OF PROMOTING RENEWABLE ENERGY PRODUCTION AND ENERGY EFFICIENCY IN THE CBT TOURISM SECTOR.

2.1. An overview of existing NLAs, national strategies and programmes in place for renewable energy generation and consumption, EE growth, tourism development

The whole current regulatory framework of Tajikistan in the field of energy, including the use of RES, increase of EE, is developed in accordance with the fundamental provisions of the Constitution of Tajikistan on the exclusive ownership of the state on land and natural resources, the social nature of the state, the diversity of ownership forms.

Tajikistan's NLAs regulating relations between state authorities, natural and legal persons in the fields of energy, renewable energy use and EE improvement in connection with tourism development, including CBT, include the following legislative acts and by-laws, respectively by regulatory sector.

- *in the field of energy, renewable energy use, energy saving and EE*
1. Law on Energy of 29 November 2000, No. 33 (as of 28.12.2013)
 2. Law of Tajikistan "On the Use of Renewable Energy Sources" of 12 January 2010, No. 587 (as of 23 November 2015).
 3. Law of Tajikistan "On Energy Saving and Energy Efficiency" of 19 September 2013, No. 1018.
 4. Law of Tajikistan "On Safety of Hydraulic Structures" of 29 December 2010, No. 666 (as of 17 May 2018).
 5. Decree of the President of the Republic of Tajikistan of 24 April 2009, No. 653 "On Additional Measures for Economical Use of Energy and Energy Saving".
 6. Rules for Use of Electricity. (approved by Decree #84 of the Government of the Republic of Tajikistan on March 6, 1998).
 7. Decree of the Government of the Republic of Tajikistan on March 3, 2011, #116 "On approval of the Rules of maintaining the State cadastre of renewable energy sources".
 8. Government Decree of the Republic of Tajikistan dated December 31, 1997 # 572 "On regulation of heat and electricity consumption in the national economy of the Republic of Tajikistan".
 9. Decree of the Government of the Republic of Tajikistan of 25 September 2018, No. 473 "On Tariffs for Electricity and Heat Energy".
 10. Procedure and conditions for exemption of dekhkan (farm) farms from payment for connection of electric power capacity, water supply (without use of structures or technical equipment) (approved by the Resolution of the Government of the Republic of Tajikistan dated December 30, 2009, No. 702).
 11. Order of the Ministry of Energy and Industry of the Republic of Tajikistan of December 03, 2010, No.111). "Rules for maintaining a catalogue of renewable energy installations of the Republic of Tajikistan".
 12. Order of the Ministry of Energy and Industry of the Republic of Tajikistan № 112 of December 10, 2010. "On approval of regulation on procedure of connection (connection) of renewable energy installations to common power networks".
 13. Decree of the Ministry of Energy and Industry of the Republic of Tajikistan No.112 of December 10, 2010. "On approval of Safety Regulations for operation of renewable energy installations in the Republic of Tajikistan".
 14. Decree of the Ministry of Energy and Industry of the Republic of Tajikistan No.112 of December 10, 2010. "On approval of the Provisions on relationships between grid operator (dispatcher of power supply organization) and operating personnel or person responsible for operation of technological and electrical equipment of energy producer using renewable energy sources (RES)".

15. Order of the Ministry of Energy and Industry of the Republic of Tajikistan of December 28, 2010, #1316 "Methodological instructions for calculation of regulated tariffs for electric (thermal) energy generated by RES facilities in the Republic of Tajikistan". Application for Preliminary Approval of the Project for Construction of a Power Plant Using Renewable Energy Sources. Application for approval of the construction of RES power plants. 16.
16. Order of the Ministry of Energy and Industry of Republic of Tajikistan #111 from December 3, 2010: "Guidelines on procedures to obtain permission to install and site power plants using renewable energy sources in the territory of Tajikistan".
17. Regulation on the Register of Natural Monopoly Entities (Approved by the Order of the Director of State Agency for Antimonopoly Policy and Support of Entrepreneurship under the Government of the Republic of Tajikistan of December 13th 2002, №55).
18. Procedure for determining the prices (tariffs) or their marginal level of economic entities occupying a dominant position in the commodity market of the Republic of Tajikistan (approved by the Order of the Ministry of Economic Development and Trade of the Republic of Tajikistan dated 5 March 2007, No.3).

▪ *in the field of tourism*

19. Law of Tajikistan "On Tourism" of 7 August 2020, No. 1718.
20. Law of Tajikistan "On Domestic Tourism" of 7 August 2020, no. 1718.
21. Decree of the President of the Republic of Tajikistan dated January 2, 2019, No. 1170 "On declaring 2019-2021 as the years of development of villages, tourism and folk crafts".
22. Decree of the Government of the Republic of Tajikistan dated September 5, 2015, No. 564 "On establishment of the Interagency Council for coordination of activities in the field of tourism under the Government of the Republic of Tajikistan".
23. Decree of the Government of the Republic of Tajikistan of 12 April 2018, No.189 "On the list of tourist facilities for the establishment of which the importation of equipment, machinery and construction materials is exempted from value added tax and customs duties".

▪ *in the use of natural resources*

24. Water Code of the RT, dated April 02, 2020, No. 1688 Section I. General provisions. Chapter I. Basic provisions. Art. 7: Competence of local executive bodies of state power in the area of water relations regulation. Section II. Water use. Chapter 6. Procedures and conditions for provision of water bodies for use. Economic conditions for the provision of water bodies for use. Chapter 12. "Use of water objects for industrial purposes and for hydropower needs". Article 83. Use of water bodies for the needs of hydropower industry. Article 84. Rights and responsibilities of hydropower enterprises for water use.
25. Land Code of the Republic of Tajikistan of 13 December 1996, No. 326 (as of 14 November 2016).
26. Law of the Republic of Tajikistan "On Mountain Regions of the Republic of Tajikistan" dated July 22, 2013, No. 1003.
27. Rules on allocation of land plots for natural and legal persons (approved by the Resolution of the Government of the Republic of Tajikistan dated September 1, 2005, No. 342).
28. Decree of the Government of the Republic of Tajikistan dated March 4, 2003, No. 95 "On approval of the Rules for Use of Water Bodies for Hydropower Needs".

1. *in the field of environmental protection*

29. Law of the RT "On Environmental Protection" of 02 August 2011, No. 760 (as of 18 July 2017).
30. Law of the RT "On Environmental Impact Assessment" of 18 July 2017, No. 1448.

2. *in the field of business and investment*

31. Civil Code (Part Two) of 11 December 1999, No. 884 (as of 02 January 2019). Section IV. Certain types of obligations. Chapter 29. Purchase and sale.

32. Code of Administrative Offences of December 31, 2008, No. 455 (as of December 17, 2020). Chapter 23. Administrative offences in the area of energy and use of energy resources
33. Tax Code of Tajikistan of September 17, 2012, #901 (as of December 17, 2020). Section XII. Taxes for natural resources. Chapter 36. Royalties for water. Section XVII. Preferential tax regimes. Chapter 46. Taxation of construction of hydropower stations. Article 312. Privileges for construction of hydropower plants.
34. Law of Tajikistan, On Licensing of Certain Types of Activities, 17 May 2004, No. 37 (as of 04 July 2020).
35. Law of RT "On Natural Monopolies" of 5 March 2007, No. 235 (as of 18 July 2017).
36. Law of RT "On Production Sharing Agreements", 05 March 2007, No. 238 (as of 01 August 2012).
37. Law of RT "On Investments" dated March 15, 2016, No. 1299 (as of August 03, 2018)
38. Law of the Republic of Tajikistan "On Investment Agreement" of 19 March 2013, No. 944 (as of 30 May 2017).
39. Law of RT "On State Registration of Legal Entities and Individual Entrepreneurs", 19 May 2009, No. 508 (as of 02 January 2020).
40. Law on State Registration of Immovable Property and Rights thereto of 20 March 2008, No. 375 (as of 04 July 2020).
41. Law on Technical Norming of 19 May 2009, No. 522 (as of 28 June 2011).
42. Law No. 759 of August 02, 2011 on Conformity Assessment (as of August 01, 2012).
43. Law on Certification of Products and Services of 13 December 1996, No. 314 (as of 3 July 2007).
44. Law of RT On Standardization dated December 29, 2010, #668 (as of April 6, 2012).
45. Resolution of the Government of the Republic of Tajikistan of 3 April 2007, No. 72 "On Approval of the Regulation "On Licensing of Certain Types of Activities" (as of 25 February 2017).
46. Resolution of the Government of the Republic of Tajikistan of March 2, 2013, No. 93 "On the List of agricultural machinery, production and technological equipment and its components forming a single technological set imported into the Republic of Tajikistan, which are exempted from value added tax and customs duty" (as of July 28, 2017).
47. Decree of the Government of the Republic of Tajikistan of June 18, 2012, № 310 "On the List of goods (works, services) subject to mandatory certification" (as of 29 September 2017).
48. Decree of the Ministry of Energy and Industry of the Republic of Tajikistan No. 112 of December 10, 2010. "On Approval of the Model Contract for Sale and Purchase of Electricity Generated from Renewable Energy Sources RES".

In addition, *international legal instruments recognised by Tajikistan* should be added to this list, such as:

3. Energy Charter Treaty (ratified by a Decree of the Majlisi Oli of 3 January 1997, No.10).
4. Agreement on cooperation of the member states of the Commonwealth of Independent States in the field of energy efficiency and energy saving of October 7, 2002. (approved by Resolution of the Government of Tajikistan, 06 June 2003, No. 257).
5. CIS Free Trade Zone Treaty of October 18, 2011 (ratified by the Decree of the Majlisi Namoyandagon Majlisi Oli of the RT, December 24, 2015, No. 285).
6. World Trade Organization Agreement on Trade Facilitation (ratified by the Majlisi Namoyandagon Majlisi Oli of Tajikistan on May 06, 2015).
7. Agreement between the Government of the Republic of Tajikistan and the Government of the Russian Federation on Avoidance of Double Taxation and Prevention of Fiscal Evasion on Income and Capital (ratified by Decree of the Majlisi Oli of the RT, November 13, 1998, № 701).

8. Agreement between the Republic of Tajikistan and the Kyrgyz Republic on the Avoidance of Double Taxation and the Prevention of Fiscal Evasion on Income and Capital (ratified by Decree of the Majlisi Oli of the RT, November 13, 1998, No.701).
9. Decision of the CIS Economic Council of March 11, 2005 on Main areas and principles of cooperation of the Commonwealth of Independent States member states in the area of energy efficiency and energy saving.
10. United Nations Framework Convention "On Climate Change" (joined by the Decree of Majlisi Oli of RT, #533 on December 13th , 1997).

It is also noteworthy that Tajikistan has adopted a number of *standards for certification of electrical equipment and electricity, including renewable energy sources*:

- Standard of the Republic of Tajikistan No. HT HT 5.10-2010. National Certification System of the Republic of Tajikistan. Rules for Certification of Electrical Equipment and Electricity. (Approved and put into effect by Order of the Agency for Standardization, Metrology, Certification and Trade Inspection of September 1, 2010, #07).
- Standard of the Republic of Tajikistan GOST R 51237-2010. Non-conventional energy. Wind energy. Terms and definitions. (Approved and put into effect by the Order of the Agency for Standardization, Metrology, Certification and Trade Inspection of 1 September 2010, #07-st).
- Standard of the Republic of Tajikistan GOST R 51238-2010. Non-conventional energy. Small hydropower engineering. Terms and definitions. (Approved and put into effect by the Order of the Agency for Standardization, Metrology, Certification and Trade Inspection of 1 September 2010, #07-st).
- Standard of the Republic of Tajikistan GOST R 51594-2010. Non-conventional energy. Solar energy. Terms and definitions. (Approved and put into effect by the Order of the Agency for Standardization, Metrology, Certification and Trade Inspection of 1 September 2010, #07-st).
- Standard of the Republic of Tajikistan № XT GOST R 51595-2010. Non-traditional energy Solar energy. Solar collectors. General technical conditions. (Approved and put into effect by the Order of the Agency for Standardization, Metrology, Certification and Trade Inspection of 1 September 2010, №07-st).
- Standard of the Republic of Tajikistan № XT GOST R 51596-2010. Non-traditional energy Solar energy. Solar collectors. Test methods. (Approved and put into effect by the Order of the Agency for Standardization, Metrology, Certification and Trade Inspection of 1 September 2010, №07-st).
- Standard of the Republic of Tajikistan No.XT GOST R 51597-2010. Non-conventional energy. Solar photovoltaic modules. Types and main parameters. (Approved and put into effect by the Order of the Agency for Standardization, Metrology, Certification and Trade Inspection of 1 September 2010, #07-st).
- Standard of the Republic of Tajikistan № XT GOST R 51388-2010. Energy Saving. Information of consumers on energy efficiency of household and municipal products.
- Standard of the Republic of Tajikistan GOST R 51387. Energy saving. Normative-methodical support. Main provisions.
- Standard of the Republic of Tajikistan GOST R 51380 Energy saving. Methods of conformity of indicators of energy efficiency of energy-using products to their normative values. General requirements.
- Standard of the Republic of Tajikistan GOST R 51541 Energy saving. Energy efficiency. Composition of indicators. General provisions.
- Standard of the Republic of Tajikistan GOST R 51379 Energy saving. Energy passport of industrial consumers of fuel and energy resources. Main provisions. Standard forms.
- Standard of the Republic of Tajikistan GOST 25380-2014 Energy Saving. Buildings and constructions. methods for measuring the surface heat flux density and determining the heat exchange coefficients between the enclosing structures and the environment.
- Standard of the Republic of Tajikistan GOST 31427-2010. Buildings of residential and public buildings. Composition of energy efficiency indicators.

Institutional arrangements

The Government of the Republic of Tajikistan, as the supreme regulatory authority, ensures the implementation of the state policy in the fuel and energy and tourism sectors of the country, implements a general pricing and tariff policy, controls the exploitation and maintenance of renewable and primary energy resources, creates the necessary conditions to attract investments in the fuel and energy and tourism sectors, approves development programmes for these sectors and controls their implementation.

The implementation of the state energy policy, including the use of RES, is the responsibility of the authorised state body in this field - the Ministry of Energy and Water Resources of the Republic of Tajikistan.

The designated state authority in the field of tourism is the Tourism Development Committee under the Government of the Republic of Tajikistan, which is charged with implementing state policy in the field of tourism.

The state-owned Barki Tojik is a monopoly in the energy sector and is responsible for generation, transmission and distribution of electricity and heat to consumers in the country and for the practical implementation of energy projects and programmes financed from the state budget, including projects aimed at promoting the use of RES.

Certain aspects of the use of RES, including in the CBT sector, are regulated at the state level by the following state structures:

- Ministry of Economic Development and Trade of the Republic of Tajikistan: elaboration and monitoring of national development strategies of the country, coordination of implementation of sectoral programmes;
- Ministry of Finance of the Republic of Tajikistan and State Committee on Investments and State Property Management of the Republic of Tajikistan: state financing of large energy projects, as well as attracting additional investments;
- Ministry of Education and Science of the Republic of Tajikistan and Ministry of Labour, Migration and Employment of the Republic of Tajikistan: coordination and management of training of specialists with higher and secondary vocational education;
- Ministry of Justice of the Republic of Tajikistan: legitimisation of departmental regulations;
- State Committee on Land Management and Geodesy of the Republic of Tajikistan: Regulation of Land Relations;
- Agency on Statistics under the President of the Republic of Tajikistan: collection and publication of statistical data;
- Tax Committee under the Government of the Republic of Tajikistan: Taxation of RES facilities and tourism service providers;
- Customs Service under the Government of the Republic of Tajikistan: customs duties on import/export of goods, equipment, devices, appliances, components, intended for use in RES and EE, tourism sector;
- Land Reclamation and Irrigation Agency under the Government of the Republic of Tajikistan: Use and conservation of water management facilities, provision of irrigation water and protection of water resources;
- Antimonopoly Service under the Government of the Republic of Tajikistan: Tariff Policy;
- Committee on Environmental Protection under the Government of the Republic of Tajikistan: Development and implementation of environmental strategies;
- Agency on Hydrometeorology of the Committee on Environmental Protection under the Government of the Republic of Tajikistan as UNFCCC coordinator;
- Agency for Standardisation, Metrology, Certification and Trade Inspection under the Government of the Republic of Tajikistan: development and approval of standards, certification;
- National Academy of Sciences of the Republic of Tajikistan: Research on non-traditional

RES;

- Specialist universities and their branches: training for the renewable energy and tourism sectors;

- Hochagii Manziliyu Kommunalni State Unitary Enterprise: Implementation of heat supply policy ;

- Local executive bodies of state power, local self-government bodies (jamoats): elaboration of local programmes for tourism development, solving issues of RES and tourism facilities location, allocation of land plots, control of RES and tourism facilities activities in terms of compliance with environmental requirements, public order norms.

Strategic objectives

NDS-2030 defines the main actions to achieve the set strategic goal of ensuring energy security and efficient use of electricity, which include the creation of technical opportunities for the use of RES (solar, wind, biological, geothermal); large-scale energy saving and improvement of energy efficiency of the national economy.

Noting the insufficiently effective legal and regulatory framework in the country's fuel and energy sector and the inadequate tariff policy in the electricity sector, NDS-2030 provides for a set of measures to ensure an attractive tax, regulatory and legal environment for investment projects in the real economy, development of legislation and regulation aimed at energy saving and EE improvement.

NDS-2030 envisages ensuring the development of the country's electricity sector on the basis of the **10/10/10/10 concept**, including: increasing the design capacity of the electricity system to 10 GW, increasing annual electricity exports to 10 billion kWh, reducing technical and commercial grid losses to 10%, diversifying generation sources by at least 10% and **an additional generation of over 500 million kWh per year through the use of RES and energy-efficient technologies.**

It is noteworthy that one of the priority areas of action in NDS-2030 has identified the creation of conditions and transport and logistics infrastructure for the formation and development of tourism business in rural areas, in areas of decentralised energy supply and areas of the country with unique natural conditions, which directly echo the objectives of the Project. It is noted that this will ensure new jobs, availability, accessibility and adequacy of food, reduction in the number of migrant workers, formation and development of the middle class in rural areas.



The main actions to achieve the set strategic objectives are:

In the sphere of energy security and efficient use of electricity:

- Diversification of generating energy sources, envisaging the development of hydropower resources of oil, gas and coal sector, development of new fossil fuel deposits, **creation of technical opportunities for the use of non-conventional (renewable) energy sources (solar, wind, biological, geothermal)**, modernisation of existing and construction of new HPPs and TPPs;

- **efficient use of the available energy capacities** and realisation of the export potential of the power sector;

- modernisation and technical re-equipment of the oil and gas sector, and development of new oil and gas fields

- **large-scale energy saving and improved energy efficiency of the national economy;**

- development of internal and external energy infrastructure (power grids and substations); - creation of an effective system for risk management and monitoring of energy security, including unrestricted and equal access to energy resources for all consumers

- ensuring financially viable and sustainable operation of the energy sector;

- integrated water resources management.

In the draft Medium Term Development Programme of Tajikistan for the next five-year period 2021-2025 special attention is given to the development of the middle class in rural areas. Special attention is given to macroeconomic stabilization, reduction of economic dependence on external negative factors, improvement of competitiveness of the national economy, diversification of production as well as search for sources and such new factors of economic development as development of "green" and digital economy; effective use of mountainous economy potential; use of transit and tourist potential of the country. A separate paragraph in SDP-2025 is devoted to the development of a "green economy", which, among other things, provides for "launching industrial production of solar panels and equipment in manufacturing plants using domestic raw materials (silicon raw materials) and thereby reducing the cost of electricity production from this source".

Since 2000 to date, Tajikistan has implemented a number of policy documents in the energy sector that include RES research and development, including:

- Concept for Development of Fuel and Energy Sector of the Republic of Tajikistan for 2003-2015 (approved by Government Decree of August 3, 2002 № 318);
- Long-term Program for Construction of Small HPPs for 2009-2020 (approved by the Resolution #73 of the Government of the Republic of Tajikistan on 2 February 2009);
- Program on Efficient Use of Hydro Power Resources and Energy Conservation for 2012-2016 (approved by the Resolution of the Government of Tajikistan, №551 dated November 2, 2011);
- Programme for Development of Renewable Energy Sources and Construction of Small Hydro Power Plants for 2016-2020 (approved by Decree of the Government of the Republic of Tajikistan, 30 December 2015, No. 796).

In particular, the last program envisaged construction of 64 small HPPs with total installed capacity from 5 to 10,000 kW by 2020. Reporting on the results of this Programme at the meeting of the Government of Tajikistan on 31 March 2020, the Minister of Energy and Water Resources said that 9 small HPPs with a total capacity of 2,260 kWt were built and put into operation only at the expense of the main programme measures and 9 small HPPs with a total capacity of 1,685 kWt, i.e. a total of 18 HPPs were constructed and put into operation outside the programme. The consumers of energy of these HPPs were 2231 households, 21 schools, 15 medical centers and 93 various objects of national economy. The minister further informed that a feasibility study for 45 small hydropower plants has been developed.

Thus, the programme is only 28% implemented. Participants in the Focus Group Discussion (FGD) held on 2 April 2021 pointed to a number of reasons for the failure of the Programme, ranging from lack of funds to lack of expertise. However, in many cases, it was the lack of a well-developed, incomplete NLAs, as well as the Programme itself.

For reference: Based on consultations and information from the MEWR staff, a new sectoral programme document is currently being drafted and is expected to be discussed in the near future. As the previous programmes have a clear focus on the big energy sector, the Project team and stakeholders should develop and make proposals for a new draft policy document.

This should take into account the changes and advances in technology, the fact that the cost of micro-generation technologies is decreasing and that the CBT sector has an increasing need for alternative and additional energy supply when shaping the programme document. For example, in recent years the experts have focused on solar energy, whereas in 2009, when developing the Long-term Programme, they considered it appropriate to use it only for low-potential thermal energy and for domestic applications.

The Laws of the Republic of Tajikistan "On Tourism" dated August 7, 2020, №1718, "On Domestic Tourism" dated August 7, 2020, №1718, Strategy for Tourism Development in the Republic of Tajikistan for the period until 2030 (approved by the Resolution of the Government of the RT dated August 1, 2018, №372) provide for purely specific aspects of tourism activities, do not contain any provisions on the use of RES, although they provide environmental aspects. It seems

possible to consider reflecting these aspects in the legislation and the Strategy through appropriate amendments.

Tajikistan has developed legislation covering the field of energy relations, including the regulation of renewable energy use. A legal and regulatory framework for the tourism sector has also been formed.

However, energy law in Tajikistan, despite its importance in the social aspect, for business development and investment attraction, including for CBT development, is still far from being perfect. As the volume of work undertaken in this area increases and investors become more interested in energy and tourism facilities in Tajikistan, the importance of improving the legal and regulatory framework of the energy and tourism sectors, making the necessary amendments to the legislation in a timely manner, taking into account the interests of all stakeholders, is increasing.

2.2. Assessing the impact of current legislation on increasing the use of RES and EE growth in CBT industry

2.2.1. Basic laws in the field of energy, renewable energy use, EE, tourism

1) **The Law on Energy** of 29 November 2000, No. 33 (as amended on 28 December 2013) defines the main organisational and legal principles and methods for regulation of economic activities in the energy sector of Tajikistan. This law establishes norms defining the main objectives of the state policy in the energy sector, including with regard to the use of RES, methods and powers of subjects of state regulation in the energy sector, as well as the specifics of regulation of energy enterprises (protection of rights, investment, financing, concession). Thus, the said Law has the character of a general framework legislative act, in which the legal regulation of the fuel and energy complex (FEC) is conditioned not by the detailed regulation methods of relations, but only by the general sphere of regulation - relations related to the organization and functioning of the FEC of Tajikistan. The law stipulates the expediency of using RES in order to increase the efficiency of the FEC, but does not define the legal status of RES entities, their rights and obligations, and does not elaborate a mechanism for regulating the price and tariff policy of the state in the energy sector in general, and in the sphere of RES use in particular.

2) **Law of RT "On Use of Renewable Energy Sources"**, January 12, 2010, No 587, (as amended on November 23, 2015) regulates activities in the field of RES in RT, including setting the principles and objectives of state policy in the field of RES development; defines ways to integrate RES into the national energy system; carries out organisational, research project, expert, design, regulatory activities aimed at increasing RES use; provides for correlation (interrelation) of activities in the area of RES

This Act establishes *the concept of "small power generation"*, which includes "micro, mini and small power plants of up to 100 kW, 101 to 1000 kW and 1001 to 30,000 kW respectively", i.e. all the rules of this Act refer to power plants not exceeding 30 mW.

Pursuant to Article 4 of this Act, **RES include:**

- "- solar energy;
- wind energy;
- the energy of natural and artificial watercourses and bodies of water;
- geothermal energy;
- wood waste, biomass in the form of industrial, agricultural, forestry, municipal and domestic waste.

Article 6 of the Law defines *priority sites for the use of RES*, these are:

- Decentralised energy supply areas, where low population densities make it uneconomical or impractical to build conventional power plants and high voltage transmission lines;

- Centralised energy supply areas, where unsatisfactory state of the energy networks or shortage of capacity or energy causes frequent customer outages, resulting in significant economic damage and negative social consequences;
- Residential and recreational areas where emissions from industrial and municipal fossil fuel-fired boilers create a difficult environmental situation;
- settlements, holiday homes and places of temporary residence where heating, electricity and hot water supply are a problem.

Part 2 of this article establishes that "For energy supply for production and domestic needs in nature reserves and specially protected areas, renewable energy sources may have priority in accordance with the legislation of the Republic of Tajikistan", this is important for the organisation of CBT, in relation to ecological tourism.

Pursuant to Article 14 of this Law, *state support for the use of RES* is provided, which includes

- Establishing an effective pricing policy for energy produced from renewable energy sources that stimulates their production and purchase;
- protection of energy producers from renewable energy sources from unfair competition by entities with a dominant position in energy production and use;
- recognition of the use of renewable energy sources as environmental and/or energy-saving activities, with the establishment of appropriate incentives for legal entities and individuals carrying out activities in the field of renewable energy sources;
- According to the amount 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, are provided with incentives;
- regulation of energy tariffs for energy supply to consumers derived from the operation of renewable energy installations, including through subsidies from sources established by legislation for the production of such energy;
- Establishing accelerated depreciation of renewable energy installations;
- Ensuring unhindered access of natural and legal persons using renewable energy sources for their own energy supply to the resources of these energy sources by simplifying the procedure of transferring the rights of use to the natural and other resources necessary for this purpose;
- Guaranteed connection of producers of energy produced from renewable energy sources to the energy networks;
- stimulating investment activities and introduction of state-of-the-art technologies in the use of renewable energy sources, including the creation of favourable conditions for national and foreign investors;
- support for scientific and technical support for the establishment and implementation of renewable energy installations.

Article 11 of this Law *obliges energy network operators and wholesale consumers to purchase energy produced from RES on a contract basis while maintaining the established balance of production and quality of energy produced by RES*, but the Law does not define a mechanism for the authorized body in the energy sector to purchase electricity from the owner of the power plant in the zone of decentralized energy supply, where there are no electricity distribution networks and electricity metering system and operational in order to ensure appropriate conditions for RES entities to carry out lawful activities to provide all types of energy services in zones of decentralized energy supply, where the authorized body (energy supplying organization) does not have electric distribution networks, electricity metering system and operating personnel, it is appropriate to grant to RES entities the status of an "energy supplying organization".

According to the legislation of Tajikistan, any natural or legal persons, irrespective of the legal form in which they are established/operating and the form of ownership they are in, may act as entities using renewable energy resources in their activities and have an appropriate license to engage in transportation, transmission, distribution, storage, processing, energy transformation, transformation, trade or sale of energy resources and products. At the same time, the legislation of Tajikistan makes an exception, RES subjects are not required to obtain a license for energy production, transmission and distribution of electricity to meet the own needs of a legal entity or an individual entrepreneur.

Thus, in order for RES entities, both individuals (registered as individual entrepreneurs) and legal entities, to carry out lawful activities to provide all types of energy services and to acquire the status of "energy supplying organisation", it is necessary to obtain an appropriate license.

A license for the generation, transmission and distribution of electricity (except in cases where these activities are carried out to meet the own needs of a legal entity or individual entrepreneur) is issued by the Ministry of Energy and Water Resources of the RT based on the Law of the RT "On licensing certain types of activities", May 17, 2004, No. 37 (Article 17. List of activities for which a license is required).

Article 12 further defines that the sale of renewable energy shall be subject to 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 authorised energy authority.

This list does not require RES entities to obtain a license for energy production, unlike other energy market entities that use primary and secondary energy resources in their activities. The remaining technical and other requirements for the provision of energy services using RES are unified, i.e., they apply to RES entities as well.

It should be noted that at the time of adoption of this law, in accordance with the Decree of the Government of Tajikistan of June 18, 2012, № 310 "List of goods and services subject to mandatory certification", certification of sold energy was mandatory. However, following the revision and approval by the Government of this List in a new version, certification for sold energy has been excluded from it and is now voluntary. In the case of an application, electricity certification is conducted in accordance with Standard ST RK 5.10-2010 "On Recommendations on Certification of Electrical Equipment and Electricity", approved by Decree of the Agency for Standardization, Metrology, Certification and Trade Inspection under the Government of Tajikistan, No. 07-st, dated 1 September 2010.

The Law of RT, dated November 23, 2015, No. 1254 amended Article 17 of the Law in question, according to which prices and tariffs for energy produced from RES are approved by the Government of RT upon submission of the authorized body on regulation of natural monopolies, which significantly complicated the procedure of price and tariff setting, including for power grids up to 100 kW. Previously, prices and tariffs were set by order of the head of the authorised antimonopoly body.

In order to implement the individual norms and articles of the Act in question, regulatory **governmental and departmental NLAs have been** developed and adopted, including

- Rules for Maintaining the State Cadastre of Renewable Energy Sources (approved by Resolution No. 116 of the Government of Tajikistan, dated March 3, 2011);
- Rules for Maintaining the Catalogue of Renewable Energy Installations of the Republic of Tajikistan (approved by Order No. 111 of the Minister of Energy and Industry of 3 December 2010);
- Methodological instructions to the procedure for obtaining a permit for the installation and siting of energy facilities functioning on the basis of renewable energy sources on the territory of the Republic of Tajikistan (approved by Order of the Minister of Energy and Industry of 3

December 2010, No. 111);

- Regulation on the relationship between the grid operator (dispatcher of the energy supply organization) and the operating personnel or person responsible for the operation of technological and electrical equipment of the energy producer using renewable energy sources (approved by Order No. 112 of the Minister of Energy and Industry of December 10, 2010);
- Contract for the purchase and sale of electricity generated from renewable energy sources (approved by Order No. 112 of the Minister of Energy and Industry of December 10, 2010)
- Regulation on the order of connection (connection) of renewable energy installations to the general energy networks (approved by Order No. 112 of the Minister of Energy and Industry of December 10, 2010)
- Regulations on safety rules for operation of renewable energy installations (approved by Order No. 112 of the Minister of Energy and Industry of Tajikistan dated 10.12.2010, agreed with the Chairman of the Republican Committee of the Trade Union of Electric Power Industry Workers of the Republic of Tajikistan).

The study showed that these NLAs are hardly ever applied in practice. The State Cadastre and Catalogue of RES has not been created. More than 90% of the respondents to the survey indicated that they are not aware of the named by-laws, which are not available. In addition, the completed reconstruction of Barki Tojik will require significant changes in both the said Law and its by-laws. This problem was also highlighted by the participants of the FGD and the Round Table.

3) The Law on Energy Saving and Energy Efficiency of 19 September 2013, No 1018

regulates public relations in the area of energy saving and EE, defining the principles of legal regulation, the competence of the Government of Tajikistan and the powers of public authorities, the state regulation and information support for energy saving and energy efficiency measures, state support and the procedure for state supervision of energy saving and EE.

In accordance with Article 27 of the Law, in order to support the state policy in the field of EE and energy saving, the Government of Tajikistan creates the Renewable Energy, Energy Saving and Energy Efficiency Development Fund (RES EE ES Fund), which is an independent structure, organised and operating on the basis of Regulations approved by the Government of Tajikistan. It should be noted that in 2013 the draft Regulation on the Fund was developed with the support of the OSCE Office in Tajikistan and submitted to the MEWR, but so far the Fund has not been established and its Regulation has not been approved. Moreover, as noted during the roundtable, the Ministry of Justice refuses to issue an opinion on the establishment of the Fund's regulations. The creation of the Fund is stipulated by the law and is urgently needed; in the Ministry of Energy and Water Resources a small department of three people deals with these issues, they are not physically able to solve the whole range of related problems. The FGD assessed the current situation regarding the establishment of the RES, EE, ES Fund as a serious failure of the implemented RES and EE policy that needs to be rectified as soon as possible.

Thus, a significant gap in the legal regulation of the renewable energy, EE and CBT industries of Tajikistan is the failure of the authorized state bodies to implement the requirements of previously adopted by-laws, lack of updating them in accordance with the new realities in the sectors - reform of management institutions, establishment of new priorities, impact of external factors, etc.

In particular, during the FGDs and the Roundtable, as significant gaps in Tajikistan's energy legislation, the use of RES, including for CBT purposes, were pointed out:

- No possibility of an independent energy audit,
- The lack of a procedure for accepting micro hydropower plants and for calculating the cost of the electricity they generate;
- The absence of a mechanism for the purchase of electricity from the owner of the power plant by the authorised body in the area of decentralised energy supply, where the energy supply company does not have an electricity distribution network, electricity metering system and staff;

- complicated conciliation procedures, many of which are handled by central authorities, for producers/suppliers of RES, especially micro-generation entities.

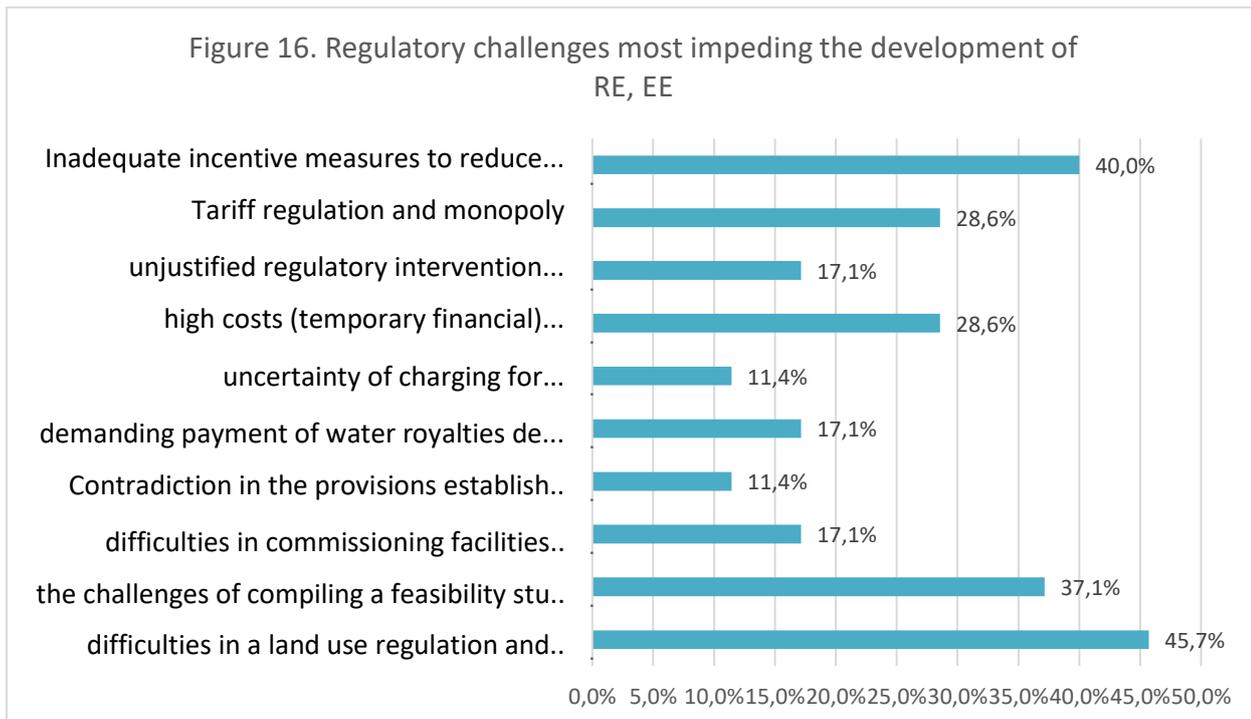
2.2.2. Regulation of construction/siting of small and micro energy facilities based on RES use. Impact of land and environmental legislation and availability of limited resources in renewable energy production and supply.

Order of the Minister of Energy and Industry of December 3, 2010, No.111 approved "Methodological instructions to the procedure for obtaining permits for installation and siting of energy facilities operating on the basis of renewable energy sources on the territory of the Republic of Tajikistan". This act defines the step-by-step procedure for obtaining permits for the use of RES, including:

1. Procedure for preliminary approval of the use of RES;
2. Procedure for preliminary approval of allocation of a land plot for construction of RES;
3. Procedure for obtaining a license;
4. Procedure for obtaining a permit for the use of RES resources;
5. Preparation of design and estimate documentation;
6. Procedure for allocation of a land plot for construction of RES facilities;
7. The procedure of obtaining a permit for the construction of the plant;
8. Compliance with ecological norms and requirements.

According to the results of the Questionnaire, the highest value was given to regulatory problems relating to difficulties with regulation of land use and obtaining of permissive documents - 45.7% of the total number of answers, 40% mentioned insufficient incentives to reduce the tax burden and payments before starting operations and getting income and 37.7% mentioned problems with preparation of feasibility studies and planning of production, equipment/energy generation due to inability to obtain long-term hydrological data.

Relations associated with the use and protection of land, as well as property relations in the area of land use arising in connection with the obtaining (acquisition) of the right to alienate the right to use a land plot are regulated by the land legislation, the basis of which is the Land Code of the RT dated December 13, 1996, № 326 (as amended on November 14, 2016).



It should be noted that the Land Code of the RT does not directly specify the category of land provided for the construction of energy facilities. From the comparison of Articles 3, 7710 and 86, one can conclude that the land plots provided for use for the construction of RES facilities belong to "lands of industry, transport, communication, main pipelines and other purposes in cities" and "lands of communication lines, radio and electricity transmission" and be guided by the rules corresponding to this status of land. Article 86 provides that land plots for overhead power line towers, buildings, structures and other devices shall be provided to enterprises, institutions and organizations engaged in the operation of power lines in accordance with technical designs and norms.

According to Article 9 of the Land Code of the RT, classification of lands into 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. Further Article 91 stipulates that "transfer of arable lands, perennial plantations, hayfields and pastures to non-agricultural land of agricultural designation shall be made by the decision of the Government of the RT".

Article 18 of the Land Code of the RT prohibits the use of a land plot prior to registration of the right to land use - until the borders of the land plot are established on the ground and documents certifying the right to use the land are issued by the relevant land surveyors.

In accordance with Article 12 of the Land Code of the RT that land plots in the RT are provided to individuals and legal entities by local executive bodies of state power in an order established by the Government of the RT.

Article 26 of the Land Code of the RT defines the size and category of land plots (from 5 to 10 hectares) submitted to the MIOGV of districts, cities and regions by agreement with the local body on land management, but further Article 26 states that the Government of the RT, by agreement with the MIOGV of districts, cities, regions and the authorized body regulating land relations grants land plots of all categories and types of lands for permanent and fixed term use, for lease regardless of size, while Article 29 states: "If necessary to grant land plots for permanent or fixed term use, for lease

- a) from the categories of agricultural land and state reserve land (arable land, perennial plantations, nurseries, hayfields and pastures);
- b) from the category of lands of residential settlements (national parks, parks of culture and recreation, botanical gardens and other types of gardens, forests of the first category, natural monuments, recreational facilities, lands of historical and cultural purpose, scientific and experimental sites, research institutions, except for light buildings, without change of designation, for servicing these lands and citizens);
- c) from the category of lands of the state forest fund and state water fund (arable lands, lands of perennial plantations, plantations, nurseries, hayfields, pastures and forests of the first category).

The procedure for the submission and consideration of applications by physical and legal persons for the granting and withdrawal of land plots, regardless of whose use they are, except in cases provided for by Tajik legislation, is provided for in the "Rules for the allocation of land plots for physical and legal persons", approved by Resolution No. 342 of the Government of Tajikistan, dated September 1, 2005.

For the allocation of land plots, a land management file is prepared by specialists from the state land management authority of Tajikistan, its local bodies, specialised design institutes and its enterprises.

Individuals and legal entities interested in the allocation of land plots shall submit an application to the regional, district and city chairmen, indicating the purpose for which the land plot is required, the size and location of the facility, and the decision of a higher authority or the Government of Tajikistan to construct the facility

The basis for granting an application for the withdrawal of a land plot is a prospective development project or a decision of a higher authority.

The location of construction projects is based on district planning projects, draft master plans of settlements, as well as other prospective projects upon the submission of local architecture and town planning authorities.

The district (municipality) MIOHV shall review the application within 15 days and submit it to the permanent commission of the district (municipality) for the selection of the land plot.

The allocation of a land plot for the construction of a RES facility is confirmed by a resolution (decision) of the respective MIOHV.

The chairmen of cities, districts, regions and the Government of Tajikistan, in cases where individuals and legal entities provide, in accordance with the requirements of the legislation of Tajikistan, developed, approved and examined construction projects, may allocate a land plot within their authority for construction in one stage without prior approval of the location of the construction facility.

This procedure for granting land for RES is reflected in the aforementioned Methodological Guidelines on the procedure for obtaining permits for the installation and siting of energy facilities functioning on the basis of RES on the territory of Tajikistan.

However, the said Order of the Minister of Energy and Industry of Tajikistan has not passed state registration with the Ministry of Justice of Tajikistan. RLAs 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 the regulation of legal relations and application of sanctions for non-compliance with the instructions contained in them. Such regulations cannot be referred to when resolving disputes.

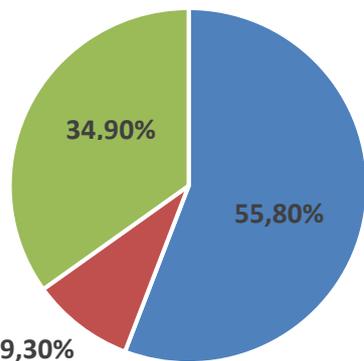
Participants at the FGD and the roundtable gave examples of small hydropower plants built with the support of international organisations not being able to be connected to the electricity grid because they did not have all the necessary permits, above all the certificate of land ownership.

Thus, the procedure for allocation of land for RES requires clarification and substantial revision. The legislation should clearly and concretely describe all aspects of land allocation for RES use; in this context, it seems appropriate to make appropriate changes and additions both to the Land Code of the RT and to the Rules on allocation of land for physical and legal persons, and, respectively, to the Methodological instructions to the procedure for obtaining permits for installation and location of energy facilities functioning on the basis of RES. At the same time, it is important to complete the procedure of state registration of the mentioned methodological instructions in the Ministry of Justice of Tajikistan.

Land legislation provides for a complex and multi-stage procedure for obtaining a certificate for a land plot intended for construction of RES and EE facilities. In addition, it is necessary to obtain a package of permits and approvals in accordance with the requirements of urban development, RAP master plans, SNIIP do not take into account the specifics of construction of RES and EE facilities, especially for RES installations up to 100 kW capacity. In particular, respondents to the Survey and Round Table questioned the need to undergo the State Environmental Expertise and Environmental Impact Assessment for installation of solar equipment up to 100 kW.

Chapter 8 of the Land Code of the RT provides for a set of measures implemented by land users regarding land protection. In particular, Article 53 stipulates that "Placement, design, construction and commissioning of new and reconstructed facilities, structures and facilities, as well as introduction of new technologies negatively affecting the condition of lands must provide for measures on land protection, ensuring compliance with environmental, sanitary, hygienic and other special requirements established by legislation, in an order established by the Government of the RT".

Figure 17: Environmental requirements of RES and EE legislation



Regarding the impact of environmental legislation requirements on the use of RES and EE on business development, 55.8% of respondents to the Survey believe that environmental requirements of legislation on the use of RES and EE provide benefits and additional benefits to their business, with 70% of them representing importers/exporters (supply and sale) of finished goods, equipment. 34.9% of the respondents believe that environmental requirements limit business development opportunities and reduce benefits, while 9.3% of the respondents believe that they oblige entities to bear the costs of compliance with environmental requirements. At the same time, there was a need to revise a number of environmental requirements to take into account the specifics of RES, which would reduce compliance costs and ensure business accessibility.

2.2.3. Impact of taxation and customs regime on renewable energy producers/suppliers

Regarding the tax regime for producers/suppliers of RES energy, it should be noted that according to the requirements of the Tax Code of the RT (hereinafter, the TC of the RT), taxation of entities producing electricity and heat is on the same terms, regardless of the type.

Individuals who operate RES installations for the energy supply of their non-profit activities are not subject to state registration and do not pay the taxes imposed on entrepreneurial activities, according to the Law on State Registration of Legal Entities and Individual Entrepreneurs.

For energy production activities, as for the production of goods in general, according to Article 109 of the TC of Tajikistan, the profit tax rate is set at 13%, which is 10% lower than for other activities.

According to Article 110 of the TC of the RT, 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 investment, starting from the date of initial state registration, if their founders have contributed to the charter capital of such enterprises within 12 calendar months after the date of state registration of the mentioned volume of investment. Entities operating in the field of RES will be able to use this incentive if they invest at least 2 million Somoni.

Chapter 46 of the TC of the RT establishes a preferential tax regime for hydropower plant construction. During the period of HPP construction, the customer and the general contractor of the construction may be fully or partially exempted from paying a number of taxes, the list, amounts and terms of payment of which are established by the Government of Tajikistan. However, firstly, this exemption applies only to HPP construction, i.e. does not apply to other types of RES; secondly, the decision-making procedure of the Government for small HPPs is complicated.

According to chapter 36 of the TC of Tajikistan, persons using water for electricity generation pay a water royalty of 0.06 per every 1,000 kWh of electricity produced as of the end of each month. According to Article 242 of the TC of Tajikistan, micro and mini power plants up to 1,000 kW are exempt from paying water royalty.

All these tax incentives apply to both conventional energy and energy produced from RES. However, there are no specific rules for renewable energy subjects, much less separately for solar energy, tax reductions or other tax preferences in the tax law.

According to Article 169 of the TC of the RT and Article 345 of the Customs Code of the RT (hereinafter - TC of the RT) all types of equipment for the production of goods, including for RES energy production, are exempt from customs duties and VAT provided that they are imported for replenishment of statutory fund. However, this exemption does not apply to individual entrepreneurs and natural persons.

There are incentives for the import of goods for the construction of hydropower plants, which are of special importance to Tajikistan, but the importance of the object is set by the Government of Tajikistan, and so far RES are not included in this category.

The Law of Tajikistan "On Investment Agreement" of 19 March 2013, No. 944 (as of 30 May 2017) may be used to soften the tax treatment of producers/providers of RES. This Law provides a special mechanism for regulating the relations arising between the state and the investor on the basis of investment agreements. This type of agreement is individual in nature and seeks to establish for individual investors a special legal regime (as extensive tax incentives), distinct from the general legal regime granted to other investors. However, the Law applies to investment projects that involve a substantial amount of investment, a high degree of financial, technological, environmental and other risks, and are of strategic importance for the economy of the Republic of Tajikistan. The criterion of "substantial volume of investment" effectively excludes the possibility of concluding an investment agreement with an energy producer from RES and providing them with special legal treatment, including tax incentives. In addition, the law envisages a ratification procedure for the signed investment agreement by the Majlisi Namoyandagon Majlisi Oli of Tajikistan, which seems to be difficult for small energy entities.

The new investment legislation in Tajikistan guarantees that once investment funds have been invested, the previous investment conditions will be maintained for 5 years, but the absence of relevant provisions in the Tax Code raises reasonable doubt as to their applicability.

Provision of tax incentives is also stipulated in the Law of RT "On Concessions" dated 26 December 2011, No. 783. According to this Law, local and foreign individuals and legal entities, with the exception of state organisations and institutions, may act as concessionaire. Granting of objects for concession is carried out on the basis of competition or on the basis of direct negotiations between the Government of the RT and the potential investor. Pursuant to Article 11 of the above Law and Article 2 of the TC of the RT, the concession agreement may contain provisions on granting tax concessions. The concession agreement is approved by the Majlisi Namoyandagon Majlisi Oli of the RT.

The rates of customs duties for imported goods into Tajikistan are determined by the Resolution 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 decree establishes a free trade regime and the application of a zero rate of import customs duty on import of goods originating from the member states of the Free Trade Zone Treaty of October 18, 2011 and from the countries with which bilateral agreements on free trade have been signed, except for the goods exempted from the free trade regime.

Regardless of the person, when importing equipment or goods for RES use from countries such as the Russian Federation, Republic of Kazakhstan, Uzbekistan, Kyrgyzstan, Belarus, Ukraine, customs duty is not levied and imports from other countries that are not part of free trade zones, customs duty rates for RES equipment and goods are between 5 and 10 per cent of their value.

According to Article 172 (1) of the TC of the RT, export of goods, except for precious metals and precious stones, jewellery made of precious metals and precious stones, primary aluminium, metal concentrates, ferrous and non-ferrous metal scrap, other metals produced in the Republic of Tajikistan, cocoons, goods produced in free economic zones, cotton fibre, cotton yarn and raw cotton is subject to value added tax (VAT) at zero rate. The zero rate of VAT is an export rate, which means that VAT paid in advance when purchasing goods from a supplier can be refunded from the budget. When exporting electricity from the Republic of Tajikistan, including that produced from RES, a zero rate of VAT is applied, which is in line with international standards for the application of VAT on export of goods.

2.2.4. Analysis of current standards on RE, energy conservation and energy efficiency

Based on directives and norms of European Union and Customs Union standards and implementation of Article 18 of the Law of RT "On the Use of Renewable Energy Sources" the

following national standards of RT on RES were approved by Order of the Agency for Standardization, Metrology, Certification and Trade Inspection under the Government of RT, No.07-st, dated September 1, 2010

- ST RT 51237-2010 "Non-conventional Energy. Wind power. Terms and definitions";
- ST RT 51238-2010 " Non-conventional energy. Small hydropower. Terms and definitions";
- ST RT 51594-2010 "Non-conventional energy. Solar energy. Terms and definitions";
- ST RT 51596-2010 "Non-conventional energy. Solar energy. Solar collectors. Test methods";
- ST RT 51595-2010 "Non-conventional energy. Solar energy. Solar collectors. General technical conditions";
- ST RT 51597-2010 "Non-traditional energy. Solar photovoltaic modules. Types and main parameters";
- ST RT 51388-2009 "Energy saving. Informing consumers about the energy efficiency of household and municipal products";
- ST RT 5.10-2010 "On Recommendations on Certification of Electrical Equipment and Electrical Power".

As can be seen from the above list, 4 of these eight standards relate directly to the use of solar energy.

The Action Plan for implementation of the State Programme "Quality" for 2013 -2015, which pays attention to the use of RES, energy saving and EE, was approved by Decree No. 512 of the Government of Tajikistan on October 2, 2012.

In order to implement the requirements of the Law on Energy Saving and Energy Efficiency of Tajikistan, the following national standards have been approved by Tajikstandard:

• *in the field of energy conservation:*

- ST RT GOST R 51387 Energy saving. Normative-methodical support. Main provisions.
- ST RT GOST R 51380 Energy saving. Methods of conformity confirmation of energy efficiency indicators of energy consuming products to their normative values. General requirements.
- ST RT GOST R 51541 Energy saving. Energy efficiency. Composition of indicators. General provisions.
- ST RT GOST R 51379 Energy saving. Energy passport of industrial consumer of fuel and energy resources. General provisions. Standard forms.

• *in the field of energy conservation and EE in buildings and structures as an interstate standard:*

- GOST 25380-2014 Energy saving. Buildings and structures. methods for measuring surface heat flux density and determining heat transfer coefficients between enclosing structures and the environment;
- GOST 31427-2010 Residential and Public Buildings. Composition of energy performance indicators.

The analysis of legislation and adopted standards showed that the development of the whole necessary package of normative and technical standardisation documents has not been completed, which hampers the proper and quality development of the RES, energy saving and EE sector.

It was noted by the FGD and the Roundtable that small hydropower plants are most often not commissioned because they do not comply with energy standards, which is why it is important to introduce a legal framework for the acceptance of micro hydropower plants. In addition, there is a very low awareness of the adopted standards among the stakeholders.

According to ACTED Tajikistan, a working group formed by them to study tourism standards has found that the existing standards do not meet modern requirements, and the employees of the State Standard have no idea what the standards should be, there is no knowledge, no defined approaches. Tourism organisations are certified and given permission for a tourism product, but only in relation to the product.

2.2.5. Tariff policy for the sale/supply of electricity and heat generated by RES

The tariff policy of Tajikistan for the sale/supply of RES-produced energy is developed on the basis of the Civil Code of Tajikistan (Part Two) of 11 December 1999, No. 884, the laws of Tajikistan "On Energy", "On the Use of Renewable Energy Sources", "On Natural Monopolies" of 5 March 2007, No. 235.

Chapter 29 "Purchase and Sale" of the Civil Code, 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 to maintain and operate networks, appliances and equipment, payment for energy, etc.

Decree No. 112 of the Ministry of Energy and Industry of 10 December 2010 approved the "Agreement on the Purchase and Sale of Electricity Produced from Renewable Energy Sources".

According to Article 17 of the Law "On Use of Renewable Energy Sources" "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 monopoly entities, upon submission by the authorised body for regulation of natural monopoly entities, are approved by the Government of Tajikistan".

The Decree of the Ministry of Energy and Industry of Tajikistan of December 28, 2010, #131 approved "Methodological guidelines for calculation of regulated tariffs for electricity generated by renewable energy installations", which are intended to be used by producers of energy using RES, wholesale buyers of electricity. However, the practice of their application revealed shortcomings in the proposed formula, which does not take into account a number of factors, including the failure to separate out the possible calculation of the tariff for electricity generated with the use of solar energy.

Decree No. 329 of the Government of Tajikistan of June 22, 2019, approved tariffs for electricity and heat, but not for RES, as according to the above-mentioned legal provision, a different price and tariff must be calculated for each type of RES.

It should also be kept in mind that by Decree of the Government of Tajikistan No. 259 of 27 May 2017, the Concept of Tariff Regulation in the Electricity Sector of the Republic of Tajikistan and the Action Plan for the Implementation of its First Phase were approved.

The Concept of Tariff Regulation in the Electricity Sector of the Republic of Tajikistan, approved by Resolution No. 259 of the Government of the Republic of Tajikistan, dated May 27, 2017, defines the strategic objectives and priorities of tariff regulation in the electricity sector, methods, ways to achieve these objectives and the main directions of transformation of electricity tariffs in Tajikistan. The goals and objectives of this Concept are:

- Balancing the interests between consumers and energy utilities by setting tariffs that reflect the actual costs of the utilities, taking into account social protection issues;
- A gradual withdrawal from the existing cross-subsidisation of electricity consumers;
- ensuring the financial sustainability of the electricity sector and attracting investment;
- promoting transparency, consistency and predictability in tariff regulation and minimising regulatory risks;
- facilitating discussions with consumers and providing information on tariff decisions;
- stimulating competition and efficiency in the industry,
- improving the quality and reliability of electricity supply, thereby mitigating the impact of higher tariffs on consumers, in particular vulnerable groups of the population.

The concept is to be implemented in three phases:

- 1) 2017-2020: Tariffs should cover the costs of electricity supply services for regulated entities;
- 2) 2021-2024: measures to achieve financial self-sufficiency of regulated enterprises, with relatively unchanged tariffs;
- 3) 2024-2028: further development of the industry and consideration of lower domestic tariffs.

In the first phase of the Tariff Policy Concept, revenue requirement projections will be prepared annually for each newly formed entity for a period of five years, after which the electricity tariffs will be revised accordingly and will be in force for a "control period" of one year. However, in order to minimise the cost of tariff revisions, the regulator may decide to introduce a multi-year tariff regime.

Deviations from the projected key assumptions on inflation, fuel costs and other factors can be accounted for by using an appropriate adjustment formula applied at the end of each year during the reference period.

The regulator will elaborate on the multi-annual tariff regime and the adjustment formula, if it is decided to introduce a multi-annual tariff. At the end of the reference period a tariff review will be carried out, during which the required revenues for the next reference period will be determined in accordance with the guidance on the required revenues set out above.

In order to mitigate the impact on electricity tariff increases for consumers, in accordance with the energy efficiency subsidy mechanisms established in the Law on Energy Saving and Energy Efficiency, the Government of Tajikistan will consider developing a mechanism to provide legal entities (in particular in the agricultural sector) and individuals (in particular low income and vulnerable consumers) with subsidies, loans and other benefits. The Government of Tajikistan may set preferential (social) tariffs for low-income and vulnerable consumers.

In accordance with Article 17 of the Law on the Use of Renewable Energy Sources, prices and tariffs for energy produced from RES, taking into account the costs of energy produced and support for the development of the use of renewable energy sources for sale to natural monopoly entities, are approved by the Government of the RT upon presentation by the competent authority for the regulation of natural monopoly entities. The energy from RES is sold by the subject of natural monopolies at prices established for the products of natural monopolies, and the difference between the prices established for RES energy is covered by the tariffs established for the products of the subject of natural monopolies, taking into account foreseeable losses.

It should be noted that initially the Law referred the setting of energy prices and tariffs to the competence of the authorized anti-monopoly body. Unfortunately, in 2015 the Law was amended, including the inclusion of this issue in the competence of the Government of Tajikistan, which significantly impedes the possibility to approve tariffs and consequently the sale of RES-produced energy to small energy entities. This issue needs to be legally reconsidered, and with the restructuring of Barki Tojik, the creation of a regulatory body is being considered, and there is a need to explore the issue of selling electricity directly to consumers.

2.3. Assessing the impact of implemented national strategies and programmes on increasing the use of RES and increasing EE in CBT industry

2.3.1. Review of the Master Plan for the Development of the Energy Sector of the Republic of Tajikistan

As noted above in Section 1 of this Analysis, the previously adopted energy sector development programmes of Tajikistan expired last year and a new programme document is just being drafted.

The MEWR website in the section "Power Sector Programmes" contains the Energy Sector Development Master Plan of the Republic of Tajikistan (hereinafter referred to as the Master Plan)¹ in two volumes, which is the Final Report of the study carried out within the framework of the Regional Power Transmission Project "Improving Sector Operations", dated February 2017. Apparently, in the absence of a formally approved sector development programme or strategy, this voluminous document can be seen as a coherent vision for sector development, or a basis for developing a sector programme.

The master plan was developed by Corporate Solutions Consulting Limited (CSCL) and Manitoba Hydro International Ltd. (MHI), commissioned by the Asian Development Bank (ADB). This document presents parameters, criteria, generation options, and outlines and analyses plans to expand the unified power system for new additional generation and transmission resources, taking into account increasing demand, obsolescence of existing generation assets and the economic value

of potential generation resources to meet growing demand.

Energy efficiency programme, generation expansion plans have been formulated and investigated for the following three options: 1) without Rogun HPP; 2) with Rogun HPP; 3) with early commissioning of Rogun HPP. The generation resources and technologies used in the General Plan include water, coal, natural gas, fuel oil and non-water RES such as wind, solar, geothermal and biomass. It has been determined that each generation expansion plan under study will include a total of 20 MW of wind power (2 power plants of 10 MW each) and 50 MW of photovoltaic solar power, to be spread evenly over 5 years, from 2021 to 2025.

It is obvious that the General Plan is focused on the development of large projects and entities, and does not reflect the interests of small and medium-sized businesses to increase profits, production and sales; there are not even prerequisites for the development of renewable energy entrepreneurship.

2.3.2. Review of the Tourism Development Strategy in the Republic of Tajikistan until 2030 and the Action Plan for the Implementation of the Tourism Development Strategy in the Republic of Tajikistan until 2030 for 2019-2022

The Tourism Development Strategy of the Republic of Tajikistan for the period until 2030, approved by Resolution No. 372 of the Government of Tajikistan, dated 1 August 2018 (hereinafter the Strategy) defines the goals, objectives and priority areas of development of the country's tourism industry until 2030 and is a factor in forming plans and guidelines for entrepreneurial initiatives of citizens in the country's tourism industry.

It is noted that the tourism resources of the Republic are not used properly and in accordance with modern international tourism standards, nor are favourable conditions created for tourists. Therefore, the aim is to continue reform in this area and significantly increase the contribution of the tourism industry to the socio-economic development of the country.

The main objective of the Strategy is to ensure the sustainable development of tourism in the country. The strategic objectives include the formation of an institutional framework for the development of the tourism industry; the formation of a modern tourism infrastructure; compliance with international standards; and ensuring the safety of tourists.

The Strategy defines a set of basic measures to achieve its objectives, in particular the development of road transport infrastructure, including modern roadside facilities for sanitation and technical services; development of mountain and eco-tourism infrastructure; improvement of the investment climate of the tourism industry; environmental protection and environmental safety.

The Strategy identifies eco-tourism, therapeutic and health tourism, recreational tourism, historical and cultural tourism, mountaineering and hunting as priority tourism sectors for Tajikistan.

The Strategy notes that, at this stage, awareness of the importance and profitability of tourism development within the private sector is not so visible. The public and private sectors need to raise public awareness of the importance of tourism development, its impact on the development of the country and the role of each individual in the development of the industry. To this end, a nationwide campaign under the slogan "Tourism - Entrepreneurship Opportunity for All" and an intensified advertising campaign through the media and the Internet are planned.

Implementing the planned measures to develop the tourism industry, the Government of Tajikistan has provided important tax and customs benefits to tourism companies, they are exempt from income tax for the first five years of operation, and imports of equipment, machinery and construction materials for the construction of tourism facilities are exempt from value added tax and customs duties. Duty on imports of new cars has also been reduced by 50 per cent.

Decree No. 189 of the Government of Tajikistan dated 12 April 2018 approved a list of tourist facilities for the construction of which the importation of equipment, machinery and construction materials is exempt from value added tax and customs duties, but RES subjects are not included in this list.

The list and quantities of equipment, machinery and imported construction materials shall be submitted in accordance with the established procedure in coordination with the authorized state body

in the field of tourism and shall be approved by the Government of the RT. Following the adoption of this decree, a complete and specific mechanism for the implementation of tax and customs exemptions for the creation of tourism infrastructure has been defined.

2.3.3. Objectives of the Green Economy Concept in Tajikistan and Sustainable Tourism

The concept of green economy is outlined in NDS 2030, which notes that the sources of economic growth could include efficient use of human capital, new transit infrastructure and economic corridors, export-oriented and import-substituting development, increased export of services and products with high added value, development of organic agriculture, ***renewable and clean energy sources as the basis for green economy***, expansion of the integrated management mechanism

The Medium-Term Development Programme of the Republic of Tajikistan for 2021-2025 (30 April 2021, No. 168) provides for the development of a green economy. (April 30, 2021, No. 168) provides for the development of a "green economy". Ensuring environmental sustainability and adaptation of the country's economy to climate change on the basis of the green economy principle" is included in the cross-sectoral priorities, and with this in mind the action lines in the Programme blocks are defined, the implementation of green economy projects, green infrastructure and green trade, creation of economic corridors, formalisation of the economy and acceleration of economic development of trading partners are outlined. The medium-term goals, which will ensure the country's transition to a qualitatively new model of development, include improving the efficient use of national resources and the country's geographical and infrastructural potential through the implementation of green economy principles.

Areas of action to implement this objective include the construction of hydropower plants of various capacities; production of electricity from other RES (solar and wind) in mountainous and favourable areas; the launch of industrial production of solar panels and equipment at manufacturing plants using domestic raw materials (silicon raw materials) in order to reduce the cost of producing electricity from this source.

In the tourism sector, the green trend has been present since the 2000s. Initially, these were so-called green programmes offering 'clean' holidays to tourists. The programmes were followed by eco-friendly hotels and other eco-friendly accommodations. Rural tourism, vegan tours and "slow travel" fall into this category. For example, the Hotel Energy Solutions programme in France, Germany and Spain advises hoteliers on how to cut electricity consumption and gradually switch to alternative sources. The world rankings to determine the best eco-hotels show that this direction is most actively developing in Africa, Asia and South America, which indicates a significant development in these regions and eco-tourism.

In the future, the greening of tourism will be accompanied by further exclusion of traditional tourism products from the tourism market, the development of designing tours according to the parameters of environmental preferences of specific customers, and, consequently, the advantage in competition will go to those tourism businesses that can best introduce green technologies in the production of tourism services. The World Tourism Organization states that green tourism is designed to conserve natural resources, preserve cultural heritage and bring benefits to all parties involved.

Thus, the greening of tourism has various manifestations, which include the greening of tourism programmes, the development of green eco-trails and the use of green technologies in the hospitality sector. Tajikistan has considerable potential in this regard.

However, the introduction of a green economy also brings challenges, such as

- risks to the competitiveness of the national economy;
- an increase in production costs;
- strengthening the role of the state in economic processes;
- risks of bureaucratisation and increased taxes;
- possible price increases and the loss of jobs in environmentally unsustainable industries;
- difficult conditions for doing business within a single country.

The aim of a green economy is to increase the well-being of society by reducing pressure on the ecosystem, so it is important to find a balance between social policy, the economy and the environment.

3. CONCLUSIONS, GAPS IN LEGISLATION, POLICY DOCUMENTS AND IMPLEMENTED POLICIES OF THE REPUBLIC OF TAJIKISTAN IN THE FIELD OF PRODUCTION AND CONSUMPTION OF RENEWABLE ENERGY, INCREASE IN EE IN THE CBT INDUSTRY. LIST OF IDENTIFIED PROBLEMS

The conducted legal analysis, the synthesis of the results of the Survey, FGDs and Round Table suggest the following **gaps and shortcomings in the regulatory framework and the implemented policies of Tajikistan** in the field of RES-based energy generation and consumption and EE growth in the CBT sector:

- The Law of RT "On Energy" does not define the legal status of RES subjects, their rights and obligations, nor is there a mechanism for regulating the price and tariff policy of the state in the energy sector in general, and in the area of RES use in particular;
 - The Law of RT "On the Use of Renewable Energy Sources" does not define a mechanism for the authorised body in the energy sector to purchase electricity from the owner of the power plant in the area of decentralised energy supply, where there are no electricity distribution networks, electricity metering system and operating staff of the authorised body (energy supplying organisation). In order to ensure appropriate conditions for the RES entities to carry out legal activities to provide all types of energy services in the areas of decentralised energy supply, where the authorised body (energy supplying organisation) does not have electricity distribution networks, electricity metering system and operating personnel, it is appropriate to grant the status of "energy supplying organisation" to the RES entities;
 - Article 17 of this Law was amended, according to which prices and tariffs for energy produced from RES are approved by the Government of Tajikistan upon submission of the authorised body for regulation of natural monopolies, which significantly complicated the procedure of price and tariff setting, including for power systems up to 100 kW, whereas previously prices and tariffs were set by order of the head of the authorised antimonopoly body;
 - The completed reconstruction of Barki Tojik requires amendments to the laws of Tajikistan in the field of energy, RES and EE;
 - There is no legal provision for an independent energy audit;
 - There is no mechanism in the legislation on how the authorised body organises the purchase of electricity from the owner of the power plant when the power supply company has no electricity distribution networks, no electricity metering system and no staff in the area of decentralised energy supply;
 - It is important to introduce a legal framework for the acceptance of micro-hydropower plants and to define the procedure for calculating the cost of the electricity they generate;
 - A significant gap in the legal regulation of the energy, EE and CBT sectors of Tajikistan is the lack of implementation of previously adopted by-laws, their updating in accordance with the new realities in the sectors - reform of management institutions, establishment of new priorities, impact of external factors, etc.
 - The State cadastre of RES and the Catalogue of RES installations have not been created;
 - The Renewable Energy, Energy Saving and Energy Efficiency Development Fund, stipulated by Article 27 of the Energy Saving and Energy Efficiency Law of Tajikistan, has not yet been established, and the Regulation of the Fund has not been approved;
 - There is no direct reference in the Land Code to the category of land provided for the construction of energy facilities;
 - The procedure for granting a land plot for the erection/construction of RES needs to be clarified and substantially refined;
- Order of the Minister of Energy and Industry of December 3, 2010, No. 111 "On approval of Methodological instructions to the procedure for obtaining permission for installation and location of energy facilities operating on the basis of renewable energy sources on the territory of the Republic of Tajikistan" has not passed state registration in the Ministry of Justice of Tajikistan;
- There are no specific rules for RES subjects in the tax legislation;
 - import privileges for the construction of hydropower plants, which are of particular

importance to Tajikistan, are not granted to RES;

- The development of the whole necessary package of normative-technical standardisation documents has not been completed, which hinders the proper and quality development of RES, energy saving and EE;

- Methodological guidelines for calculation of regulated tariffs for electricity generated by renewable energy installations", approved by Decree of the Ministry of Energy and Industry of Tajikistan No.131 of 28 December 2010, has shortcomings in the proposed formula, which does not take into account a number of factors, including not separately identifying a possible tariff calculation for electricity generated with the use of solar energy;

- Decree of the Government of Tajikistan, 22 June 2019, No. 329 "On Electricity and Heat Tariffs" does not include tariffs for RES-produced energy;

- For producers/suppliers of RES, especially micro-generation entities, complex conciliation procedures are defined, many of which are handled by central authorities;

- There is no policy document for the development of the energy sector for the next period;

- The Master Plan for the Development of the Energy Sector of Tajikistan focuses on the development of large projects and entities, and does not reflect the interests of small and medium businesses to increase profits, production and sales volumes, nor even the preconditions for the development of renewable energy entrepreneurship;

- Decree No. 189 of the Government of Tajikistan dated 12 April 2018 approved a list of tourist facilities for the construction of which the importation of equipment, machinery and construction materials is exempt from value added tax and customs duties, but RES subjects are not included in this list;

- the list of tourist facilities for the construction of which the importation of equipment, machinery and construction materials is exempt from value added tax and customs duties, approved by Decree No. 189 of the Government of Tajikistan, dated 12 April 2018, does not include RES entities;

- no separate document on the development of a green economy has been developed.

The cause-effect relationships of the problems hindering the sustainable development of RES and EE production in the CBT sector according to the main factors can be presented as follows:

"INFORMATION".

Environmental issues:

Lack of ability of MSMEs to collect, analyse technical information, copy (adopt experience in using RES, EE sources for green benefits) on their own.

Reasons:

- Low level of literacy of CBT subjects on the use of RES and EE.
- Lack of funds for specialist consultants.
- Limited technical, economic, financial information except for advertising.
- The problems of the public administration system:
- Limited information for management decision-making at the level of authorised authorities on the actual needs of the tourism sector and macro-generation trends.

Lack of a reporting and monitoring system for RES and EE development.

Reasons

- Lack of adequate accountability and informing decision-making.
- Lack of assessment of the impact of legislation and policies on RES and EE development.
- Low awareness of the responsible staff of the involved ministries and agencies of the strategies and programmes in place for the development of tourism in the country.
- The quality of statistics and data does not meet the needs of users in developing investment plans and significantly reduces the quality of developed renewable energy and EE policies.
- Time-consuming process of monitoring and evaluating actual impact, lack of budgetary resources.

- Lack of social partnership and participation of civil society and MSME actors in RES and

EE decision-making due to low awareness and legal literacy.

- Low capacity of the responsible state structures to ensure broad participation and social partnership in decision-making.
- Lack of available information on hydrotechnical data on small river channels, tributaries, irrigation canals (fast-flowing rivers), mapping of resources, capacities, water projections.
- Lack of basic knowledge among tourism practitioners.
- Lack of funds for specialist consultants.
- Limited technical, economic, financial information except for advertising.
- Limited access to up-to-date departmental NLAs and statistical data on RES, in particular there is no mapping of the country on the use of RES, no data on total installed RES capacity by region.
- There is no information platform to demonstrate modern methods and examples of energy saving, energy efficiency, where examples of EE compliance can be shown.
- Lack of awareness among businesses, the public about the benefits of renewable energy.

"**TECHNOLOGY**" - the availability of technology, the ability to choose technical solutions that bring benefits and public utility, provide cost-effectiveness, cost-recovery and allow for additional profits from the introduction of technology.

The problem of the environment

Low level of technology development in the field of RES and EE.

Reasons:

- Underdevelopment of applied research in public and private research institutions
- Weak level of technology borrowing and imports from other countries
- High technological dependence in the use of equipment, production methods, renewable energy generation, use of materials, EE systems
 - Lack of incentive and preferential tax and customs regimes for the supply of complete sets and equipment to an undetermined range of potential consumers (buyers), in particular production and process equipment for RES and EE (except for large HPP equipment) are not included in the list of goods, approved by Resolution No. 93 of the Government of the Republic of Tajikistan, dated 2 March 2013, which are exempt from customs duty and value added tax
 - Underdevelopment of technology consultancy, high cost of developing individual projects (feasibility studies), business plans, technical projects.
 - Practical absence of involvement of specialists from the Department of New Technologies of the Ministry of Industry and New Technologies of the RT to solve technological problems in the field of RES and EE development.

For equipment developers and manufacturers (RE suppliers):

- Lack of state support measures for R&D.
 - Underdeveloped innovation support institutions and infrastructure, lack of budgetary resources for the practical implementation of state support measures.
 - Lagging of the technical regulation system and unreasonable barriers in the form of standards, approved types of measuring instruments, ensuring conformity assessment and confirmation of safety of commissioned utility systems, units of generating equipment.
 - Regulatory-technical linkage to conventional technology through mandatory energy supply requirements for properties, certain types of services.
 - Use, production, import of energy-intensive equipment and machinery with low EE
- For the CBT sector
- Low literacy and knowledge of the use of renewable energy.
 - There is no practical experience in the use of advances in mechanics, thermal engineering, and biogas production from renewable energy.
 - Lack of specific knowledge about the use of traditional materials for energy saving, conservation purposes.
 - There is a stereotype that these technologies are difficult to maintain and expensive.

- Complexity of selection, independent design, technical and economic calculations of feasibility of selection of machinery, equipment and technologies for energy supply of tourism objects and production of individual services on the basis of RES.

"ECOLOGY" is a growth factor in the use of RES, EE.

A reasonable balance between regulatory costs, prohibitions on the use of hydrocarbons and the use of natural RES resources (water from surface runoff from small rivers, tributaries, irrigation canals, discharge structures (sluices) including hydropower plants, geothermal water, and a limited natural resource - land).

- Low awareness of approved environmental standards for RES and EE among MSME actors.
- There is a lack of "green certification" of facilities, and in particular of CBT subjects.
- Lack of adequate systems for assessing environmental risks and threats from the siting of micro-generation facilities on renewable energy sources.
- Low extra benefits for MSMEs from using high environmental standards in their operations.
- Inapplicability of the environmental requirements for industrial energy generation facilities to the design, construction, installation, operation of micro-generation facilities at household and CBT levels.

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

Land use and land tenure. Regulation of land use, water use - in cities and settlements, outside on land of different categories, development management (design and construction of alternative energy facilities).

- Placement of small-scale renewable energy facilities on land plots included in residential buildings and their certification;
- No land allocation within residential areas for small-scale generation facilities and no regulations (except for land allocation for traditional energy facilities);
- Lack of a legal and regulatory framework for the location of micro-generation facilities.
- Gap in regulation and management of land and water use (hydropower) return use of water into river channels, irrigation canals without actual consumption. (water bodies are located on land plots).
- High administrative barriers (procedure and procedures for obtaining permits, approvals similar to the construction of urban development projects).

"CAPITAL - FINANCE". - a key resource for development and growth.

- Lack of state grant support and soft earmarked lending dependence on imported renewable energy and EE technologies and equipment.
- The lack of preferential targeted credits for RES, EE and CBT subjects from special development funds causes low application of RES and EE in the tourism sector at the community level), increases the payback period of investments and affects the high interest rate of lending institutions.
- Low application of public-private partnerships in RES and EE.
- It is precisely where renewables are used that lending is complicated, in remote mountainous areas, where there are no bank branches or banking centres.
- Low availability of financial resources for producers/suppliers of renewable energy, CBT subjects.

"HUMAN RESOURCES". - Competences and competences

- There is a shortage of mid-level professionals as well as blue-collar jobs in the energy sector, and for remote mountainous regions, which is a constraint to ensuring the design and operation of RES facilities, the implemented state support measures in this area are insufficient.
- Lack of educational programmes and courses in the vocational training system with a focus on the training of specialists in the production and maintenance of RES and EE.

- There is a shortage of design engineers, RES equipment maintenance and installation specialists, small energy and RES facility builders, managers and marketers.
- Lack of involvement and interest of scientists from institutes of the National Academy of Sciences of Tajikistan.
- Low level of competence of renewable energy and EE entrepreneurs in generation technologies, renewable energy; business planning and marketing, financial management and others.
- Lack of specialised retraining courses for RES and EE specialists and managers
- Insufficient attention to creating new in-demand professions in HEIs and vocational schools in the field of RES and EE.
- Lack of thematic workshops and trainings for stakeholders and CBT entities on the use of RES and EE.
- Incomplete educational standards and curricula of HEIs and vocational schools on RES and EE generation and application.
- Limited public access to educational information and materials via the internet.
- Insufficient development of professional networks and associations.

"Entrepreneurship and Investment Initiative" - the engine for the development of generation, clean energy consumption, EE

- Low level of application of the PPP mechanism in RES and EE.
- Underdeveloped entrepreneurial infrastructure.
- Lack of experience and successful practices in using RES for benefits.
- The investment initiative is hampered by high administrative and regulatory barriers, with costs as a percentage of the cost of acquiring microgeneration equipment.
- Lack of technological support for IMSBs and R&D.
- Lack of engineering services provided by business support centres and their underdevelopment.
- Lack of simple and clear rules in state regulation when selling surplus energy to third parties.
- The lack of interest of conventional energy actors in the growth of consumer EE deters investment in EE.

GLOSSARY

State regulation is the reasonable establishment of rights and obligations, requirements and conditions for the conduct of certain business activities.

Decentralisation of energy is a type of sectoral policy aimed at developing small-scale energy.

Household - a form of economic activity, for the use of property complex, uniting people by labour relations, the smallest and most massive unit of the national economy, quite an independent subject of market relations.

Engineering services are specialised services that provide technical support for individual activities from the design and construction phase through to the operation of the facility.

Local renewable energy systems are autonomous complexes of energy generation, transmission, storage and consumption.

Small-scale energy is a segment of the energy (market) sector comprising small-scale generation plants and small-scale generation complexes, including those not connected to the centralised electricity grid, operating on traditional fuels and on renewable energy sources (RES).

Micro-generation is the production (generation) of electricity, heat by very small capacity facilities. (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 - either off- grid or in parallel with the grid).

Tourism infrastructure facilities - engineering support systems that consume energy resources and generate, transmit and store energy.

Tourism facilities - buildings, structures and engineering infrastructure.

Suppliers - firms, companies, organisations, individual entrepreneurs producers of goods, works, services.

Consumers - private entrepreneurs in the community-based tourism sector with the intention to use technologies, equipment, resources to generate clean energy from renewable sources and to apply technologies and materials for energy-efficient resource use.

Distributed energy is a model for the operation of a unified energy system that allows small- scale energy entities to supply generated energy to distribution companies.

CBT entities - natural persons, legal entities, citizens engaged in economic activities, to provide tourism services in local areas, using their property, in order to generate 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.

Tourism services are the activities of an entrepreneur aimed at generating income and profit by meeting the needs of the tourist (citizen).

Energy audit is a type of specialised activity to provide expert advisory services, an external energy efficiency assessment.

Energy efficiency - rational use (consumption) of energy resources while maintaining the quality of tourism services and maintaining (improving) the level of comfort in compliance with the necessary standards, regulations.

ANNEX 1. List of normative legal acts, strategic and policy documents of the Republic of Tajikistan having an impact on the growth and development of the RES, EE sector, tourism development, at CBT level, micro generation and local energy supply development of tourism facilities

1. LAWS AND CODES OF THE REPUBLIC OF TAJIKISTAN

1. Constitution of the Republic of Tajikistan of 6 November 1994. (amended in 1999, 2003, 2016).
2. Law of RT "On energy" dated November 29, 2000, № 33 (amended on 28.12.2013).
3. Law of RT "On the Use of Renewable Energy Sources" of 12 January 2010, No. 587 (as of 23 November 2015).
4. Law of Tajikistan "On Energy Saving and Energy Efficiency" of 19 September 2013, No. 1018.
5. Law of RT "On Tourism" of 7 August 2020, No. 1718.
6. Law of Tajikistan "On Domestic Tourism" of 7 August 2020, No. 1718.
7. Law of RT "On Mountain Regions of the Republic of Tajikistan", 22 July 2013, No. 1003.
8. Law of Tajikistan "On Licensing of Certain Types of Activities", May 17, 2004, No. 37 (as of July 04, 2020).
9. Law of RT "On Natural Monopolies" of 5 March 2007, No. 235 (as of 18 July 2017).
10. Law of RT "On Production Sharing Agreements", 05 March 2007, No. 238 (as of 01 August 2012).
11. Law of RT "On Investments", March 15, 2016, No. 1299 (as of August 03, 2018)
12. Law of the Republic of Tajikistan "On Investment Agreement" of March 19, 2013, No. 944 (as of May 30, 2017).
13. Law of the Republic of Tajikistan "On Safety of Hydraulic Structures", 29 December 2010, No. 666 (as of 17 May 2018).
14. Law of the RT "On Environmental Protection" of 02 August 2011, No. 760 (as of 18 July 2017).
15. Law of the RT "On Environmental Impact Assessment", 18 July 2017, No. 1448.
16. Law of RT "On State Registration of Legal Entities and Individual Entrepreneurs", 19 May 2009, No. 508 (as of 02 January 2020).
17. Law of RT "On state registration of immovable property and rights thereto" of 20 March 2008, No. 375 (as of 04 July 2020).
18. Law No. 522 of May 19, 2009 on Technical Regulation (as of June 28, 2011).
19. Law No. 759 of RT on Conformity Assessment, 02 August 2011 (as of 01 August 2012).
20. Law No.314 of Tajikistan On Certification of Products and Services of December 13, 1996 (as of July 3, 2007).
21. Law #668 of RT On Standardization, December 29, 2010 (as of April 6, 2012).
22. Water Code of the RT, dated April 02, 2020, No. 1688.
Section I. General provisions. Chapter I. Basic provisions. Art. 7: Competence of local executive bodies of state power in the area of water regulation.
Section II. Water use. Chapter 6. Procedures and conditions for provision of water bodies for use. Economic conditions for the provision of water bodies for use.
Chapter 12. "Use of water objects for industrial purposes and for hydropower needs". Article 83. Use of water bodies for the needs of hydropower industry. Article 84. Rights and duties of hydropower enterprises for water use. 23.
23. Civil Code (Part Two), 11 December 1999, No. 884 (as of 02 January 2019).
Section IV. Separate types of obligations. Chapter 29. Purchase and sale.
24. Land Code of the Republic of Tajikistan of 13 December 1996, No. 326 (as of 14 November 2016).
25. Code of the Republic of Tajikistan on Administrative Offences of 31 December 2008, No. 455 (as of 17 December 2020).
Chapter 23. Administrative offences in the field of energy and use of energy resources
26. Tax Code of the Republic of Tajikistan, September 17, 2012, #901 (as of December 17, 2020).
Section XII. Taxes for natural resources. Chapter 36. Royalties for water.

Section XVII. Preferential tax regimes. Chapter 46. Taxation of construction of hydropower stations. Article 312. Relief for construction of hydropower plants.

2. DECREES OF THE PRESIDENT OF THE REPUBLIC OF TAJIKISTAN

1. Decree of the President of the Republic of Tajikistan of 24 April 2009 No 653 "On Additional Measures for Economical Use of Energy and Energy Saving".
2. Decree of the President of the Republic of Tajikistan dated January 2, 2019, No. 1170 "On declaring 2019-2021 as the years of rural development, tourism and folk crafts".

3. RESOLUTIONS OF THE GOVERNMENT OF THE REPUBLIC OF TAJIKISTAN

3.1. NATIONAL STRATEGIES, CONCEPTS AND PROGRAMMES

3. National Development Strategy of the Republic of Tajikistan until 2030 (approved by Decree of Majlisi Namoyandagon Majlisi Oli of the Republic of Tajikistan, No. 636 of 1 December 2016).
4. Tourism Development Strategy of the Republic of Tajikistan for the period until 2030 (approved by the Resolution of the Government of the Republic of Tajikistan dated 1 August 2018, No. 372).
5. The concept of tariff regulation in the electric power sector of the Republic of Tajikistan (approved by the Resolution of the Government of the Republic of Tajikistan dated May 27, 2017, No. 259).
6. Long-term programme for construction of small power plants for the period 2009-2020 (approved by the Resolution of the Government of the Republic of Tajikistan dated February 2, 2009, No. 73).
7. Renewable Energy Development and Small Hydropower Construction Programme for 2016-2020 (approved by the Resolution of the Government of the Republic of Tajikistan dated 30 December 2015, No. 796)
8. National Climate Change Adaptation Strategy of the Republic of Tajikistan until 2030.

3.2. REGULATORY

9. Decree of the Government of the Republic of Tajikistan of 5 September 2015, No. 564 "On Establishment of the Inter-Ministerial Council for Coordination of Activities in the Field of Tourism under the Government of the Republic of Tajikistan".
10. Decree of the Government of the Republic of Tajikistan of March 3, 2011, No.116 "On approval of the Rules of Maintenance of the State Renewable Energy Cadastre".
11. Rules on allocation of land plots for physical and legal entities (approved by Government Decree of the Republic of Tajikistan, #342 dated September 1, 2005).
12. Rules for use of electric energy. (approved by the Resolution #84 of the Government of the Republic of Tajikistan on March 6, 1998).
13. Decree of the Government of the Republic of Tajikistan of March 4, 2003, #95 "On approval of the Rules on using water bodies for hydropower needs". 14.
14. Procedure and conditions for exemption of dekhkan (private) farms from payment for connection of electric power, water supply (without use of structures or technical equipment) (approved by the Resolution of the Government of the Republic of Tajikistan, #702 of December 30, 2009).
15. Resolution of the Government of the Republic of Tajikistan dated December 31, 1997, #572 "On regulation of heat and electric energy consumption in the national economy of the Republic of Tajikistan".
16. Decree of the Government of Tajikistan dated June 22, 2019, No.329 "On Tariffs for Electricity and Heat".
17. Decree of the Government of the Republic of Tajikistan of 3 April 2007, No. 72 "On approval of the Regulation "On peculiarities of licensing certain types of activities" (as of 25 February 2017).
18. Resolution of the Government of the Republic of Tajikistan of March 2, 2013, No. 93 "On the

List of agricultural machinery, production and technological equipment and its components forming a single technological set imported into the Republic of Tajikistan, which are exempted from value added tax and customs duty" (as of July 28, 2017).

19. Resolution of the Government of the Republic of Tajikistan of June 18, 2012, № 310 "On the List of goods (works, services) subject to mandatory certification" (as of 29 September 2017).
20. Decree of the Government of the Republic of Tajikistan of 12 April 2018, No.189 "On the list of tourist facilities for the establishment of which the importation of equipment, machinery and construction materials is exempt from value added tax and customs duties".

4. DEPARTMENTAL BY-LAWS

1. Order of the Ministry of Energy and Industry of the Republic of Tajikistan of December 03, 2010, №111). "Rules for maintaining a catalogue of renewable energy installations of the Republic of Tajikistan".
2. Order of the Ministry of Energy and Industry of the Republic of Tajikistan № 112 of December 10, 2010. "On approval of the standard agreement for purchase and sale of electricity generated from renewable energy sources".
3. Decree of the Ministry of Energy and Industry of the Republic of Tajikistan No.112 of December 10, 2010. "On approval of the Regulations on the order of connection (connection) of renewable energy installations to the common power grid".
4. Decree of the Ministry of Energy and Industry of the Republic of Tajikistan No.112 of December 10, 2010. "On approval of Safety Regulations for operation of renewable energy installations in the Republic of Tajikistan".
5. Decree of the Ministry of Energy and Industry of the Republic of Tajikistan №112 of December 10, 2010. "On approval of the Regulation on the relationship between the grid operator (dispatcher of the energy supplying organization) and the operating personnel or person responsible for operation of the technological and electrical equipment of the energy producer using renewable energy sources (RES)".
6. Order of the Ministry of Energy and Industry of the Republic of Tajikistan of December 28, 2010, #1316 "Methodological instructions for calculation of regulated tariffs for electric (thermal) energy generated by RES facilities in the Republic of Tajikistan". Application for Preliminary Approval of the Project for Construction of a Power Plant Using Renewable Energy Sources. Application for approval of construction of RES power plants. 7.
7. Order of the Ministry of Energy and Industry of Republic of Tajikistan #111 from December 3, 2010: "Guidelines on obtaining permission to install and operate power plants using renewable energy sources in the territory of Tajikistan".
8. Regulations on the Register of Natural Monopoly Entities (Approved by the Order of the Director of the State Agency for Antimonopoly Policy and Support of Entrepreneurship under the Government of the Republic of Tajikistan on December 13th, 2002, №55).
9. Procedure for determining the prices (tariffs) or their marginal level of the economic entities occupying the dominant position in the commodity market of the Republic of Tajikistan (approved by the Order of the Ministry of Economic Development and Trade of the Republic of Tajikistan dated 5 March 2007, No.3).

5. INTERNATIONAL LEGAL ACTS RECOGNIZED BY TAJIKISTAN

10. Energy Charter Treaty (ratified by Decree of Majlisi Oli of the RT, dated January 3, 1997, #10).
11. Agreement on cooperation of Commonwealth of Independent States member states in the area of energy efficiency and energy saving of October 7 2002. (approved by the Resolution #257 of the Government of RT on June 06, 2003).
12. CIS Free Trade Zone Treaty of October 18, 2011 (ratified by Decree of the Majlisi Namoyandagon Majlisi Oli of the RT, December 24, 2015, No. 285).
13. World Trade Organisation Agreement on Trade Facilitation (ratified by the Majlisi Namoyandagon Majlisi Oli of the RT, May 06, 2015).
14. Agreement between the Government of the Republic of Tajikistan and the Government of the

Russian Federation on Avoidance of Double Taxation and Prevention of Fiscal Evasion on Income and Capital (ratified by Decree of the Majlisi Oli of the RT dated November 13, 1998, No.701).

15. Agreement between the Republic of Tajikistan and the Kyrgyz Republic on Avoidance of Double Taxation and Prevention of Fiscal Evasion on Income and Capital (ratified by the Resolution of Majlisi Oli of the RT, No.701, November 13, 1998).
16. Decision of the CIS Economic Council on Main areas and principles of cooperation of the Commonwealth of Independent States member states in the area of energy efficiency and energy saving of March 11, 2005.
17. United Nations Framework Convention "On Climate Change" (joined by the Decree of Majlisi Oli of the RT on December 13th , 1997, #533).

6. NATIONAL STANDARDS

1. 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 Order of the Agency for Standardization, Metrology, Certification and Trade Inspection of September 1, 2010, #07).
2. Standard of the Republic of Tajikistan No. ST HT GOST R 51237-2010. Non-conventional energy. Wind energy. Terms and definitions. (Approved and put into effect by Order of the Agency for Standardization, Metrology, Certification and Trade Inspection of 1 September 2010, #07-st).
3. Standard of the Republic of Tajikistan No. ST HT GOST R 51238-2010. Non-conventional energy. Small hydropower engineering. Terms and definitions. (Approved and put into effect by Order of Agency for Standardization, Metrology, Certification and Trade Inspection of September 1, 2010, #07-st).
4. Standard of the Republic of Tajikistan No. ST HT GOST R 51594-2010. Non-conventional energy. Solar energy. Terms and definitions. (Approved and put into effect by the Agency for Standardization, Metrology, Certification and Trade Inspection Order of September 1, 2010, #07-st).
5. Standard of the Republic of Tajikistan No. ST HT GOST R 51595-2010. Non-traditional energy Solar energy. Solar collectors. General technical conditions. (Approved and put into effect by Order №07-st of the Agency for Standardization, Metrology, Certification and Trade Inspection of September 1, 2010).
6. Standard of the Republic of Tajikistan No. ST HT GOST R 51596-2010. Non-traditional energy Solar energy. Solar collectors. Test methods. (Approved and put into effect by Order №07-st of the Agency for Standardization, Metrology, Certification and Trade Inspection of September 1, 2010).
7. Standard of the Republic of Tajikistan No. ST HT GOST R 51597-2010. Non-conventional energy. Solar photovoltaic modules. Types and main parameters. (Approved and put into effect by Order №07-st of the Agency for Standardization, Metrology, Certification and Trade Inspection of 1 September 2010).
8. Standard of the Republic of Tajikistan No. ST HT GOST R 51388-2010. Energy Saving. Informing consumers about energy efficiency of household and municipal products.
9. Standard of the Republic of Tajikistan GOST R 51387. Energy Saving. Normative-methodical support. Main provisions.
10. Standard of the Republic of Tajikistan GOST R 51380 Energy saving. Methods of conformity confirmation of indicators of energy efficiency of energy consuming products to their normative values. General requirements.
11. Standard of the Republic of Tajikistan GOST R 51541 Energy-saving. Energy efficiency. Composition of indicators. General provisions.
12. Standard of the Republic of Tajikistan GOST R 51379 Energy saving. Energy passport of industrial consumer of fuel and energy resources. Main provisions. Standard forms.
13. Standard of the Republic of Tajikistan GOST 25380-2014 Energy Saving. Buildings and

constructions. Methods to measure surface heat flux density and to determine coefficients of heat exchange between enclosing structures and the environment.

- 14.** Standard of the Republic of Tajikistan GOST 31427-2010. Buildings of residential and public buildings. Composition of energy performance indicators.

7. NATIONAL SURVEYS, REPORTS, STATISTICAL COMPILATIONS

- 15.** National progress report on implementation of strategic documents of the country in the context of the Sustainable Development Goals. 2018 г.
- 16.** Tajikistan. Energy Sector Master Plan - Final Report. Regional Power Transmission Project | Improving Sector Operations. 2017 г.
- 17.** Socio-Economic Situation of the Republic of Tajikistan, January-December 2020. Agency on Statistics under the President of the Republic of Tajikistan, 2021.

ANNEX 2. SURVEY REVIEW on opportunities for using renewable energy sources and energy efficiency in the community-based tourism sector in Tajikistan

Background

This questionnaire was conducted within the framework of the European Union SWITCH Asia Programme "Promoting Energy Efficiency and Renewable Energy Production in the Community-based Tourism Industry in Central Asia" project, which aims to reduce the carbon footprint of the tourism sector in Kyrgyzstan, Uzbekistan and Tajikistan. The objectives of the project are: to support MSME providers in the RE/EE and community-based tourism sector in introducing sustainable consumption and production of green energy practices and accessing finance and to create an enabling environment to strengthen sustainable consumption and production in RES/EE in the community-based tourism sector.

Purpose of the questionnaire: To assess the current situation, the policies in place, the analysis of the economic environment for business activities, the identification of problems and solutions in the use of renewable energy sources (RES) and energy efficiency (EE) in the community-based tourism sector in the Republic of Tajikistan.

The main objective of this questionnaire is to identify the problems and current situation of the business environment, RES/EE production and use and the tourism sector at community level.

Target audience:

- ✓ importers/exporters (supply and sale) of finished goods, equipment, devices, appliances, components using RES/EE
- ✓ manufacturers of finished goods, equipment, appliances, devices, components using RES/EE and energy saving, works and services
- ✓ producers, generation and sale of electricity
- ✓ finance sector
- ✓ public sector
- ✓ civil society
- ✓ Community-based tourism

General information about the questionnaire:

In the course of the survey, 74 respondents were interviewed and the following questionnaires were approved:

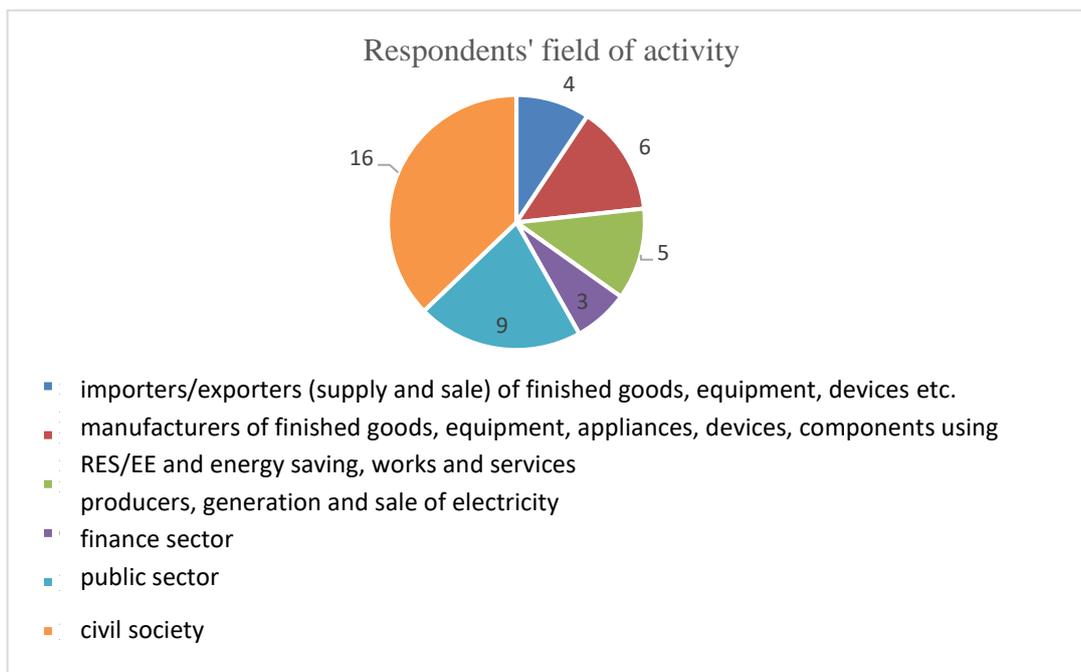
Questionnaire 1 for representatives of the public sector, non-governmental organisations, academia, importers and exporters of RE equipment, equipment manufacturers, organisations generating RES and EE;

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

Of the total number of respondents, 57% responded to the first questionnaire and 43% to the second questionnaire.

A total of 42 respondents were interviewed for the first questionnaire, of whom 4 were women (10%)

The respondents who answered the first questionnaire varied in terms of their field of activity as follows:



A total of 32 respondents participated in the second questionnaire, of whom 7 (22%) were women.

Of the total number of respondents to the second questionnaire, 78% were community-based tourism actors (owners of hostels, hostels, etc.) and 22% were representatives of tour operators.

ANALYSIS BY QUESTIONNAIRE 1

GENERAL QUESTIONS

Which of the following are renewable energy sources?

The vast majority of the respondents chose the right answers to this question, with a total of 89.7% in favour of hydro and solar energy, 82.1% in favour of solar energy and 69.2% in favour of geothermal energy. By respondent category, the worst response was from the financial sector with 66.7% in favour of hydropower and 33.3 for the other RES and EE categories.

Responses to this question for all categories of respondents, broken down by gender, showed the highest awareness of women at 100%, while responses from men ranged from 89.7% to 69.2% respectively.

1. FACTOR OF PRODUCTION; ECONOMIC RESOURCE, INFORMATION

1.1. How do you assess the availability of information on the use of technologies, materials, generating equipment, energy efficiency appliances for the country's tourism service providers?

To this question, 51% of respondents confirmed that there is insufficient information to make a decision about the use of RES and EE, while 28% believed that the materials obtained on the internet and in the media meet their needs. 19% of respondents expressed the opinion that they have not searched for such information and only 2% complained about the inaccessibility of information. The responses of men and women were almost identical.

1.2. Lack of reliable statistics and studies on the use and state of the business environment in the supply of EE and RE by economic operators reduces the quality

53.5% of all categories of respondents responded that the lack of reliable statistics and research results on the use and state of the business environment in EE and RE supply by economic entities reduces the quality of the development of sound investment projects and the creation of benefits. This indicator among female respondents differed significantly from the responses of male respondents and amounted to 75%. 34.9% of all respondents chose the answer that it reduces the quality of

development and implementation of adequate sectoral programmes and strategies, while the answers of women amounted to 25%. 11.6% expressed the opinion that it reduces the quality of analysis and definition of the scale of problems and their impact on the sector.

1.3. Is there a need for publicity campaigns and the posting of specific training materials, online calculators for calculating the benefits, costs, expenses, safe operation of energy installations on their own?

95% of all respondents answered "Yes" to this question.

2. TECHNOLOGY AS ONE OF THE MAIN FACTORS OF PRODUCTION

2.1. The application of modern RE and EE technologies allows tourism service providers to:

According to 67.4% of all respondents, the use of modern RE and EE technologies allows tourism service providers to use energy and other production factors efficiently. 14% believe that it allows to obtain more economic benefits. 14% of respondents note that it will significantly reduce the cost of energy production and increase EE, and only 4.7% of respondents expressed the opinion that it may increase the cost of purchasing high-tech facilities.

2.2. The introduction of modern RE and EE technologies in the tourism sector will require the development of specialised services:

When asked, 67.4% of respondents said in favour of user and service worker training (repair and maintenance), 18.6% said "development of engineering services during business planning, feasibility studies, supervision and commissioning" and 14% said "development of design, construction and installation work for the construction of facilities".

3. THE ENVIRONMENT

3.1. How do the environmental requirements of RES and EE legislation affect the development of your business?

55.8% of respondents, 70% of whom were representatives of importers/exporters (supply and sale) of finished goods, equipment, believe that environmental requirements of legislation on the use of RES and EE "bring advantages and additional benefits to their business", while 34.9% believe that they "limit business development opportunities, reduce benefits" and only 9.3% of respondents believe that they "oblige entities to bear the costs of compliance with environmental requirements".

For the first answer, the largest number of answers (100%) refers mainly to 1) entities involved in the import/export (supply and sale) of finished goods, equipment 2) producers of finished goods, equipment, appliances, devices, and 3) representatives of the financial and credit sector. 75% of female respondents express the opinion that the environmental requirements of RES and EE legislation "oblige entities to bear the costs of compliance with environmental requirements".

4. FACTOR OF PRODUCTION: CAPITAL AS AN ECONOMIC RESOURCE

4.1. What financial resources do you use for RES and EE development?

Regarding financing RES and EE, out of the total number of respondents 50% (of which half are entities importing/exporting finished goods, equipment, machinery, devices and representatives of organisations generating electricity) indicated that for the development of RES and EE they mostly use grant funds from organisations and funds, while 40% indicated the use of state grants and soft loans, 40% use own funds and 15% of them use borrowed funds from financial institutions.

5. THE LAND (LAND RESOURCES, REAL ESTATE, WATER RESOURCES, GEOTHERMAL RESOURCES, RES INFRASTRUCTURE)

5.1. The production and supply of renewable energy on land requires permits and other authorisations from the authorised state authorities relatively:

48% of respondents express the opinion that the generation and supply of RES-based energy on a land plot requires permits and other permissive actions from the authorised state bodies to obtain a certificate for the land plot, 29.3% believe that permits are required to amend city planning documentation and the general plan, detailed layout plan, other documents related to changes in the

status, functional and target purpose of the land plot, construction, erection, installation

On this question, of the total number of women interviewed, 75% think that the generation and supply of renewable energy on a land plot requires permits and other permissions from the authorised state bodies to obtain a certificate for the land plot.

5.2. Which authorities are required to obtain licences, permits for the use of surface water resources from rivers, man-made canals and reservoirs?

Almost all respondents answered positively to this question, which proves their understanding of the question and previous practice in this area.

5.3. The emergence of entrepreneurial and investment interest in RES, EE is based on:

76.2% of the total number of respondents believe that the emergence of entrepreneurial and investment interest in RES, EE is based on the need for alternative electricity supply and energy consumption, 52.4% assume opportunities to gain benefits, profit, savings, additional income and solving the problem of electricity supply limits in autumn and winter, as well as creating a competitive advantage and promoting a tourist product.

5.4. Which of the regulatory bodies create unnecessarily high administrative barriers?:

Respondents provided the following answers to this question:

- ✓ Tax Committee under the Government of Tajikistan, licensing authorities
- ✓ These are mainly government bodies
- ✓ Environmental Protection Committee
- ✓ Antimonopoly Service of Tajikistan in determining the tariff for electricity generation using RES
- ✓ All ministries and agencies related to RES, EE create barriers to business development
- ✓ State authorities, tax authority, bodies that grant business permits
- ✓ On the ground, in rural communities and households that have installed solar plants, for example, there are misunderstandings with the regulatory authorities
- ✓ The labour factor (Workforce and competencies;
- ✓ The need to reduce emissions and use zero-emission production models for goods and services
- ✓ A sound approach to construction and site selection is needed. The regulator is the one who determines the construction site, either the ME or the BT
- ✓ A one-stop-shop system needs to be established
- ✓ Unknown, because I have not come across it. The public has no factual information on this, it is very few and far between
- ✓ I haven't come across it.

6. 6. THE LABOUR (HUMAN RESOURCES AND COMPETENCES)

6.1. How would you assess the availability of specialists with the necessary competences in the renewable energy and EE sector?

65% of the respondents express the opinion that the level of training of specialists does not correspond to the required competences, while 30% assessed the provision of the RES and EE growth sector as satisfactory. Only 5% say that there are not enough specialists, and in some areas there are none at all.

6.2. Do you engage qualified specialists for the design, business planning, construction and operation of renewable energy installations and the use of EE?

30.2% of respondents said that they engage domestic specialists. 27.9% of respondents - no specialists in this field, 23.3% - have their own specialists and 18.6% - attract, including from abroad.

6.3. How do you assess the level of competence of specialists, officials of authorised state bodies in RES, EE issues?

39% of the respondents indicated insufficient competence of some specialists and authorized officials of the state bodies. 34% of respondents evaluate the level of competence of specialists, officials of the authorized state bodies in RES, EE issues as satisfactory, 16.3% believe that the competence of specialists in all authorized state bodies is insufficient, 9.3% evaluate well and employees were trained.

6.4. In your opinion, what needs to be done to provide the sector with specialists?

The following suggestions were made by respondents to this question:

- ✓ Good conditions for professionals, pay rises, (in line with international standards), skills development and exchange of experience.
- ✓ Provide grants for students to study abroad in the field of RES, need for courses, support for local NGOs to do outreach work.
- ✓ Raise wages.
- ✓ Build the capacity of professionals on the ground.
- ✓ Education, training.
- ✓ There needs to be more sharing of experiences with staff from different companies. Training from secondary school and in specialised universities. High pay.
- ✓ It is necessary to attract young specialists on the basis of RES, as well as to send young specialists for internships in foreign countries to participate in educational courses and programmes.
- ✓ Retraining of professionals.
- ✓ Additional training in the use of solar panels and wind farms is required.
- ✓ Establish advocacy and optional education for undergraduate and masters in RES and EE.
- ✓ Expand training programmes for RES specialists in HEIs for training engineers and vocational schools for training mid-level professionals.
- ✓ Training courses on the importance of renewables as 'clean energy' sources with all professionals, regardless of level in the energy, construction or other sectors.
- ✓ A small training, retraining and re-training centre should be set up within the central structure of the service sector.
- ✓ Providing training, education and professional development.

7.7. FACTOR OF PRODUCTION: ENTREPRENEURIAL AND INVESTMENT ACTIVITIES

7.1. Are you, your company, including the CBT community, ready to invest in increasing the use of RES, EE in the next two years?

39.5% of the total number of respondents said they would be willing to invest if they had the funds and resources available; 18.6% said no, as consumption is limited and market institutions are not developed in this sector; 16.3% said they would be willing to invest if they had "cheap and long credit" at an acceptable cost; 11.6% indicated their willingness to invest if legal and economic conditions are in place that allow them to make additional profit.

8.8. LEGAL SUPPORT, IMPLEMENTED POLICIES, AND STATE REGULATION

8.1. 8.1 Which of the following laws and codes of the Republic of Tajikistan in the context of energy supply and energy efficiency growth of the tourism industry at community level are you aware of (underline):

On this question, 81% of respondents have chosen the Law of RT "On the Use of Renewable Energy Sources", 78.4% - the Law of RT "On Energy", 56.8% - Law of RT "On Energy Saving and Energy Efficiency" and Law of RT "On Environmental Protection", 45.9% - Tax Code, 40.5% - Law of RT "On Tourism", 35.1% - Law of RT "On licensing certain types of activities" and Law of RT "On registration of legal entities and individual entrepreneurs", 32.4% - Law of RT "On Safety of Hydraulic Engineering Structures".4% - Law of RT "On Safety of Hydraulic Structures".

8.2. In your practice, have you applied any of the laws and codes listed in the previous paragraph, which ones (you may indicate the paragraph number of the previous paragraph)?

Respondents provided the following answers to this question:

- ✓ RT Law on Energy, Renewable Energy Sources, Section 8, "Standardisation, Certification and Metrology in Energy Saving - 7 answers;
- ✓ Land Code of the RT - 1 response;
- ✓ Law of Tajikistan "On Environmental Protection" - 1 response

- ✓ RT Law on Tourism;
- ✓ Concession Law, Law on the Safety of Hydraulic Structures - 1 response;
- ✓ haven't had to apply in a while - 1 response;
- ✓ All of the above are 2 responses;
- ✓ Not used in practice, used only in the preparation of his scientific, popular science publications - 1 response;
- ✓ Law of the RT "On Subsoil", Section XVII- 1 response;

8.3. Are you aware of any by-laws (decrees of the Government of Tajikistan, orders and instructions of ministries and agencies) that have been adopted on the basis of the Law of the Republic of Tajikistan "On the Use of Renewable Energy Sources"? Which ones?

To this question, 90% of respondents answered that they were not aware of the by-laws; 7% answered that they were aware of the by-laws; 3% listed some of the by-laws, including

- ✓ Law on the Use of Renewable Energy Sources of Tajikistan,
- ✓ Targeted integrated programme for the widespread use of RES, Long-term programme for the construction of small hydropower plants,
- ✓ Decree of the Government of Tajikistan - Regulation of the Ministry of Energy and Water Resources,

8.4. Do you know what tax and other incentives are stipulated by the Renewable Energy Sources Law of Tajikistan? List them

Respondents provided the following answers to this question:

91% confirmed their ignorance of the tax and other incentives provided for in the Law on the Use of Renewable Energy Sources

1% - confirmed knowledge of the benefits

8% - responded as follows:

- ✓ benefits for the construction of hydroelectric power plants,
- ✓ Tax Code of the RT, Article 343 taxation of hydropower plant construction, exempt from tax for the period of construction. water royalties Article 366, yes, they are detailed in the collection (normative legal acts in the field of RES),

✓ I know, benefits and preferences in the field of RES, like tax breaks, water royalties, benefits for building a hydroelectric power plant.

8.5. Which imported goods for the use of RES and EE should be exempted from VAT? List them

To this question, 40% of respondents answered "Don't know".

32% offered the following answers:

- ✓ microHPPs, components and spare parts for RES
- ✓ all types of RES technologies related to solar energy
- ✓ solar systems, namely modules, batteries, inverters, pumps, collectors
- ✓ household goods that use photovoltaics
- ✓ solar plants/panels and their components
- ✓ solar collectors and heat pumps
- ✓ wind farms, complete wind turbines and their spare parts;
- ✓ Batteries and spares, collectors, hydro generators, turbo generators
- ✓ biomass treatment plants

28% responded as follows:

- ✓ I am not an expert on the subject.
- ✓ There are no such products.
- ✓ Under the concession agreement, Pamir Energy is exempt from VAT.
- ✓ I believe that there is no need for a tax exemption.
- ✓ No imports of RES and EE goods should be exempted from VAT, but production facilities for such plants, equipment, units, etc. should be established at home. For example, low- cost compact solar generators, wind turbines, mini and small hydropower equipment, etc.

8.6. In your opinion, how should public education on RES legal issues be improved? List them.

The following suggestions were made by respondents to this question:

26% Organisation of educational events trainings seminars etc.

30% Public information campaigns through the media, social media and the internet.

35% "Don't know".

9% Other, including:

- ✓ the launch of a dedicated website,
- ✓ it is necessary to exempt the price of RES from all taxes,
- ✓ explain the proper use of electricity,
- ✓ preparation of booklets on the development of RES
- ✓ From the factors listed below, identify the regulatory issues that most hinder the development of RES, EE

Regulatory problems associated with difficulties in regulating land use and obtaining permits received the highest number of responses - 45.7% of the total number of respondents, 40% indicated insufficient incentives to reduce the tax burden and payments before starting operations and generating income and 37.7% indicated problems with feasibility studies and production planning, equipment/energy generation due to inability to obtain multi-year hydrological

8.8. How do the state programmes being implemented in the field of RES and EE technologies affect your activities?

51.4% of respondents believe that qualitative implementation of the program measures will allow to increase production and supply of renewable energy, will increase application of EE technologies, will allow to maintain and expand business, while 20% note that they are not aware of such documents and their impact and that implementation of the laid down measures is not tangible for their activities. 17.1% of respondents think that the adopted strategic documents, sectoral programmes do not solve the growth problems. 8.6% of respondents think that the adopted documents and their implementation have an impact on their business.

8.9 In your opinion, which of the following problems most hinder the development of RES use and EE growth in the tourism sector in the Republic of Tajikistan?

69,4% mention weak investment attractiveness and low activity of business in implementation of technologies and establishment of RES and EE production, 52,8% mention insufficient human resources capacity and low availability of specialists in RES and EE, 50% mention weak state support and inadequate incentives for the sector and 50% mention limited access to information on RES and EE. 36.1% consider dependence on imported RES and EE technologies and equipment to be a problem for the sector, 33.3% mention insufficient strategic planning, 30.3% mention imperfect environmental requirements, lack of "green certification" of tourism objects, and 27.8% point out low interest of citizens and tourism entities in using renewable energy.

CONCLUSIONS FROM QUESTIONNAIRE 1

1. FACTOR OF PRODUCTION; ECONOMIC RESOURCE, INFORMATION

Based on the analysis of the respondents' answers regarding information as a factor of production, it can be determined that access to information on the use of RES and EE in the country is limited and insufficient, even for the high potential category of respondents in question. In addition, the quality of statistics and data does not meet the needs of the users in developing investment plans and significantly reduces the quality of the developed RES and EE policies.

Accordingly, the focus group should clarify which data, information and statistics need to be made more accessible and focused on in order to improve their quality.

2. TECHNOLOGY AS ONE OF THE MAIN FACTORS OF PRODUCTION

The application of modern RES and EE technologies is a priority and will enable tourism service entities to efficiently use energy and other inputs for business development, but this area requires information and education of CBT entities, training and the establishment of local service

units.

During the focus group, it is recommended to clarify in which areas there are specific problems in informing and educating CBT actors and which problems exist in establishing local services.

3. THE ENVIRONMENT

The environmental requirements of RES and EE legislation offer benefits and added value to businesses, but there is a need to review and improve some technical regulations and requirements to reduce their cost and affordability to businesses.

During the focus groups, it is not clear which environmental requirements and technical regulations need to be improved.

4. FACTOR OF PRODUCTION: CAPITAL AS AN ECONOMIC RESOURCE

RES and EE are mainly supported by grant resources from international organisations and there is a lack of concessional financing. Consequently, a system of concessional financing for RES and EE development and increased public financial incentives for the sector are needed in the development of future policies in this area.

The FGD should focus on financing problems and answer the questions "What are the problems in creating long and soft loans and how feasible is it? How can the state stimulate the development of the RES and EE sector, is it possible to create a system of incentives and subsidies for the sector?".

5. THE LAND (LAND RESOURCES, REAL ESTATE, WATER RESOURCES, GEOTHERMAL RESOURCES, WIE INFRASTRUCTURE)

It is necessary to simplify the procedures for obtaining a certificate for a land plot intended for construction of RES and EE facilities. In addition, there are difficulties in obtaining permits, fulfilling the requirements of urban planning, RAP master plans, SNIp and SanPiN in terms of procedures, taking into account the specifics and characteristics of RES and EE construction, promoting the principles of creation and construction of "Green and Smart Cities".

It is recommended that the focus group should have a specific focus on specific NAPs.

6. THE LABOUR (HUMAN RESOURCES AND COMPETENCES)

The questionnaire showed that one of the main problems hindering the development of RES and EE use is the lack of staff and the low level of competence of specialists, officials of the authorised state bodies in RES and EE issues.

Accordingly, it is recommended that the FGD should clarify and elaborate on these issues.

7. FACTOR OF PRODUCTION: ENTREPRENEURIAL ACTIVITIES AND INVESTMENT

Most respondents expressed their willingness to invest in RES and EE if funds are available and resources are available, if credit is cheap, and if legal and economic conditions are created that allow for additional profits.

The FGD should clarify the issues related to the creation of a favourable climate for entrepreneurship and investment, readiness for public-private partnership in the field of RES and EE. It is also necessary to clarify the problems of demand for RES and EE and the development of institutions in the sector.

8. LEGAL SUPPORT, CURRENT POLICIES, AND STATE REGULATION

Given that most of the respondents represented NGOs, academics and practitioners directly involved in RES and EE development, their answers to understanding of existing legislation and state regulation were positive, i.e. they are aware of relevant laws. However, the analysis showed that only a small part of them applies these laws in their practice, and more than 90% of the respondents are not familiar with the by-laws regulating the use of RES and EE, as well as with tax and other benefits provided by the Law of RT "On the Use of Renewable Energy Sources".

During the FGD it is recommended to discuss which imported goods for RES and EE use should be exempted from VAT, using the following suggestions made by the respondents:

- ✓ micro HPPs, components and spare parts for RES;
- ✓ all types of RES technologies related to solar energy;
- ✓ solar systems, namely modules, batteries, inverters, pumps, collectors;
- ✓ household goods that use photovoltaics;
- ✓ solar stations/panels and their components;

- ✓ solar collectors and heat pumps;
- ✓ wind farms, complete wind turbines and their spare parts;
- ✓ Batteries and spares, collectors, hydro generators, turbo generators;
- ✓ biomass treatment plants.

In addition, the FGD should clarify the problems of public education on legal issues of renewable energy and the problems identified by respondents in question 8.9: weak state support and insufficient incentives for the industry, dependence on imported renewable energy and EE technologies and equipment, insufficient strategic planning, imperfect environmental requirements, lack of "green certification" of tourism facilities, low interest of citizens and tourism entities in using renewable energy.

ANALYSIS BY QUESTIONNAIRE 2

for CBT entities, associations, small tourism organisations that use traditional energy sources in their activities and have tourism assets

A total of 32 respondents participated in the survey, 7 of them were women (22%), 78% of them community-based tourism operators (owners of hostels, hostels, etc.) and 22 representatives of tourism companies.

1. In the provision of which tourism services do you use energy carriers, and which ones?

84.4% of respondents from CBT representatives confirm that they use energy resources for tourist accommodation and service provision (heating/cooling, lighting of accommodation facilities, use of electricity, heat energy, operating energy costs, hot/holly water supply, area lighting, internet services, mobile communication, other - gas, coal, firewood, liquid fuel, electricity from networks), 71.9% also use energy resources for organisation and provision of catering (cooking, food storage - coal

2. To conserve heat and save energy, you use:

To preserve heat and save energy, 46.9% of CBT subjects use modern and traditional finishing and building materials, 37.5% state that they save and limit consumption and use of energy carriers and energy at the expense of comfort and quality of services, 37.5% use automatic systems for regulation of temperature in premises.

3. What energy sources do you use?

56,3% of the respondents say that they use water energy in their lives and activities, 46,9% use coal, 43,8% use firewood, organic waste and dry plants, 37,5% use gas (mainly liquefied gas in cylinders), 18,8% use liquid fuel (fuel oil, paraffin, etc.), 18,8% use solar energy and only 6,3% use industrial waste and rubbish (rags and tyres).

4. Are you aware of any laws, decrees of the Government of Tajikistan concerning the use of renewable energy sources? If yes, which ones?

To this question 99% of the respondents had difficulty in answering and only 1% emphasised knowledge of the law on the use of RES and the law on energy conservation and EE.

5. How do you think public education on the legal issues of renewable energy should be improved?

Only 1% of respondents suggest improving public education on the legal issues of renewable energy use through the media, roundtables, meetings and seminars, while 99% found it difficult to answer this question.

6. Do you use diesel/gasoline generators for power generation?

59.4% of respondents indicated that they do not use diesel/gasoline generators for power generation in their practice, while 40.6% confirm their use.

7. Do you use boilers, cookers for heating, cooking, hot water?

81.3% of respondents confirmed the use of boilers, cookers for heating, cooking and hot water supply.

8. Do you know what renewable energy is?

78.1% of the respondents confirmed their knowledge of RES.

9. Do you know which renewable energy sources are most common and can be developed in your region?

87.5% of respondents cited hydropower, 62.5% solar power, 37.5% wind power and 4.2% other RES.

10. In your opinion, what are the main barriers to the growth of renewable energy use in the tourism sector?

75% of respondents consider that the main barriers hindering the growth of RES usage are their high cost and lack of own funds to design, install, purchase RES equipment, materials, EE technologies, 50% believe that RES equipment is technically complex and they lack skills to maintain and operate such equipment, 50% confirm their low awareness of the benefits of using RE/EE, 29.9% believe that it is difficult to obtain permission to place the generation facilities on the land

CONCLUSIONS FROM QUESTIONNAIRE 2.

All of the tourism and CBT respondents stated that they use energy in providing tourism services, for organizing and providing food (cooking, food storage - coal, firewood, electricity from the grid, gas, liquid fuel), for manufacturing consumer goods. The main energy carriers are: 1) water energy, 2) coal, 3) firewood, organic waste and dry plants.

More than half of the respondents answered that in their practice they use diesel/gasoline generators for power generation, boilers, cookers for heating, cooking, hot water supply. Also, an absolute majority of respondents confirmed their knowledge of RES and listed in order of priority the most common RES that can be developed in the country: 1) hydropower, 2) solar energy, 3) wind energy and others.

Regarding understanding of the laws, decrees of the Government of Tajikistan concerning the use of RES, most of them could not answer.

Most respondents use modern and traditional finishes and building materials to conserve heat and save energy, CBT entities consider that the main barriers hindering the growth of RE use are their high cost and lack of own funds for design, installation, purchase of equipment, RES, materials, RE/EE technologies, technical complexity of RES equipment, lack of skills in their maintenance and operation among the staff of tourist companies. In addition, most confirm their low awareness of the benefits of using RES/EE, the difficulty of obtaining permits to locate generating facilities on lands and plots, facilities.

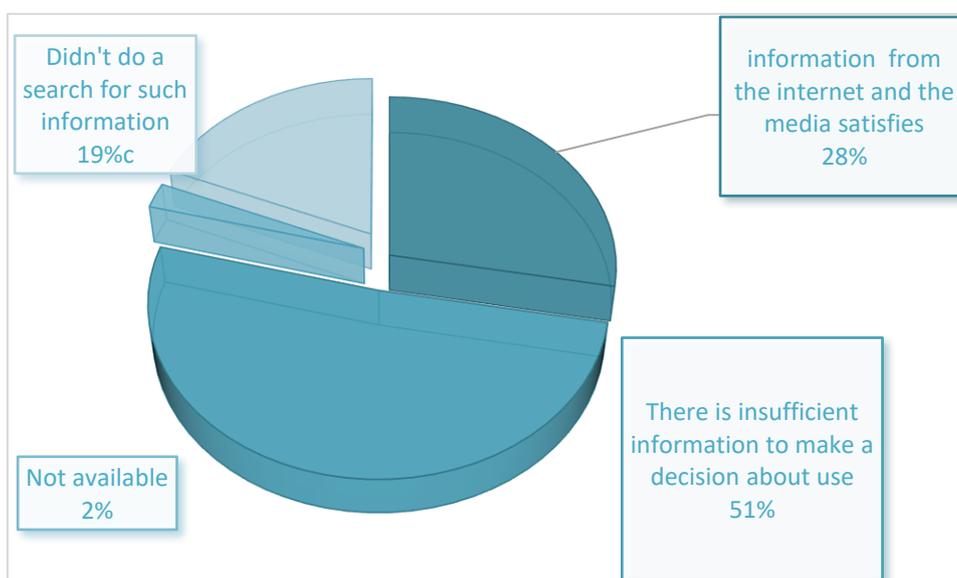
The FGD should be clarified during the FGD:

1. What is the main obstacle to the introduction of RES and EE in the CBT sector.
2. How to effectively raise the awareness and capacity of CBT entities to use RES and EE.
3. Which means and channels of information should be used, to determine the most appropriate format for capacity building.
4. How social partnership and community participation in RES and EE development should be developed.

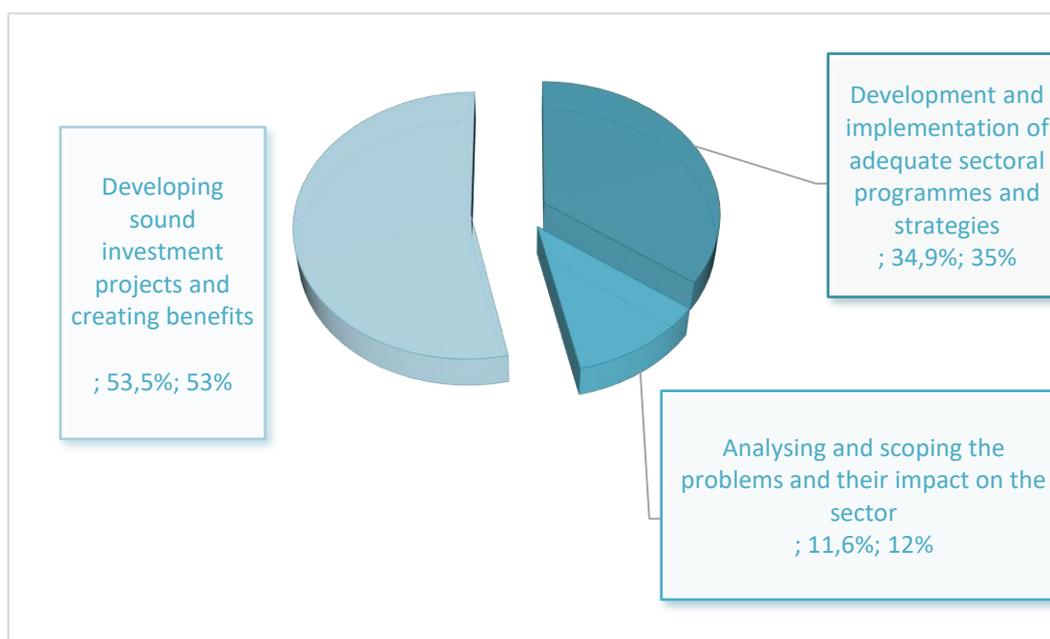
CHARTS AND TABULATIONS

1. FACTOR OF PRODUCTION; ECONOMIC RESOURCE, INFORMATION

1.1. How would you rate the availability of information on the use of technologies, materials, generating equipment, energy efficiency appliances to the country's tourism service providers?



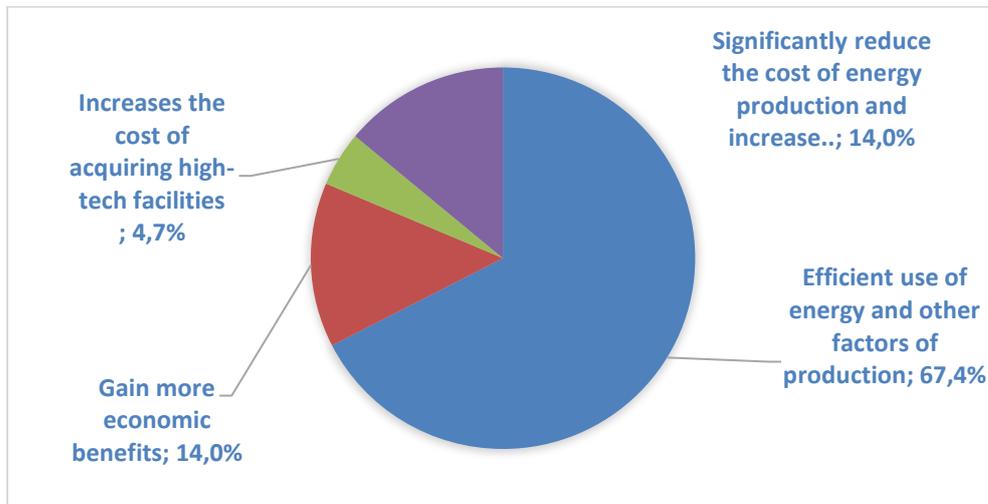
1.2. The lack of reliable statistics and studies on the use and state of the business environment in the supply of EE and RE by economic operators reduces the quality:



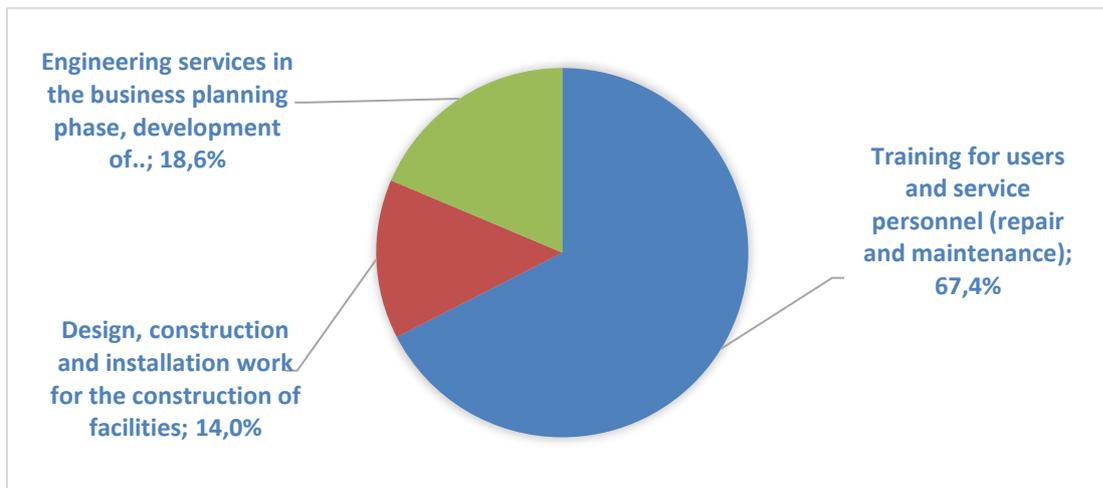
1.3. Is there a need for publicity campaigns and the posting of specific training materials, online calculators for calculating benefits, costs, expenses, safe operation of energy installations on one's own?

2. TECHNOLOGY AS ONE OF THE MAIN FACTORS OF PRODUCTION

2.1. The application of modern RE and EE technologies allows tourism service providers to:

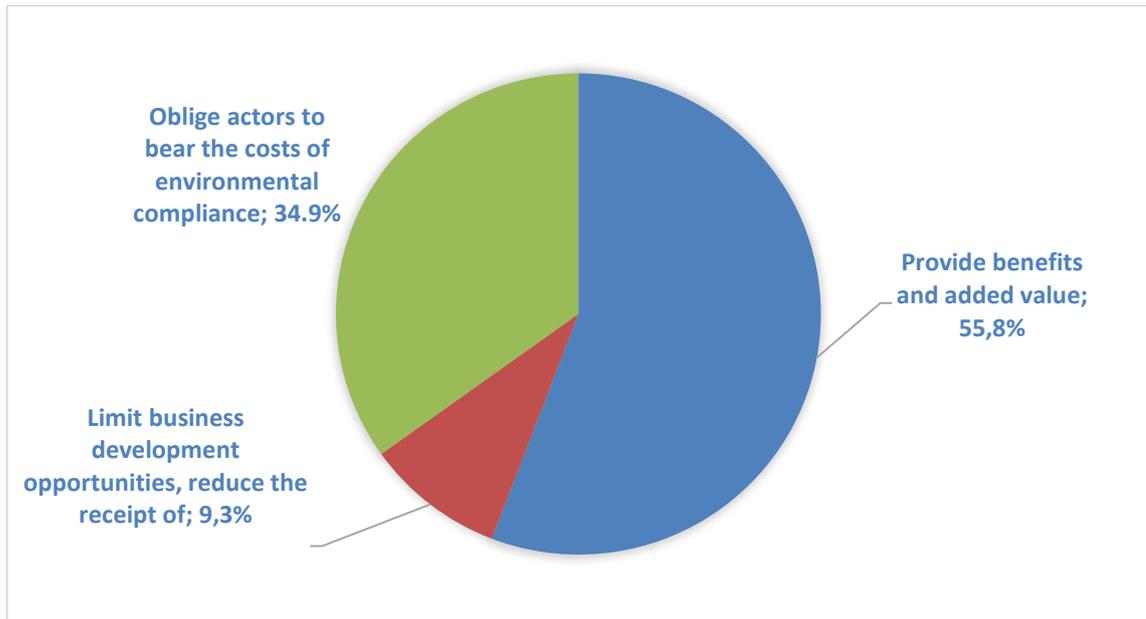


2.2. The use and introduction of modern RE and EE technologies in the tourism sector will require the development of specialised services:



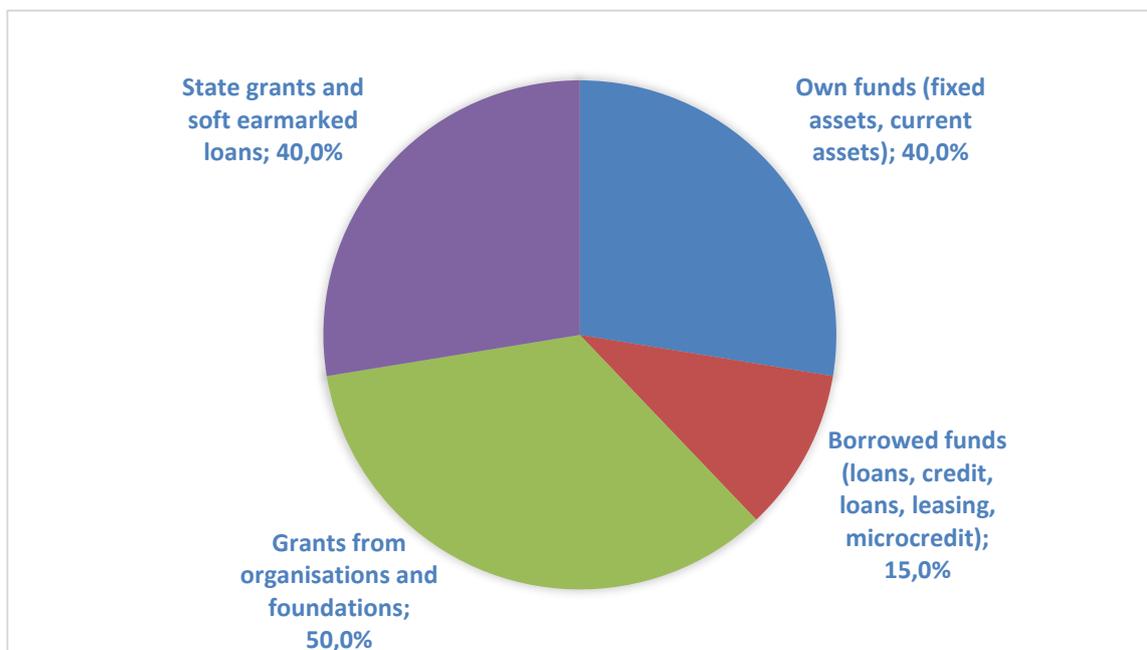
3. THE ENVIRONMENT

3.1. How do the environmental requirements of RES and EE legislation affect the development of your business?



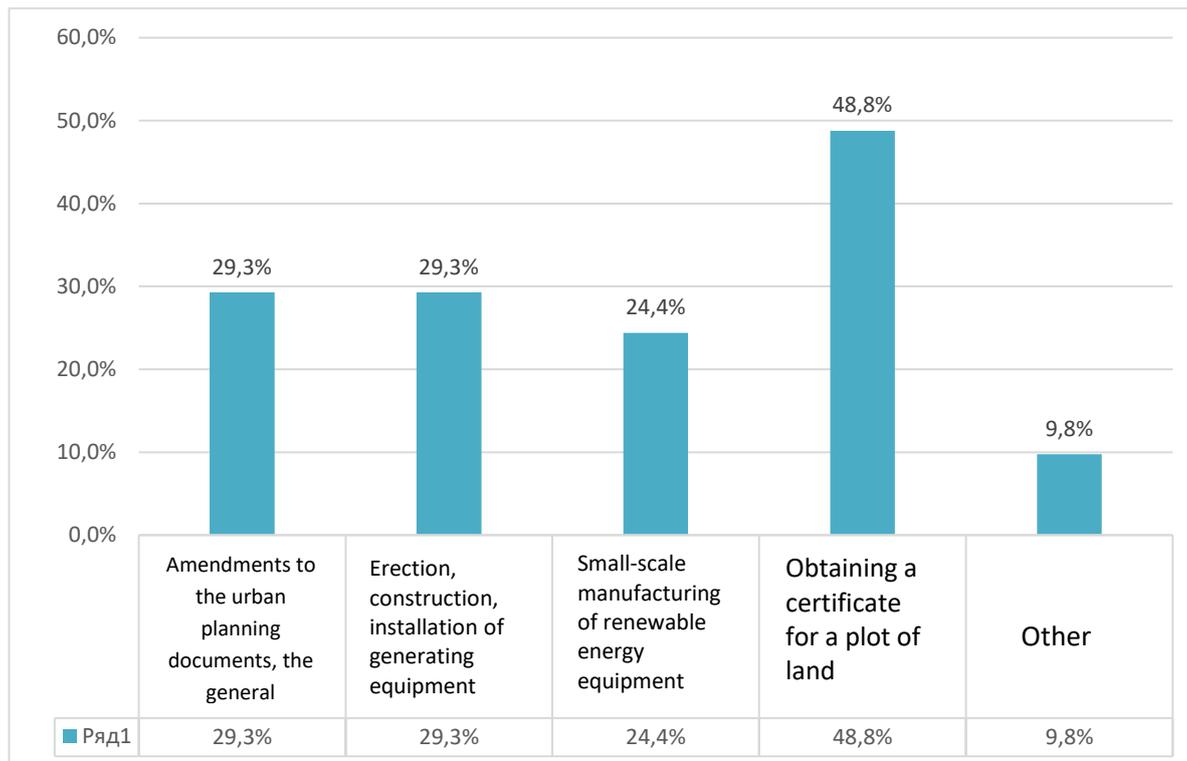
4. FACTOR OF PRODUCTION: CAPITAL AS AN ECONOMIC RESOURCE

4.1. What financial resources do you use for RES and EE development?

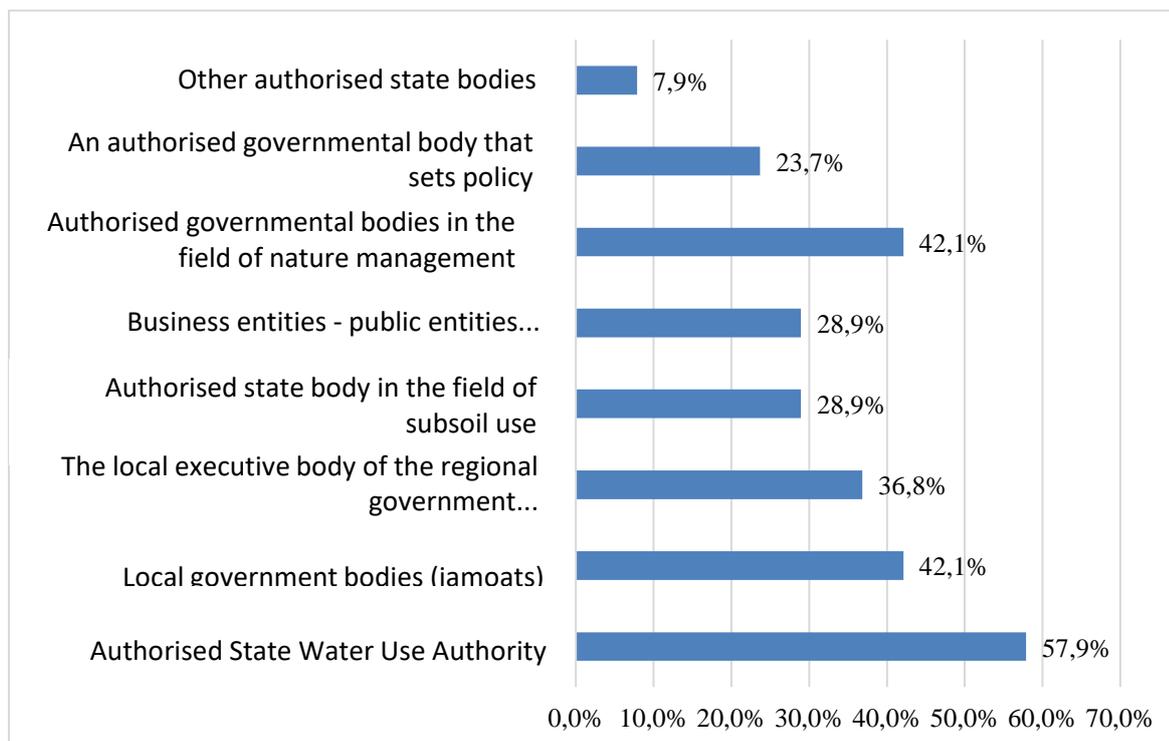


5. THE LAND (LAND RESOURCES, REAL ESTATE, WATER RESOURCES, GEOTHERMAL RESOURCES, RE INFRASTRUCTURE)

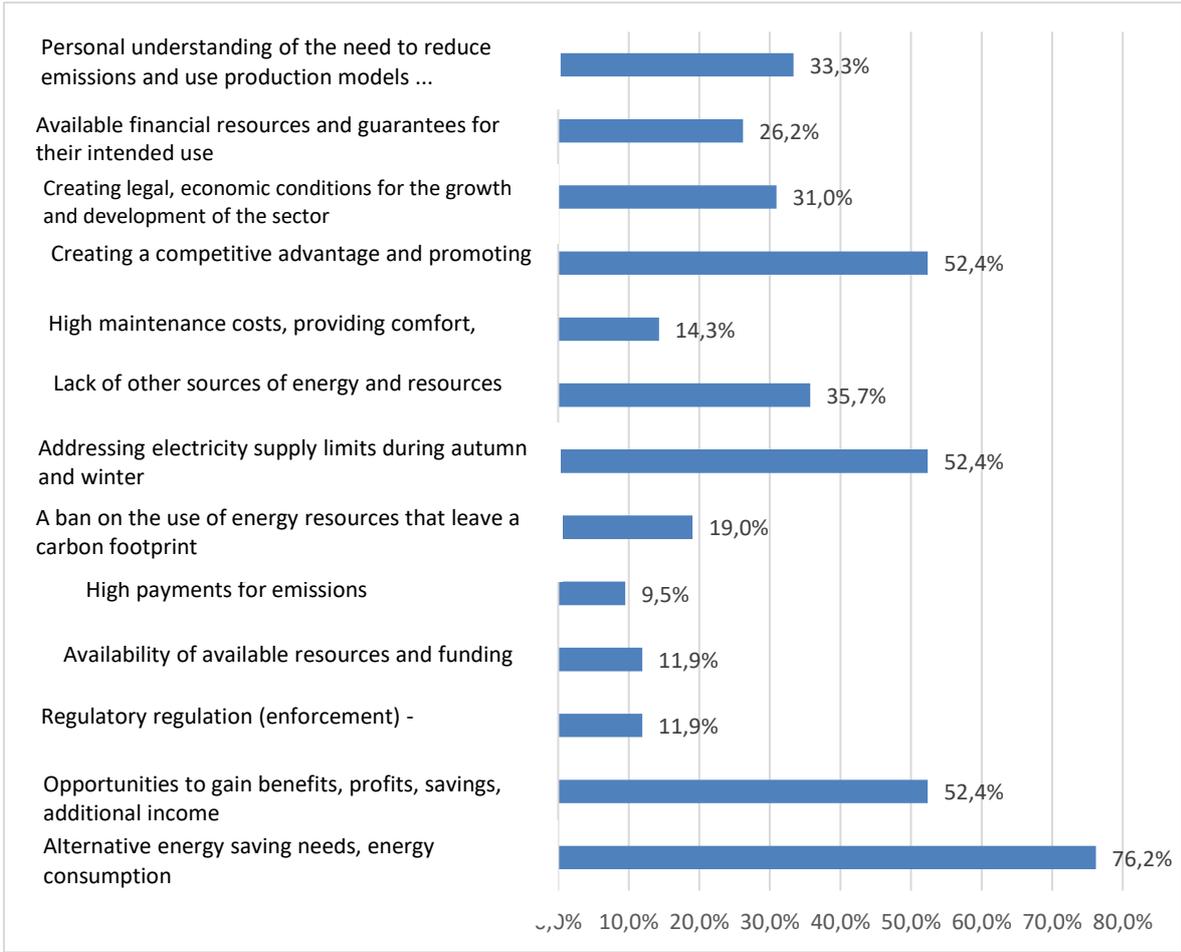
5.1. The generation and supply of renewable energy on land requires permits and other authorisations from the authorised state authorities relatively:



5.2. Which authorities are required to obtain licences, permits for the use of surface water resources from rivers, man-made canals and reservoirs? Which of the regulatory authorities create unnecessarily high administrative barriers

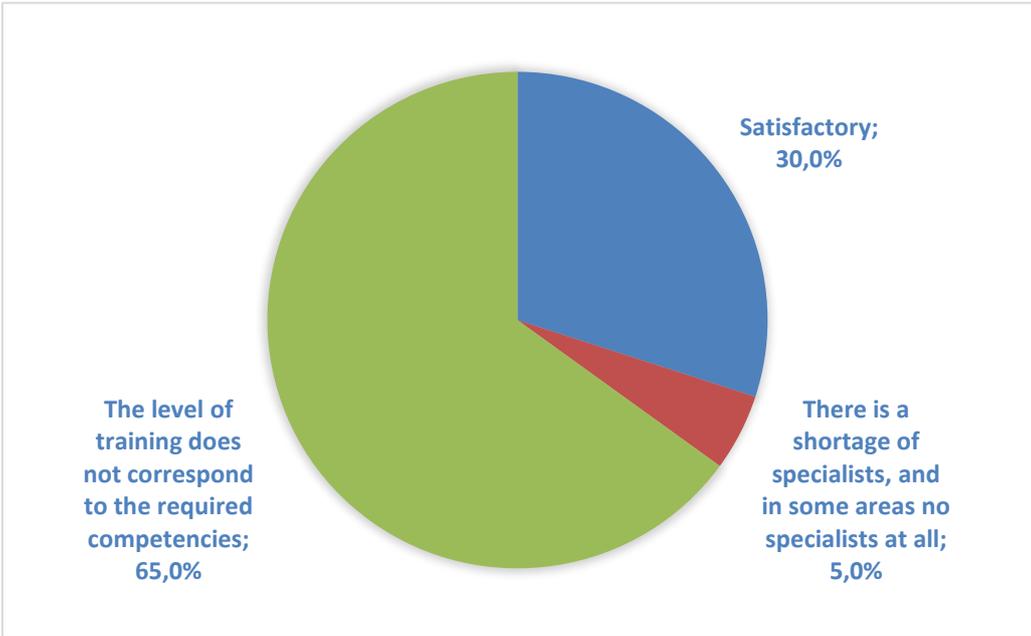


5.3. The emergence of entrepreneurial and investment interest towards RE, EE is based on:

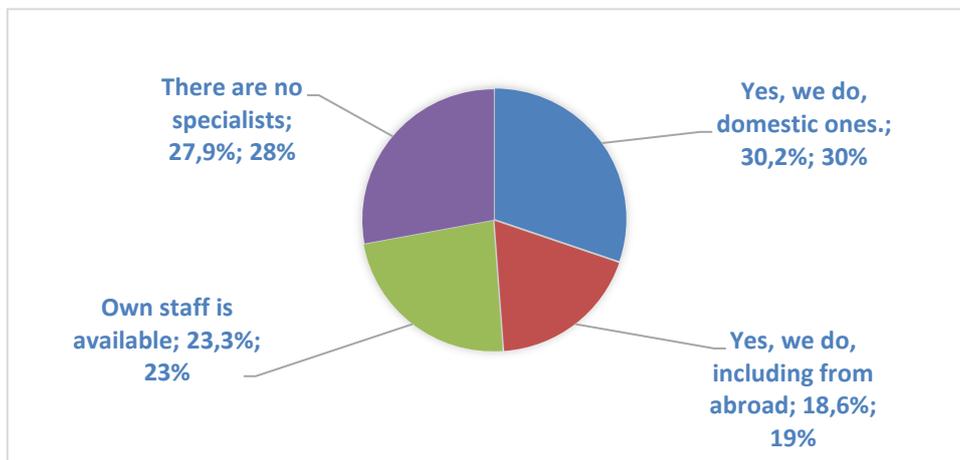


6. THE LABOUR (HUMAN RESOURCES AND COMPETENCES)

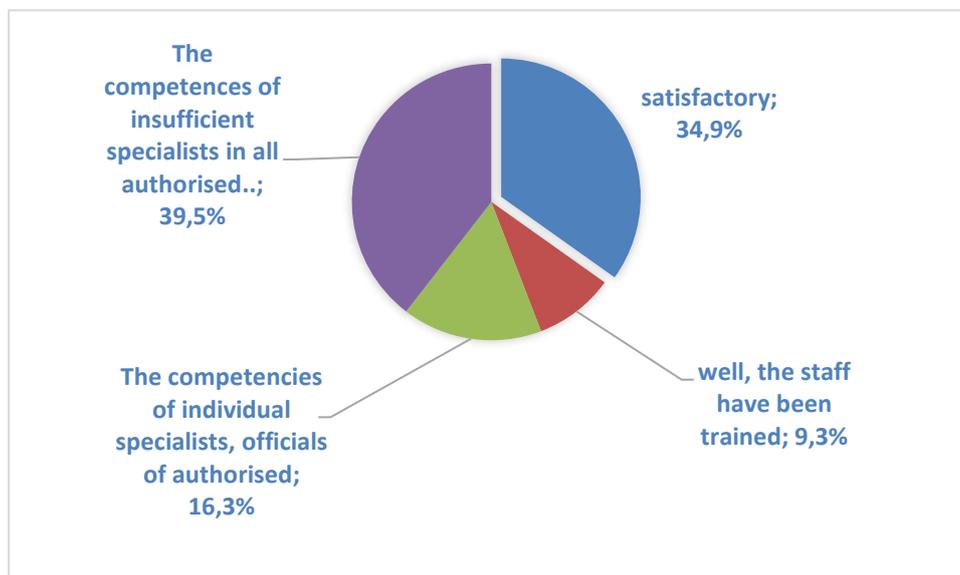
6.1. How would you assess the availability of specialists with the necessary competences in the renewable energy and EE growth sector?



6.2. Do you engage qualified specialists for the design, business planning, construction and operation of renewable energy installations and the use of EE?

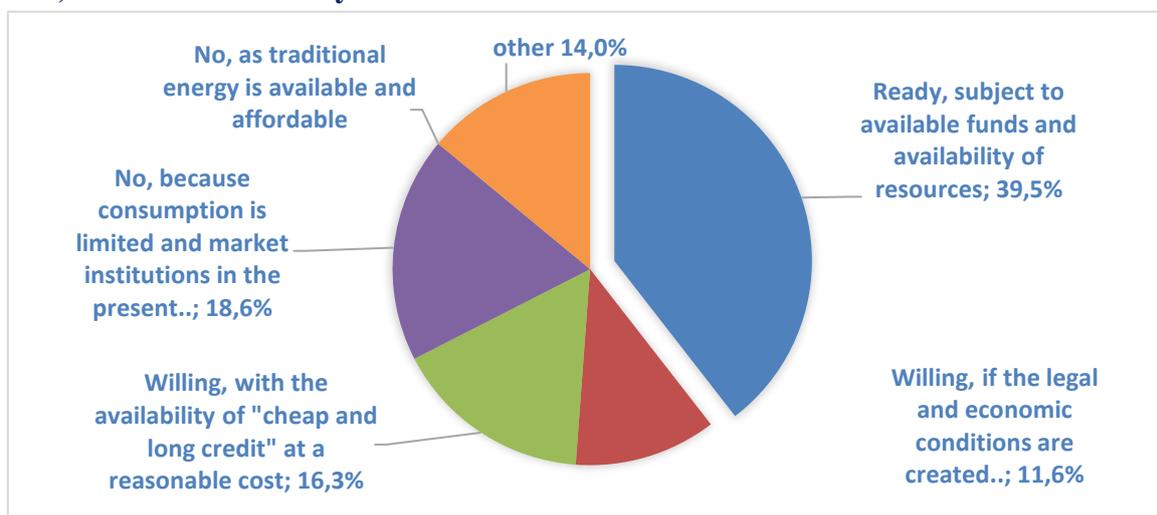


6.3. How do you assess the level of competence of the specialists, officials of the authorised state bodies in RES, EE issues?



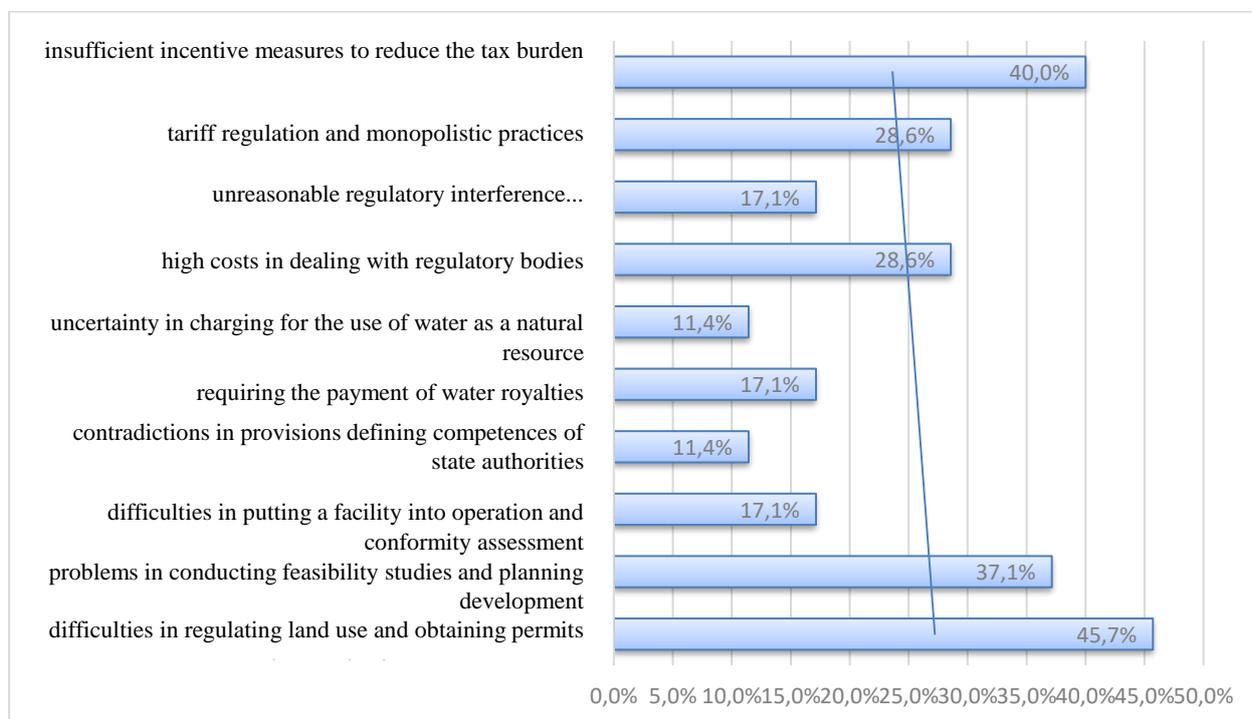
7. FACTOR OF PRODUCTION: ENTREPRENEURIAL ACTIVITIES AND INVESTMENT.

7.1. Are you, your company, including the CBT community, ready to invest in increasing the use of RES, EE in the next two years?

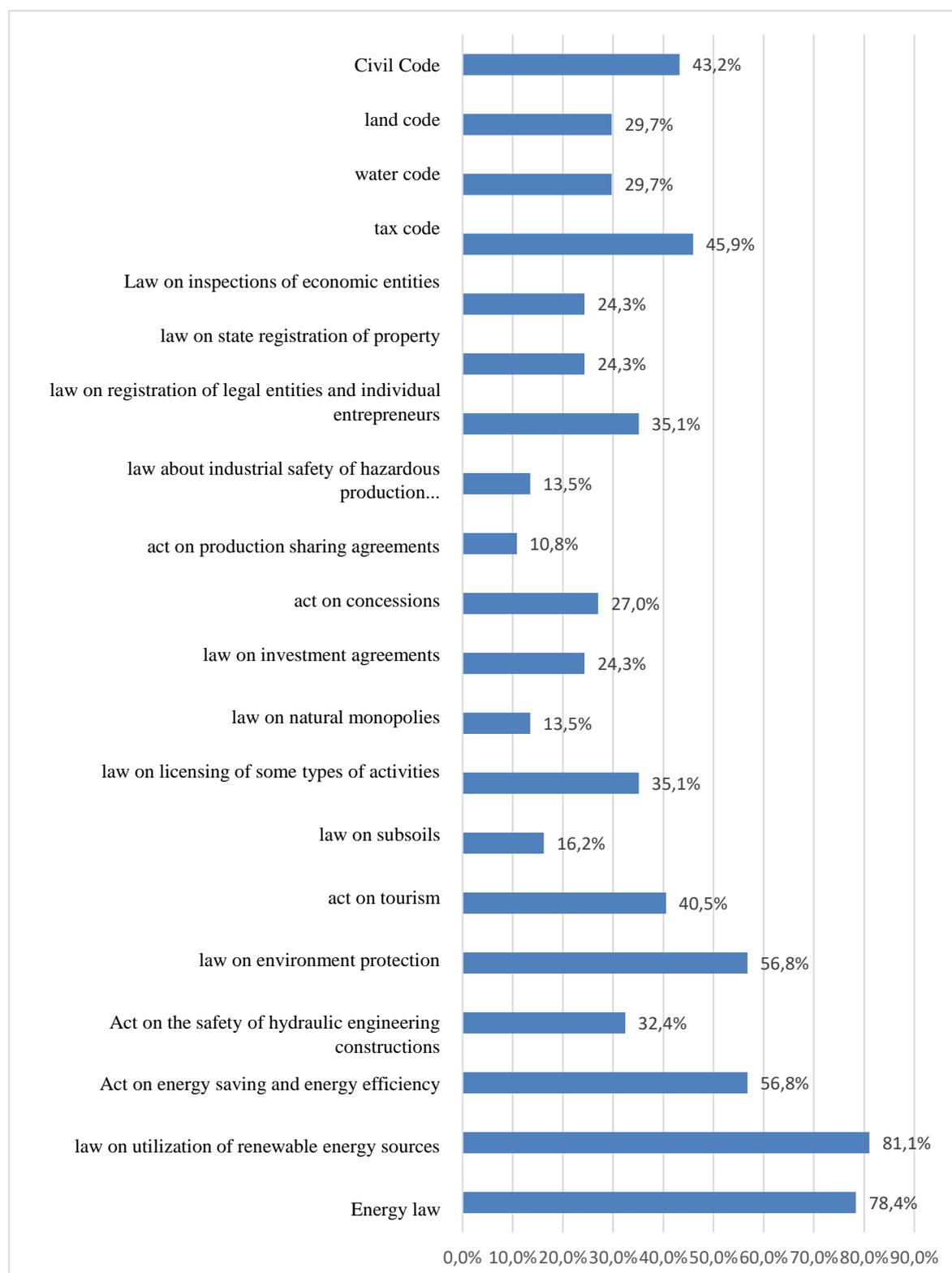


8. LEGAL SUPPORT, POLICY IMPLEMENTATION AND STATE REGULATION OF ENTREPRENEURIAL ACTIVITIES

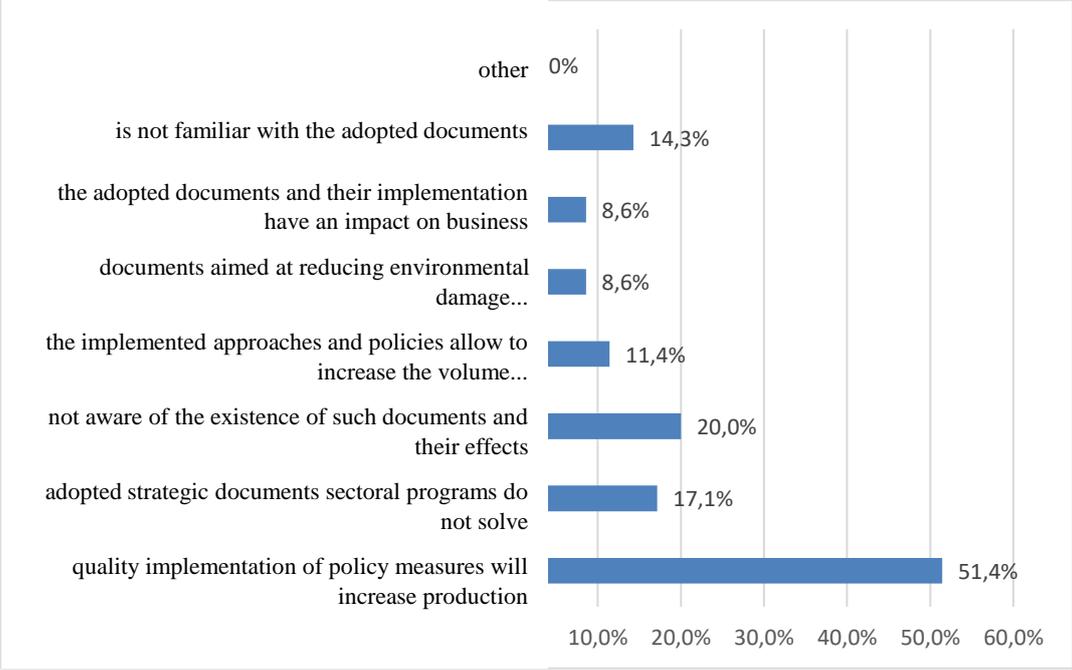
8.1. From the factors listed below, identify the regulatory issues that most hinder the development of RES, EE:



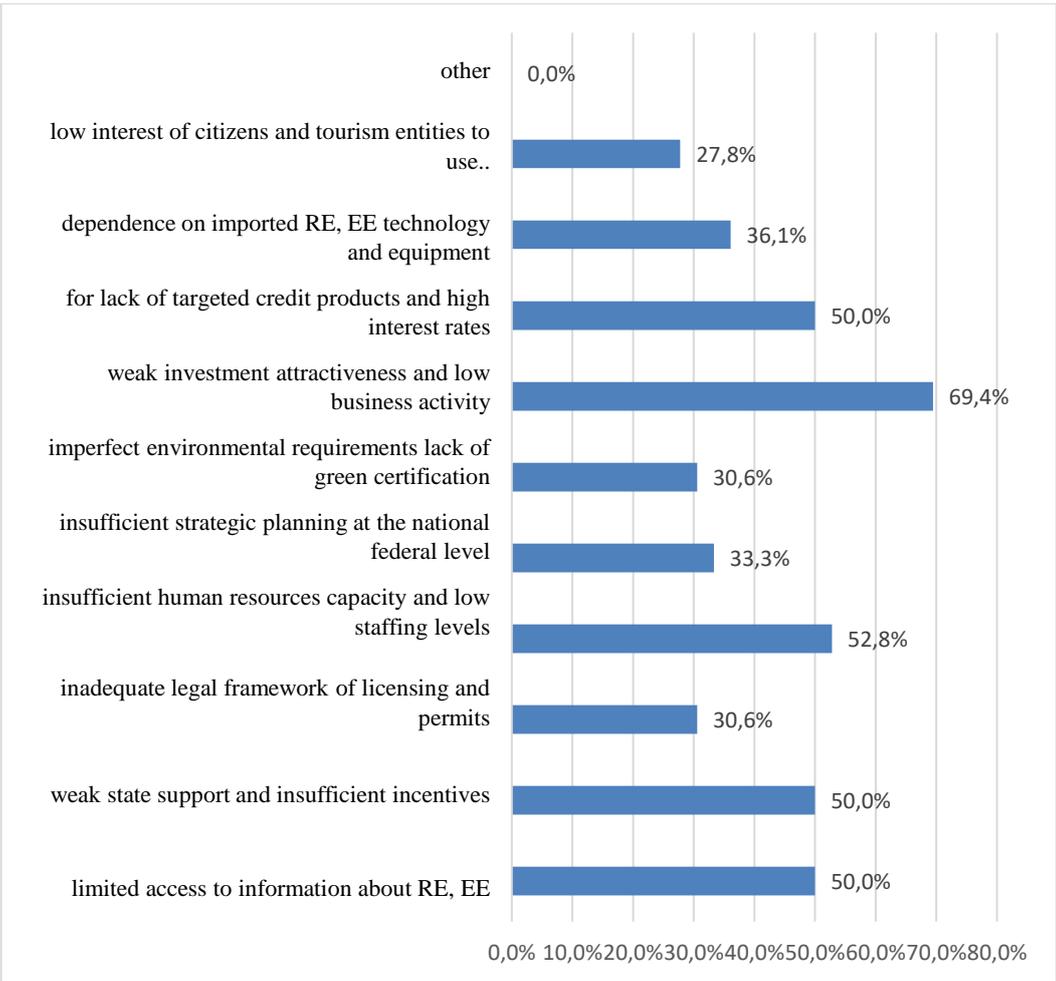
8.2 Which of the following laws and codes of the Republic of Tajikistan in the context of energy supply and energy efficiency growth of the tourism industry at community level are you aware of (underline):



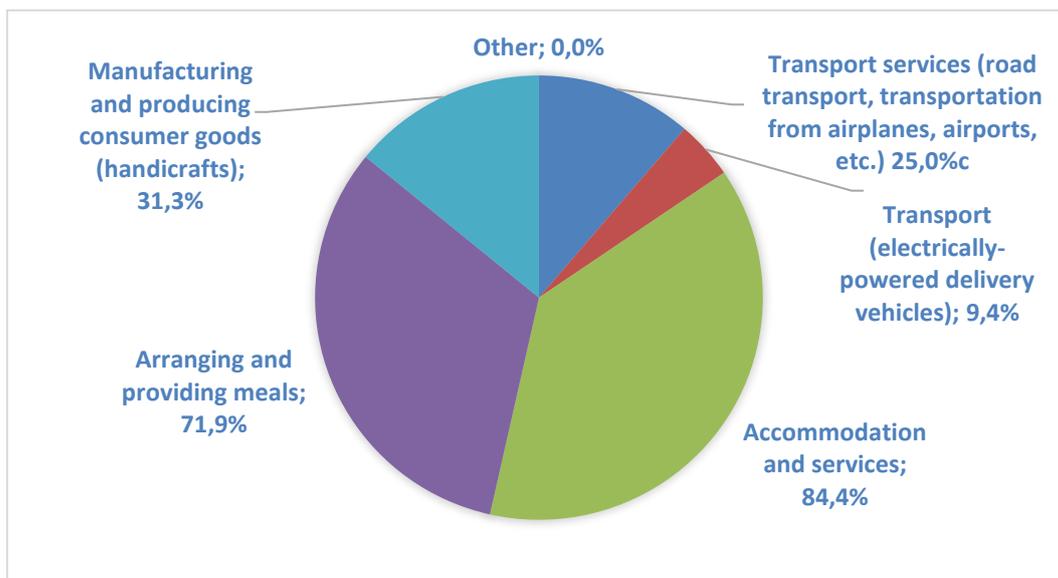
8.3. How do ongoing government programmes for the introduction of renewable energy and energy efficiency technologies affect your activities?



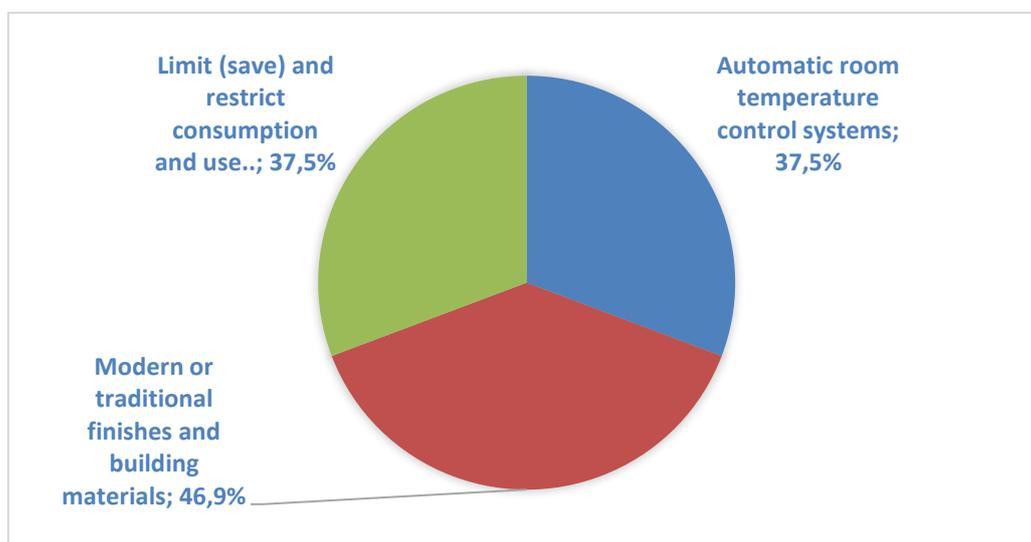
8.4.. In your opinion, which of the following problems most hinder the development of RES and EE growth in the tourism sector in the Republic of Tajikistan?



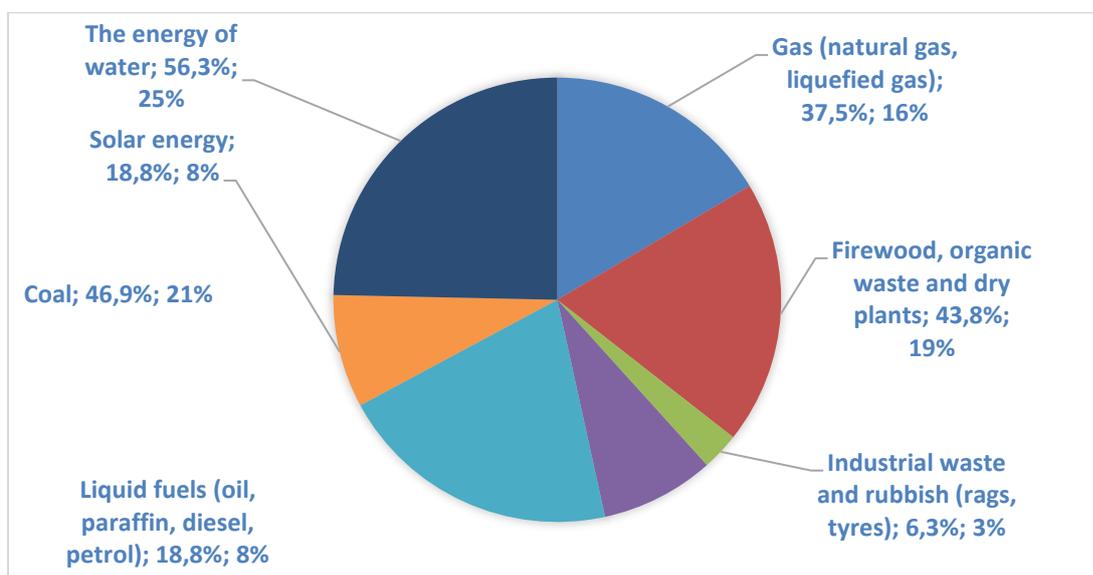
9. In the provision of which tourism services do you use energy carriers, and which ones?



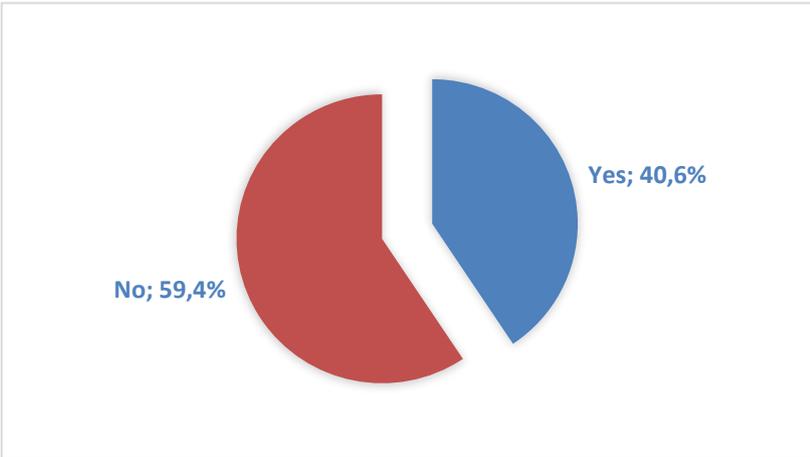
10. To conserve heat and save energy, you use:



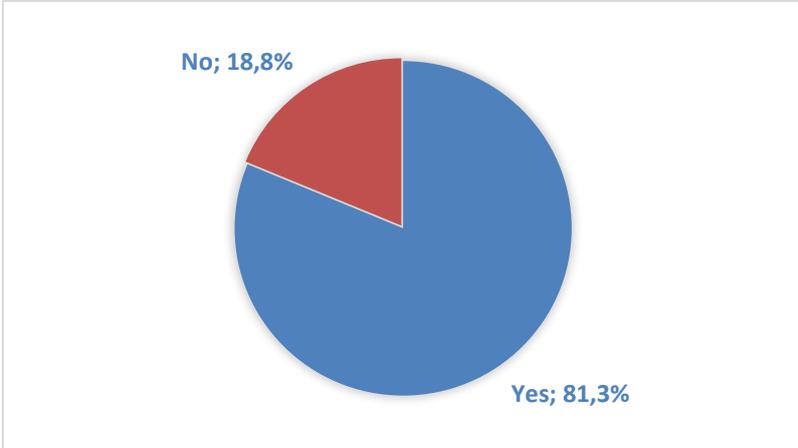
11. What energy sources do you use?



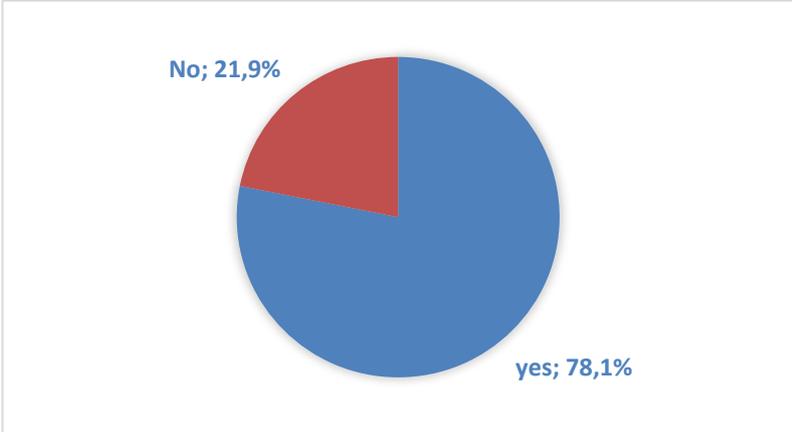
12. Do you use diesel/gasoline generators for power generation?



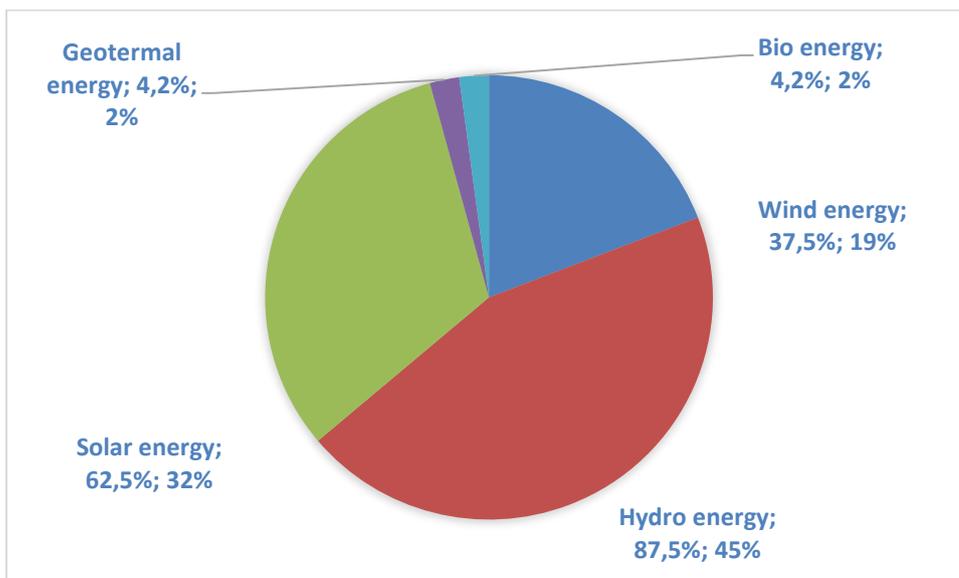
13. Do you use boilers, furnaces for heating, cooking, and hot water?



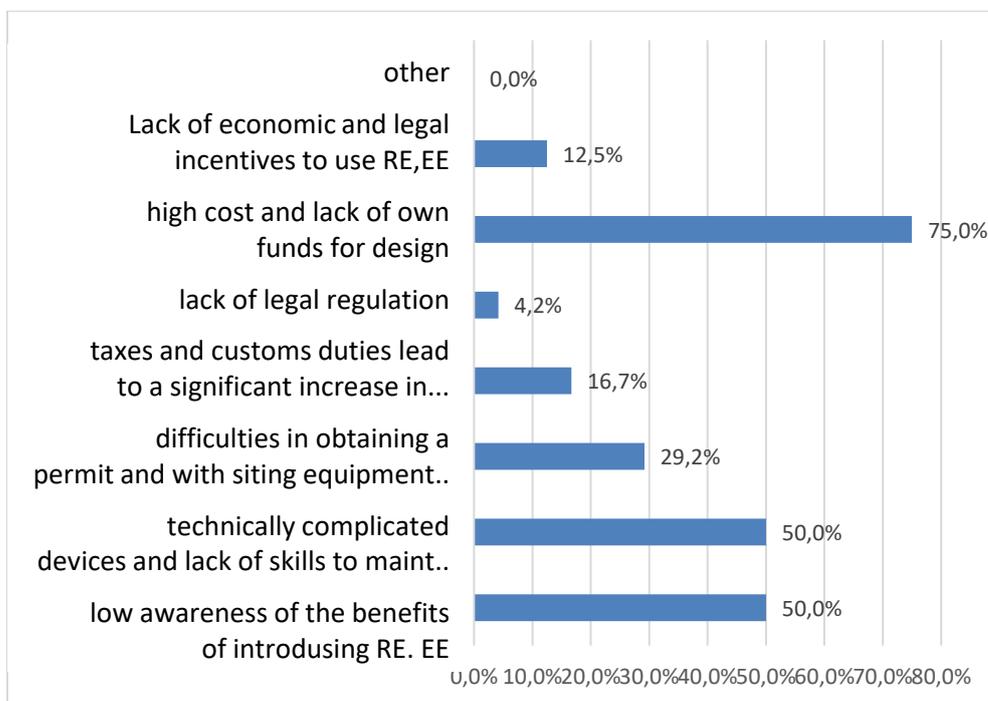
14. Do you know what renewable energy is?



15. Do you know which renewable energy sources are used in your region?



16. In your opinion, what are the main barriers to the growth of renewable energy production and consumption in the tourism sector?



Organisation	NAME	Position	Phone	E-mail
Public sector				
1. Ministry of Energy and Water Resources of Tajikistan	Tilloyev Vaysiddin	Head of RES department	2359824	
2. Ministry of Economic Development and Trade of Tajikistan	Ashurboy Solehzoda	First Deputy Minister	901607070	ashurboy@mail.ru
3. Ministry of Justice of Tajikistan	Nusratov Loik	Director of the Legal Aid Centre of the Ministry of Justice of Tajikistan	919925533	nusratov@mail.ru
4. Agency for Standardisation, Metrology, Certification and Trade Inspection under the Government of Tajikistan	Rakhimov Jurahon Rakhimovich	Head of department	907787684	Viber
5. Tourism Development Committee under the Government of Tajikistan	Kamoliddin Muminzod	Vice-Chairman	901902424	ker.procurment@email.com
6. Tax Committee under the Government of Tajikistan	Vazirov Sobir	Head of department	988480001	vsobir@gmail.com
7. Barki Tojik, Tajik Gosenergonadzor,	Shahbozov Anvar Garibshoevich	department head	2277401 p2340450d9 935340450	
8. Gissar Employment Centre	Rakhimov Halimjon Salimovich	Manager	918621238; 2242958	tv2005@mail.ru
Civic organisations, NAs, HEIs				
9. Centre for Innovative Development of Science and New Technologies of the National Academy of Sciences of Tajikistan	Iilov Mahmadscho	head of department	919228189	Viber
10. Association of Renewable Energy Sources of Tajikistan Public Association	Umarhon Madvaliev	Chairman	935050231	solar@systemavto.jj
11. AEFSP (Pecta)	Zoolshoev Asadsho	Director	935777131	director@vizitpa.mir.org
12. TATO Association	Fayzulloev F. N.	Director	938857555	tatoti@mail.ni
13. Public association "Tourism Development Council"	Habibov Davlat	Chairperson	918610189	d.habibov@mail.com
14. Association of Energy Workers of Tajikistan Public Association	Sirozhev Bakhrom	honorary chairman	919441114	Viber
15. NGO network on climate change	Yuri Skochilov	Coordinator	9045620909 18613428	Viber
16. TajNor Tajik-Norwegian Foundation	Jovid Gulommukhiddinov	director	555552525	Viber
17. Association of Micro Financial Institutions of Tajikistan (AMFOT)	Zebuniso Fattiddinova	director	918777010	Viber
18. ACTED Tajikistan representative	Zafar Norov	director	9923722464 22+9929876 00409	Viber

19. Association of Energy Workers of Tajikistan	Hodjaeva Uguloi Tiloevna	Deputy Chairman of the AET, Associate Professor at the MPEI branch, former head of Tajik State Energy Inspectorate, Deputy Chairman of the OSHC	935080448	ugul.kh@mail.ru
20. Tajik Technical University	Sadykov Khisrav Rizayevich	Professor in the Department of Energy	935080448	khisrav@tarena-tj.org
21. Tajik Technical University	Rustam Abduhamidovich Jalilov	Associate Professor in the Department of Energy	918614379	Viber
22. Tajik Technical University	Samadov Shakarbek Dodhoevich	D. in Economics, Senior Lecturer, Department of Economics and Production Management, TTU	927741958	Viber
23. Tajik Technical University	Chekalin Vladimir Georgievich	Head of the Department of IT and BT of TTU	907979733	Viber
24. Association of Energy Workers of Tajikistan	Rustam Sarabekovich Rakhimov	worked at Barki Tojik for more than 30 years	935605959; 945605959	Viber
25. Association of Energy Workers of Tajikistan	Usmanov Sobirjon	Member of the Board of AET	918659503	s_usmanov@mail.ru
26. Rural Community Development Agency, Sugd Oblast	Akramov Yahya Maumurovich	Founder of the Rural Community Development Agency, Ph.D., trainer in the use of RES	927151311	jamshedkayumov@gmail.com
27. Rural Community Development Agency, Sugd Oblast	Jamshed Kayumov	manager	927775559	Jamshedkaumov@gmail.com
28. Tajik Technical University	Abdurakhmanov Abdukarim Yakubovich	associate professor at TSU, assistant professor	918800664	Viber
29. Association of Energy Workers of Tajikistan	Valamat-Zadeh Timur Gafarovich	Industry veteran, Honoured Energy Worker of the CIS	2213005p; 2231522e	Viber
30. Association of Energy Workers of Tajikistan	Gulov Rashid Rajabovich	Member of the Board of AET, energy expert, RES	2358714; 2340414	gulovbarkitojik@mail.ru
31. Corresponding Member of the Academy of Engineering of Tajikistan	Sirojiddinov Kamolidin	Corresponding Member of the Academy of Engineering of Tajikistan	917045450	SKSh-54@mail.ru
Import/export (supply and sale) of finished goods, equipment, devices, appliances, components using RES/EE				
32. OJSC Sistemavtomatika	Kudusov Mansur	Deputy Director	992 37 222-14-56	m.kudusov@systemavto.tj
33. Samo Company	Abdumanon Toshkhojaev	director	992 927 774 266	Viber
34. CJSC Unitech	Ibodov U.N.	director	992 908 44 21 88	umedi87@yandex.ru
35. Pamirenergoservice Ltd.	Abdulatif Amonulloev	director	992 935 16 28 28	aaalatif@rambler.ru

36.	Kasabai Dovut Ltd.	Abdulaziz Amonulloev	director	992 935 162 828	aaziz66 @ramble r.ru
37.	DEVELOPMENT ESSENCE OF LIFE	Muyassar Naimov	director	992 935 155 515	muyassar8787@gmail.com
38.	Individual entrepreneur	Mamadnazar Chivonov	director	992 935 723 337	mamadnazar.jivonov@gmail.com
39.	Individual entrepreneur	Mamadgazanov Fakhridin	director	992 915 368 484	fakhridin.mamadgazanov@gmail.com
40.	Individual entrepreneur	Hokim Davlatbekov	director	992 935 747 314	hokim72@mail.ru
41.	Individual entrepreneur	Mirmurodov Chorshanbe	director	992 935 028 643	ch_mirmurodov@gmail.com
42.	Individual entrepreneur	Yorali Berdov	director	992 935 132 002	eraly.berdov@mail.ru
43.	Individual entrepreneur	Hamza Bulbulshoev	director	992 937 321 313	hamza.bubulshoev@gmail.com
44.	Individual entrepreneur	Sabrati Lutfaliyev	director	992 501 288 585	sabrati74@mail.ru
Production of finished goods, equipment, appliances, devices, components using RES/EE and energy saving, works and services					
45.	CJSC T-Rank	Hinenson Vitaly Vladimirovich	Director of ZAO T- Raik	918610209; 2212143	vitra00@mail.ru
46.	CJSC "Tajikenergoremont"	Roza Khoshmukham edova,	director	935051544	Viber
47.	Green Technologies Ltd.	Abdulloev Bahrulo	director	992 93 374 30 90	Viber
48.	Somon Energy Ltd.	Abdurahim Ismoilov	director	992 92 777 65 25	somon_company@mail.ru
49.	Innovation Technologies and Furkat Amonullo Ltd.	Furkat Amonulloev	director	992 935 831 989	furkat.amonulloev@gmail.com
Electricity generation-generation and sales					
50.	PamirEnergy	Shonizorov Shofozil	Generation department manager	93 548 11 08	shofozil.shonizorov@pamirenergy.com
51.	PamirEnergy	Kurbonshoeva Saodat	Generation engineer	93 453 98 76	saodat.kurbonshoeva@pamirenergy.com
52.	PamirEnergy	Dalatshoyev Imron	Mechanical repair service manager	93 577 99 55	Viber
53.	Khorog hydropower plant	Khudobakhsho Olucha	Khorog hydropower plant manager	93 819 55 63	Viber
54.	PamirEnergy	Palla Boyev	MSRWAI manager	90 744 07 95	palla.boev@pamirenergy.com
55.	PamirEnergy	Erach Davronshoev	MSRWAI engineer	93 786 05 04	Viber
56.	PamirEnergy	Asmatbekov Jovid	Accounting manager	93 854 97 97	jovid.asmatbekov@pamirenergy.com
57.	PamirEnergy	Haidarova Nazira	GBAO Human Settlements Electrification Project Manager	93 775 23 44	nazira.khaydarova@pamirenergy.com
Finance and credit sector					
58.	OJSC Ko mmerzbank Tajikistan	Minrzonazarzo da Farhod	Deputy Head of the Cashier's Office	900998862	Viber
59.	MDO Tamvil Ltd.	Gulmamadov Shams	Lawyer	938008699	shgulmamadov@mail.ru

60. CJSC Halyk Bank Tajikistan	Maksudov Farukh	Deputy Chief Legal Officer	985208080	fmaksudov@halykbank.ti
Tourism campaigns				
61. Kuhandiz Ltd.	Bakhromov Dilovar Shoimov	Director	928162002	dilya68@mail.ru
62. Saiyohachi Sarazm Ltd.	Bakhronov Manuchehr Shoimovich	Director	928690108, 928297555	sarazm-travel@mail.ru
63. Sairi Watan Ltd.	Safargul Nuralievna Nazarova	Director	918611150	Vatan.tours@mail.ru, jamshednazirov@mail.ru
64. Koshif Ltd.	Xpdjatov Farrukh Bakhtiyorovich	Director	989135555	farrukh.khojatov@gtt4 behruz.nasrulloev@gtt.tj
65. Pomir Peaks Ltd.	Habibov Davlat	Director	918610189	Info@uamirneak
66. Javohir Ltd.	Kholov Tojiddin Ashurovich	Director	939201010	umeda747@mail.ru
67. Panjakent Intour Ltd.	Sharifbadalov Mukhammadrasul	Director	935812173	sharifbadalov@mail.ru
Subjects of CBT				
68. Homestay in Jafr village, Rasht	Akobirov Mirzoshoh	owner	988048059	Viber
69. Homestay in the village of Podzhe, Rasht	Shohev Mahmadroib	owner	935816600	Viber
70. Homestay in Khoit village, Rasht	Abrorov Mullojon	owner	981037182	Viber
71. Homestay in Hoyt village, Rasht	Balaev Ahmad	owner	933113235	Viber
72. Homestay in Hoyt village, Rasht	Balaev Saidbek	owner	934675312	Viber
73. Homestay in Boki village, Rasht	Olimhuja Nizomov	owner	934707144	Viber
74. Homestay in Shulmak village, Rasht	Khasanov Alyor	owner	938861353	Viber
75. Homestay in Ruvoz village, Rasht	Sharipov Kurbonali	owner	908087450	Viber
76. Homestay GBAO	Baxrieva Mavluda	owner	935530087	Viber
77. Homestay GBAO	Shambieva Zumra	owner	935530087	Viber
78. Homestay GBAO	Shodilbek Odilbekov	owner	935530087	Viber
79. Homestay GBAO	Mamadshoev Taigonsho	owner	935530087	Viber
80. Homestay GBAO	Zavarova Jonbegim	owner	935530087	Viber
81. Homestay GBAO	Vali's Dawn	owner	935825820	Viber
82. Homestay GBAO	Sangakov Bakhrom	owner	934100250	Viber
83. Homestay GBAO	Khudodova Kurbumoh	owner	935392525	Viber
84. Homestay GBAO	Badakiev Sobirjon	owner	555051278	Viber
85. Homestay GBAO	Zoolshoeva Zhandia	owner	935575903	Viber
86. Homestay GBAO	Iilov Saidaziz	owner	555553912	Viber

87.	Homestay GBAO	Gairat	owner	939408994	Viber
88.	Homestay GBAO	Nasiba	owner	934177111	Viber
89.	Homestay GBAO	Sohibnazarov	owner	935847931	Viber
90.	HomeAbdusator	Abdusattor	owner	2207007	Viber
91.	Home-stay Abduyalim	Abdukhalim	owner	907516060	Viber
92.	Homestay Asad	Rajabaliyev	owner	935186661	Viber

Sectors	Quantity
Tourism campaigns	7
Public sector	8
Import/export	18
Civic organisations, NAs, HEIs	23
Electricity generation-generation and sales	8
Subjects of CBT	25
Finance and credit sector	3
The overall result	92

ANNEX 3. REVIEW OF THE OUTCOME OF THE FOCUS GROUP DISCUSSION on the potential of renewable energy production and consumption, energy efficiency in the Community-based tourism sector in Tajikistan

Prerequisites for the study

This qualitative focus group discussion (FGD) study is implemented within the framework of the European Union SWITCH Asia programme "Promoting Energy Efficiency and Renewable Energy Production in the Community Based Tourism Sector in Central Asia" project, which aims to reduce the carbon footprint of the tourism sector in Kyrgyzstan, Uzbekistan and Tajikistan. The objectives of the Project are: to support MSME providers in RES/EE and the community-based tourism sector in introducing sustainable consumption and production of green energy practices, and to access financing and create an enabling environment to strengthen sustainable consumption and production of RES/EE and the community-based tourism sector.

Programme, thematic content, approaches to organising and conducting the FGD and the survey.

The analysis and assessment of the business environment and compliance of legislation with the objectives of RES, EE and community-based green tourism development is based on a method to assess the presence/absence of green energy production factors. In addition, the Problem Tree methodology was used to identify actual problems of impact of policies (environmental impact factor), NAPs in three countries based on a survey, interviews, expert evaluation of results using the method of foresight projection (discussion) of ways to achieve the goal of reducing Co2 and O emissions in tourism.

Objective of the FGD: To gather objective information to analyse, evaluate and identify data and other factual problems of the sector already through direct dialogue in open discussion with stakeholders.

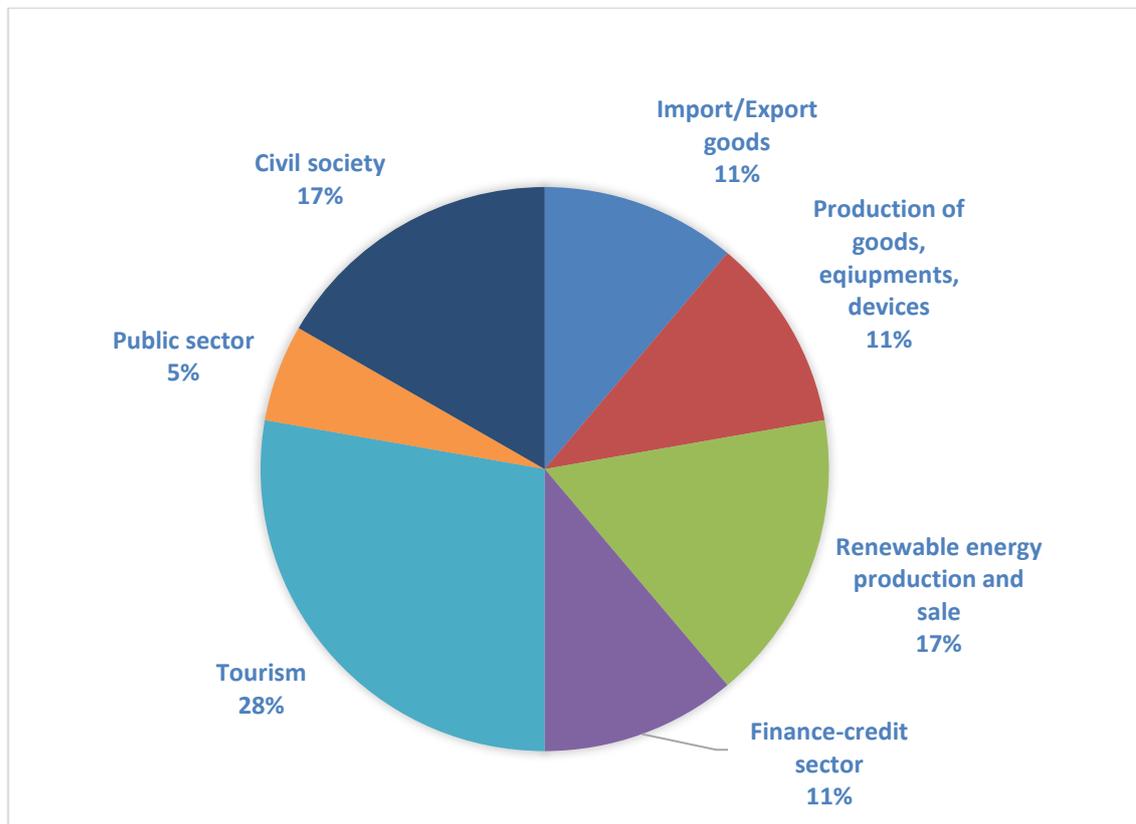
Date and venue of the FGD: **02 April 2021, Dushanbe**, Kohi afsaron/ Officers' Palace,
Number of participants in the FGD: 21 participants (list attached)

Moderator R. Musaeva - National consultant of the RES project, Chairperson of the Association of Energy Workers of Tajikistan, Ph.

Target audience:

- ✓ importers/exporters (supply and sale) of finished goods, equipment, devices, appliances, components using RES/EE
- ✓ manufacturers of finished goods, equipment, appliances, devices, components using RES/EE and energy saving, works and services
- ✓ producers, generation and sale of electricity
- ✓ finance sector
- ✓ public sector
- ✓ civil society
- ✓ Community-based tourism actors

Quantitative and qualitative indicators of the composition of FGD participants

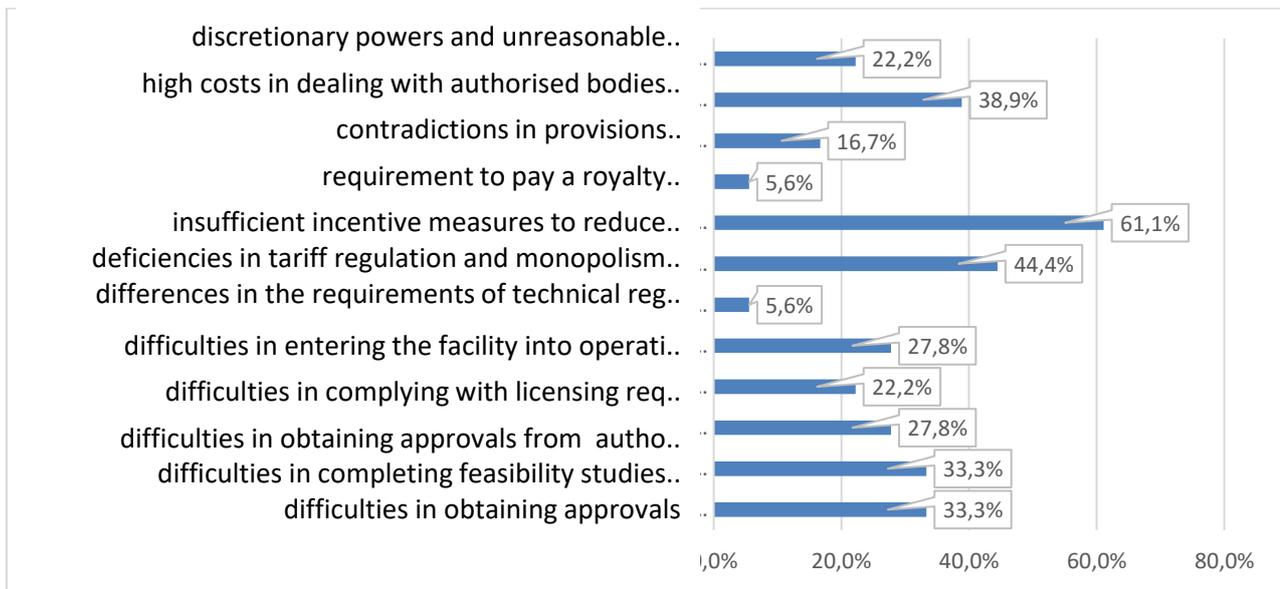


1. Assessment of the impact of existing legislation, adopted national strategies and programmes on increasing the use of RES and increasing EE in CBT industry

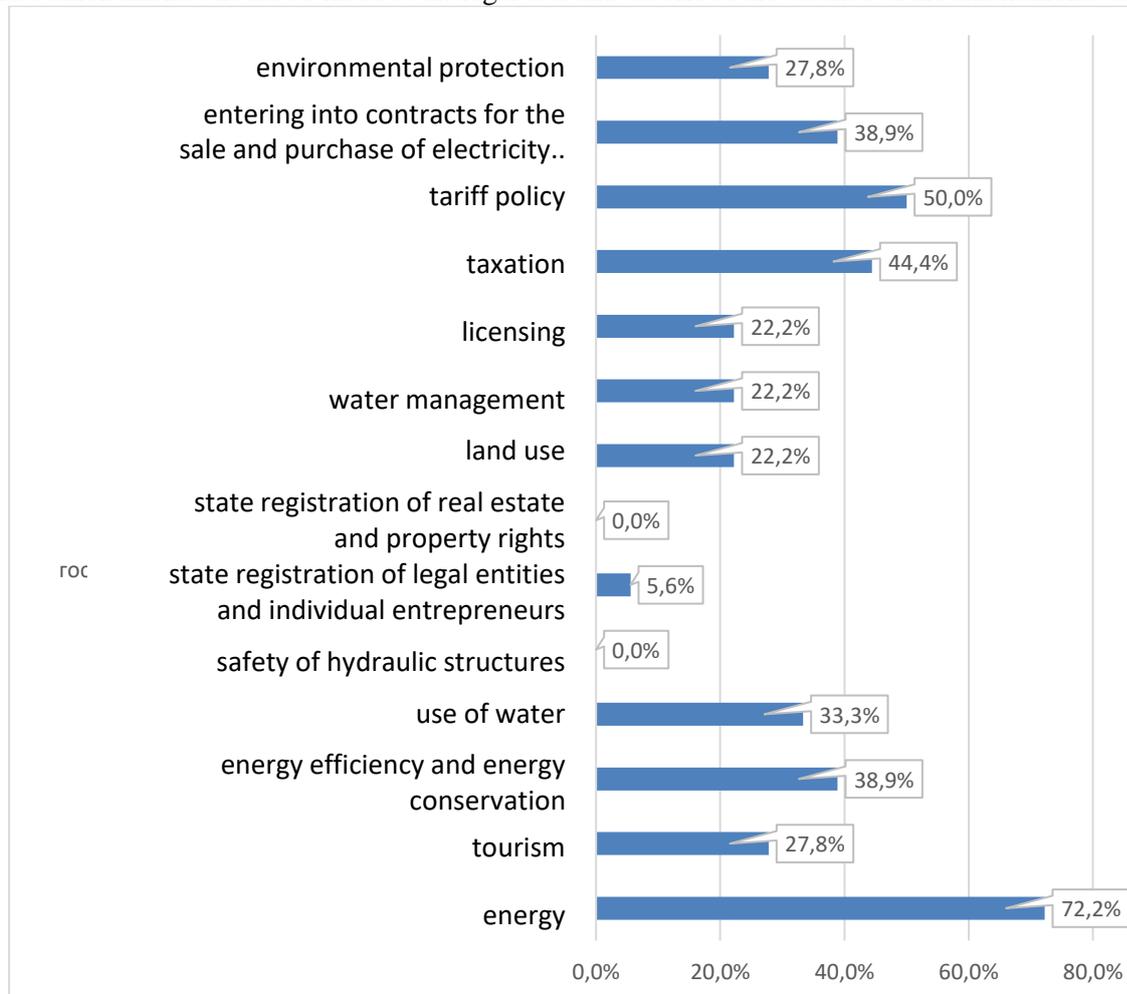
During the discussion on this topic, participants at the FGD considered and highlighted the following issues, among others

- ✓ Lack of decisions on the establishment and financing of the Renewable Energy, Energy Saving and Energy Efficiency Fund. It is not defined which sources should be used and how.
- ✓ Due to the restructuring of the energy sector, there is a need to amend the basic laws "On Energy", "On the Use of Renewable Energy Sources", "On Energy Saving and Energy Efficiency".
- ✓ Incomplete regulatory framework for tariff setting, need for a legislative definition of the tariff-setting regulatory body in the energy sector.
- ✓ Desirability of including measures to increase the use of renewable energy sources in the Tourism Development Strategy.
- ✓ RES facilities should be protected, as is established for large hydropower plants. The legal status of RES should be defined. They are not protected, e.g. they cannot directly sell surplus energy to electricity consumers. This should be provided for in Article 576 of the Civil Code. The Electricity Use Rules should also be revised.

A further questionnaire survey of FGD participants was carried out to detail the problems, and they in turn identified the following issues as the most impeding the widespread use of renewable energy, energy efficiency in the tourism sector at community level.



To the question "Is it necessary for the development of renewable energy production and increase of EE for CBM purposes to amend the existing legislative acts?" most participants answered positively and noted that these amendments should be made to the legal acts and described the essence of the amendments as follows



To the question "How do the implemented state programmes affect the use of RES and energy efficiency in CBT?" 100% of the respondents answered that quality implementation of the programme measures will increase RES energy production and supply, increase application of EE technologies, allow business retention and expansion, and generate more revenues and profits.

2. An overview of the main factors - the necessary economic resources for renewable energy production and EE growth in CBT industry” (land, natural resources, fixed capital, property, environment).

During the FGDs, participants highlighted the following issues regarding the necessary economic resources for RES and EE production.

✓ Although there is a surplus of water and energy resources in the country, there is a significant problem related to the seasonal nature of their availability. The previous IHPP development programme did not work primarily for this reason.

✓ There is a big difference between inflows in summer and winter, from 8 to 11 times. All small mountain rivers are low-water in winter, and this practically limits the operation of small hydropower plants during this period.

✓ It can be assumed that the tourism sector is most in demand during the summer period.

However, the types of tourism characteristic of the autumn-winter period are also increasingly developing in the country. In this context, sustainable access to electricity in all seasons of the year is important. Therefore, the challenge is to diversify the use of available energy resources, including various types of RES.

✓ Tourists' interest in winter views is growing, and there is already a lack of energy supply. The installation of solar panels to make up for the lack of heat, hot water is worth considering in this respect. But this will increase the costs.

✓ The capital intensity of water and solar renewables is about the same.

✓ Indeed, in world practice, by now, the cost of electricity from RES has decreased many times over. We can see that, on the one hand, tariffs for conventional energy are rising, and, on the other hand, the cost of electricity generated from solar energy is gradually decreasing with the development of technology.

✓ The availability of resources differs considerably between RES types, and not only geographically. The specifics of each RES should be taken into account.

✓ Regarding the "Capital" factor in terms of money, it should be noted that there is no institutional support for all RES in terms of taxes, incentives.

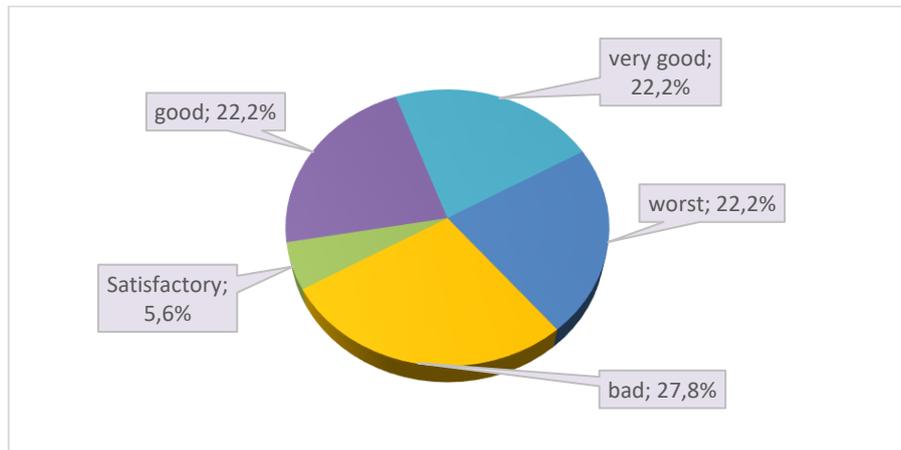
✓ Even for one type of RES, there are differences. For example, the use of solar energy is possible both through batteries and in parallel with the conventional grid, as well as the use of collectors to heat water. Battery-based applications are still expensive.

✓ A heat source such as ground source heat using heat pumps should not be forgotten. Such an installation is already in use in Khujand, in Machiton for power supply to the tuberculosis hospital and in Kulyab for the National Bank branch.

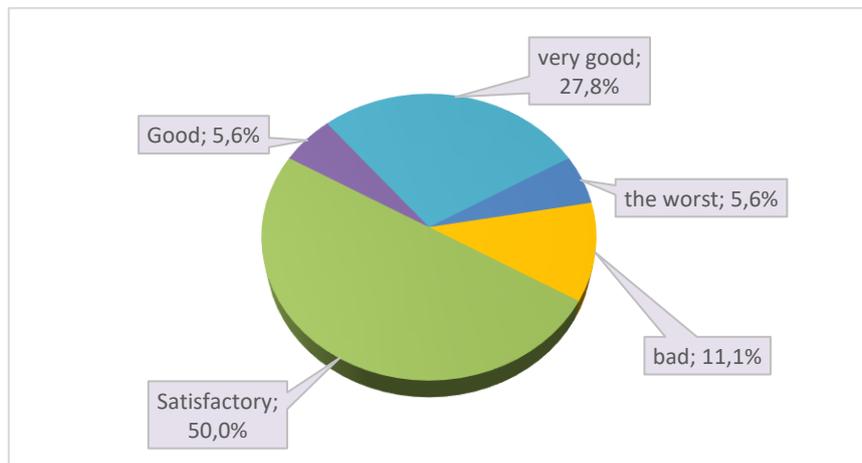
✓ The aim of the project is to reduce the carbon footprint of tourism activities. The impact of using more than just solar and water energy needs to be investigated.

According to the assessment of access to inputs required and involved in RES and EE energy production, 66.7% of respondents gave a positive assessment of access to the ground factor.

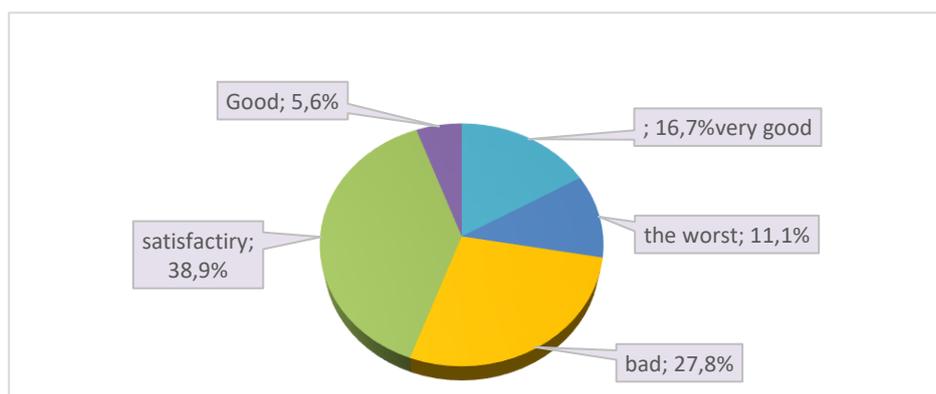
However, in terms of access to the capital factor, respondents' opinions were almost proportionally distributed, with 27.8% of respondents rating access to this factor as "low", 22.2% rating it as "very poor", 22.2% rating it as "good", 22.2% rating it as "very good" and 5.6% rating access to capital as "satisfactory".



Regarding access to the "labour" factor, 50% of respondents confirmed access to this factor as "satisfactory", 27.8% of respondents assessed it as "good" and 11.1% of respondents assessed this factor negatively. In general, the respondents confirm the sufficiency of labour resources as such in the country, but expressed doubts about the availability of qualified specialists in the field of RE production and EE.

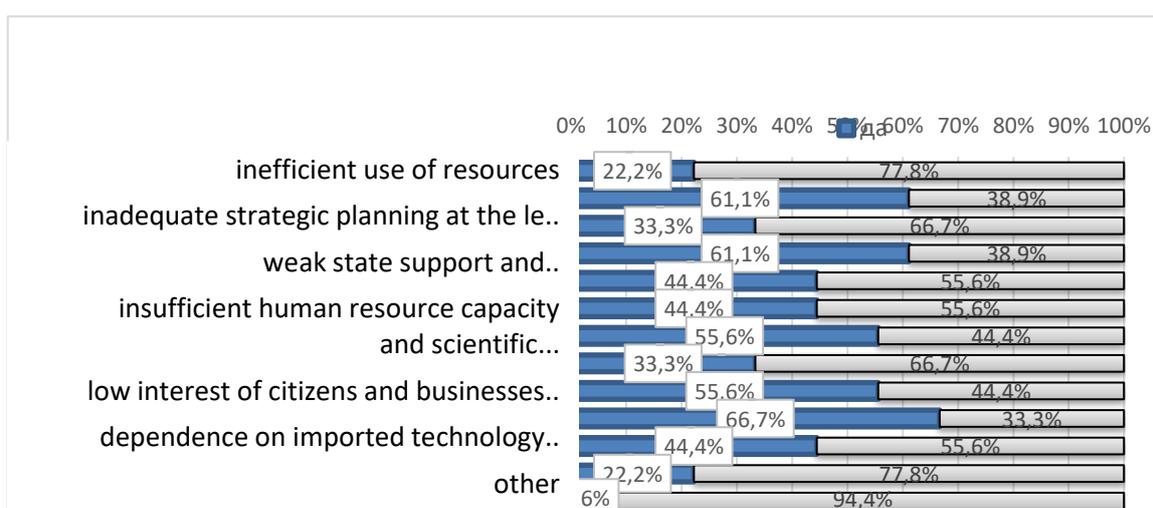
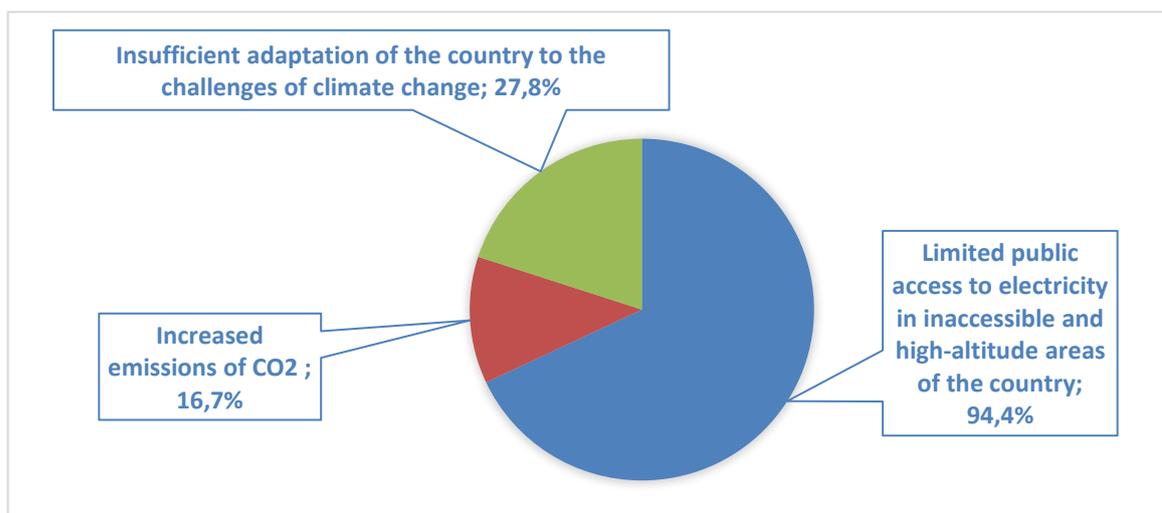


Regarding the entrepreneurial initiative in the field of RES and EE as a production factor, the vast majority of respondents evaluated it negatively, with 38.9% rating it "satisfactory", 27.8% "poor" and 11.1% at a low quality.



94.4% of respondents confirmed that the central problem of the RES and EE development sector is "limited access to electricity for the population in inaccessible and high altitude areas of the country".

In addition, respondents identified and prioritised the following sub-problems of the sector:



Respondents prioritised governance, legislative and institutional issues in the RES and EE sector into a separate cluster and as a result:

- 61.1% said that the main problem was an imperfect legal and regulatory framework,
- 55.6% confirmed tax and customs barriers as a sector problem,
- 50% believe that the problem is weak state support and insufficient incentives for the industry,
- 33.3% cite imperfect environmental requirements, standards and lack of green certification of tourism facilities as a problem,
- 33.3% of respondents cited administrative barriers and difficulties in obtaining permits and in obtaining land for the construction of energy facilities as an obstacle,
- 27.8% identified as a problem the insufficient competence of individual specialists, officials of the authorised state bodies,
- 22.2% consider insufficient strategic planning at national, sectoral and regional levels to be a problem,
- 11.1% - lack of reliable statistics and information for management decisions.

Respondents further prioritised resource management issues in the RES and EE sector into a separate cluster and as a result:

- ✓ 55.6% cited insufficient funding and investment attractiveness of the sector as a problem,
- ✓ 44.4% identify the dependence on imported technologies and equipment for RES and EE as a problem,
- ✓ 33.3% consider insufficient human resources capacity and availability of RES and EE specialists to be a problem,
- ✓ 27.8% emphasise the lack of targeted credit products and high interest rates for loans and limited

access to information on RES and EE,

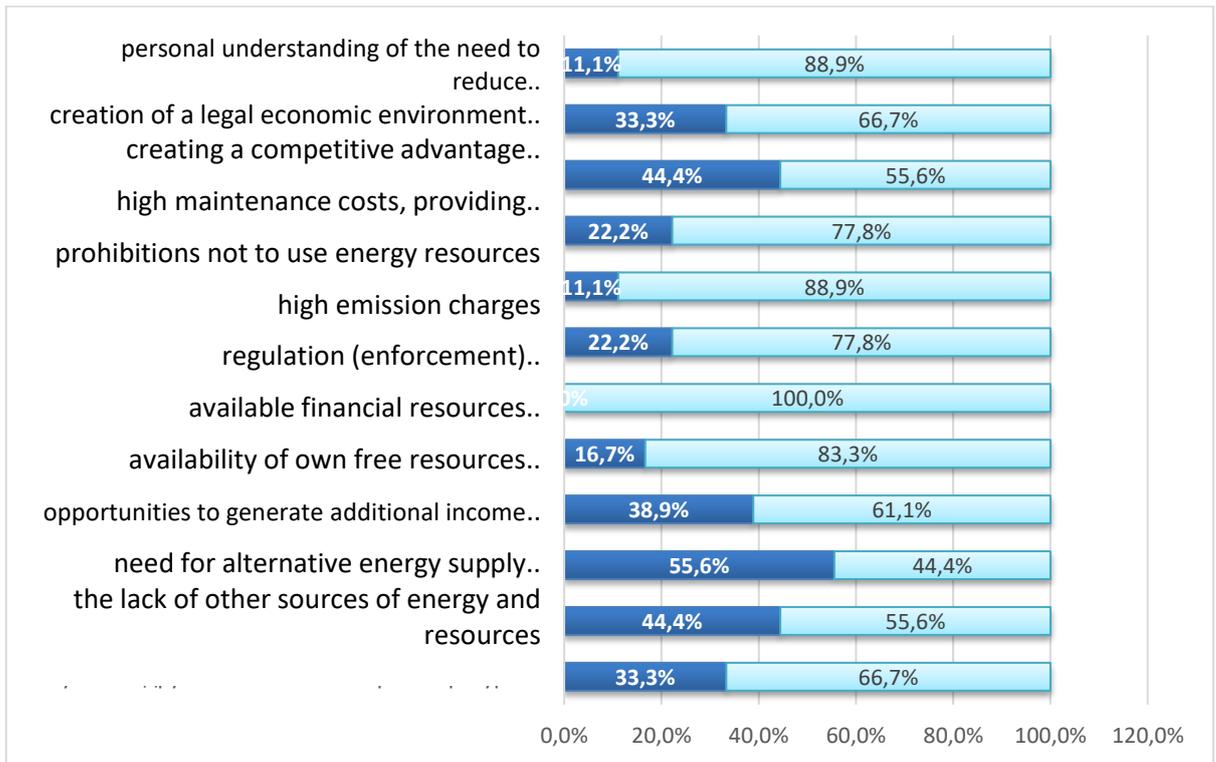
- ✓ 22.2% confirm low interest of citizens and tourism entities in using renewable energy,
- ✓ 16.7% say that research and development and innovation activities are underdeveloped and that educational standards and curricula in higher education institutions and colleges are imperfect.
- ✓ Half of the surveyed respondents consider the low activity of businesses in introducing technologies and setting up production in the field of RES and EE to be a problem for the business environment.

3. State regulation of entrepreneurship - legislation. Impact of environmental and land legislation on renewable energy opportunities in CBT.

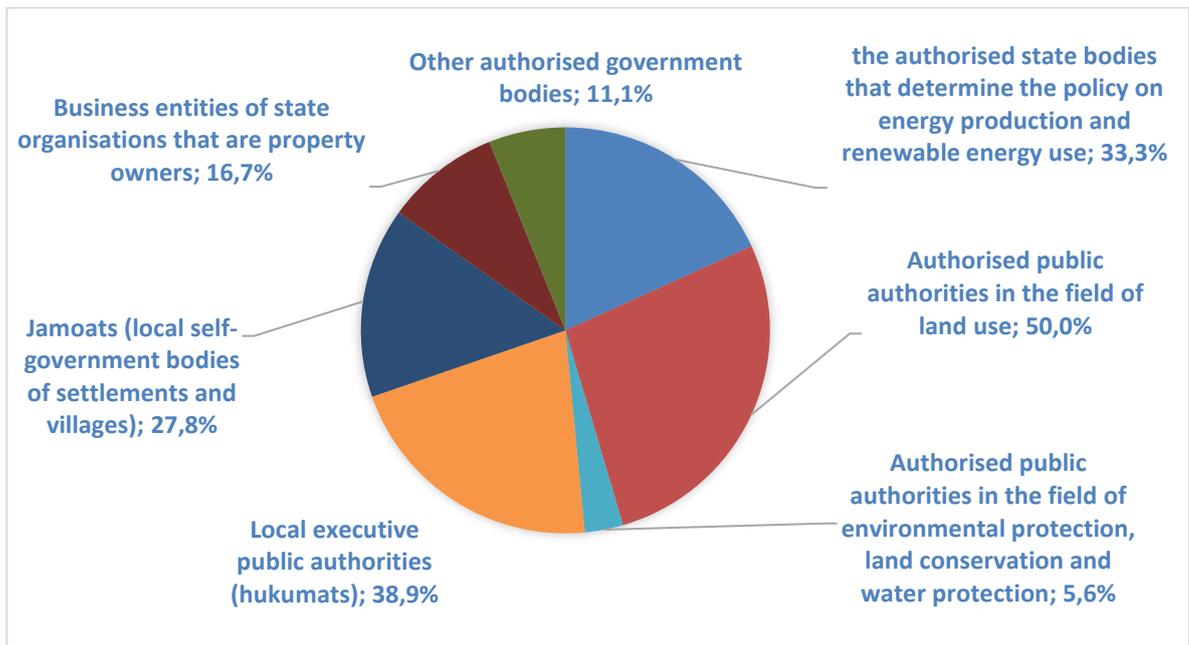
During the FGDs, participants highlighted the following problems in the area of state regulation of entrepreneurship at the legislative level:

- ✓ According to the practice of a number of small hydropower projects, the problems are not only in the quality of existing legislation, but also in ignorance and low awareness of the existing regulations on RES and EE, both investors and owners of SHPPs. Many small HPPs were built without proper permits and approval procedures, which subsequently affected the acceptance of these HPPs, their connection to the grid, calculation and setting of tariffs. Therefore, knowledge of and strict adherence to the requirements of the current legislation should be the basis for business activities.
- ✓ Article 38 of the Energy Saving and Energy Efficiency Law provides for the establishment of a Renewable Energy, Energy Saving and Energy Efficiency Development Fund to support the state policy on energy efficiency and energy saving. This support also includes assistance to entrepreneurs in the construction of renewable energy facilities. If the Fund were actually in place, any entrepreneur would be able to apply and receive the necessary advice, including on legislative issues.
- ✓ It is very important to have the necessary standards in the field of renewable energy, energy saving and energy efficiency. Businesses do not know that these have been approved, hence Tajikstandart should be concerned about communicating them to the business community and continue its work in this direction.
- ✓ Energy industry experts and analysts have repeatedly raised the issue of independent energy audits, but government agencies are blocking relevant changes in legislation. Energy audits should be independent; this would also attract investors. There should be an alternative; competent energy audit companies will play a significant role in the implementation of energy saving and energy efficiency objectives by conducting energy audits of facilities, including social facilities, production facilities, and housing, of course, if there is a legal regulation of this issue.
- ✓ Supervision of compliance with technical regulations and standards, norms and rules in production, transportation, processing, transformation, storage, consumption of energy resources and products, operation of energy facilities, installations and equipment is carried out by state energy supervision bodies, regardless of the type of energy resources. If necessary, an audit may be organised.

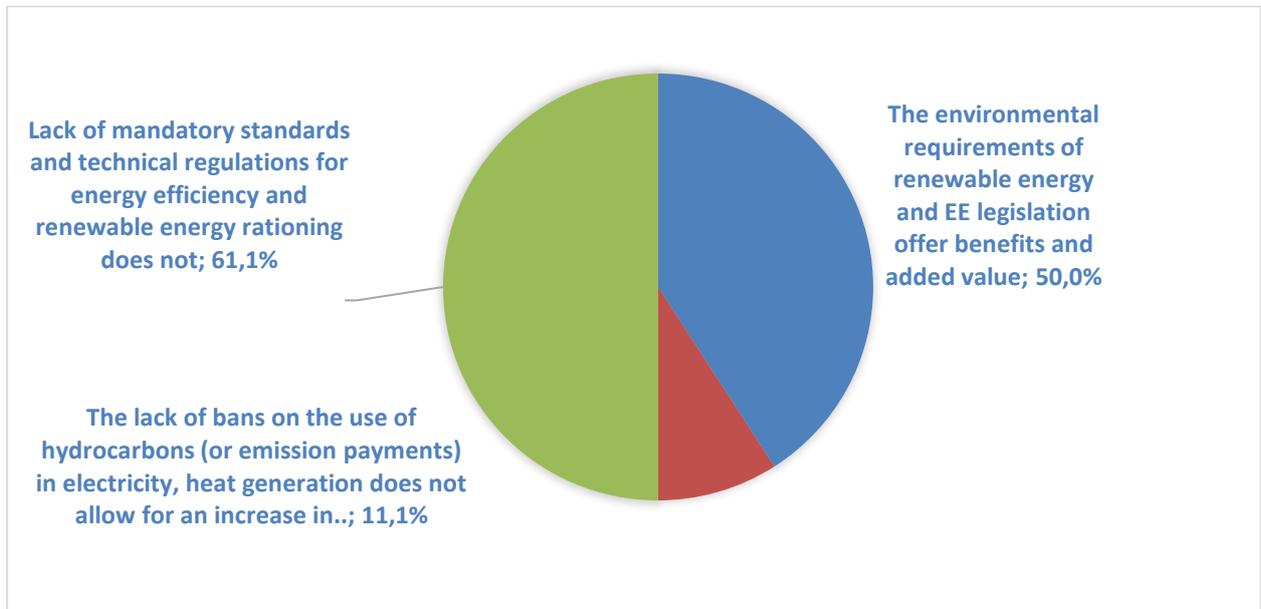
Further problems in this area are ranked in the questionnaire, where the majority of respondents confirmed that the emergence of entrepreneurial and investment initiatives for the implementation of RES, energy efficiency is based largely (55.6%) on the opportunity to generate additional income, profit, savings, other benefits and (44.4%) creation of a competitive advantage: promotion of the tourism product "Green Tourism" and the need for alternative energy supply, energy consumption, energy efficiency. 38.9% of respondents confirmed that it is based on the availability of their own free resources and financial means, etc.



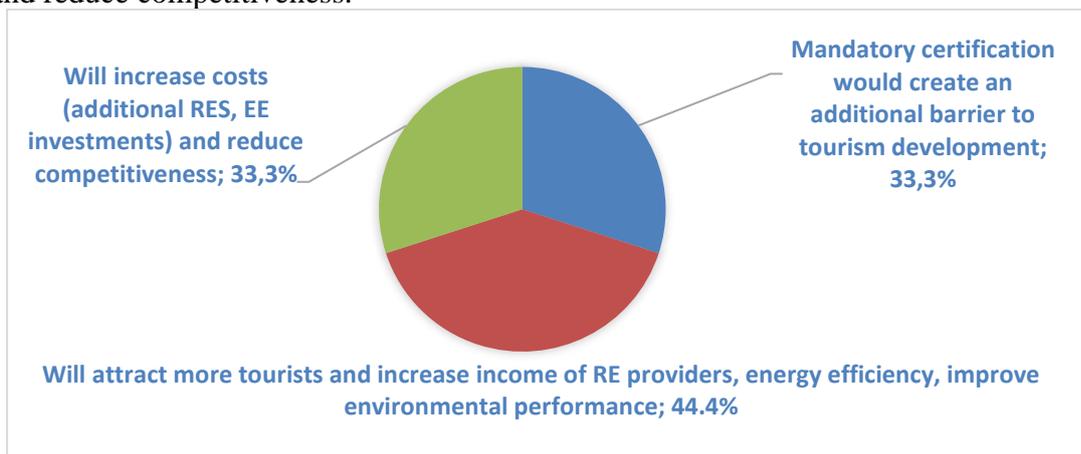
The main eligible entities creating unreasonably high administrative barriers in the use of RES and energy efficiency improvement for CBT purposes according to the survey results are authorized state bodies in the field of subsoil use (50% of respondents), local executive bodies of state power (Hukumats) (38.9%), authorized state bodies defining the policy in the field of energy production and RES use (33.3%), and Jamoats (local self-government bodies of settlements and villages) (27.8%).



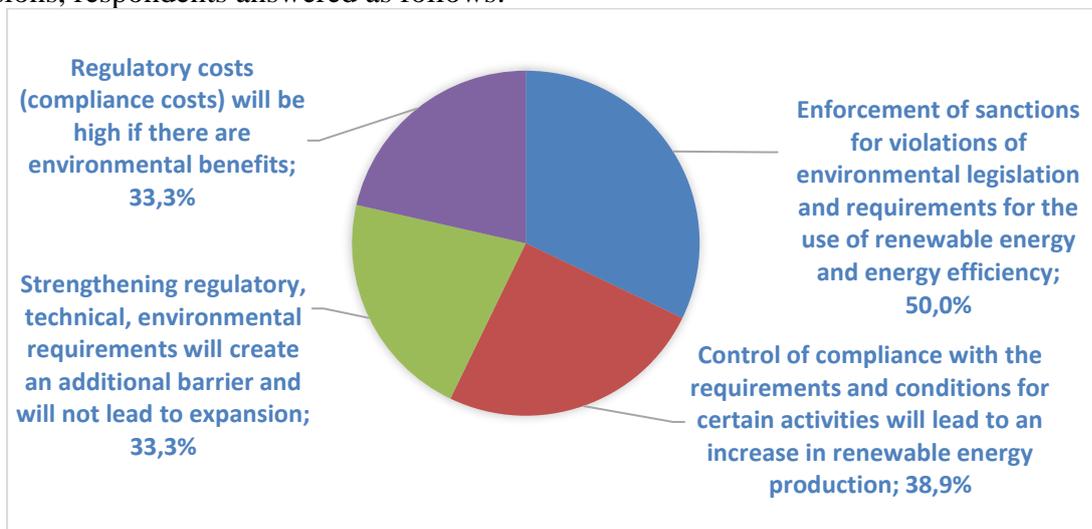
When asked whether the environmental factor affects investment decisions in renewable energy production and energy efficiency, 61.1% of respondents confirm that there are no mandatory standards and regulations for energy efficiency and rationing of renewable energy production, which prevents increased sales, 50% believe that the environmental requirements of renewable energy and EE legislation provide benefits and added value and influence investment decisions in renewable energy production.



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



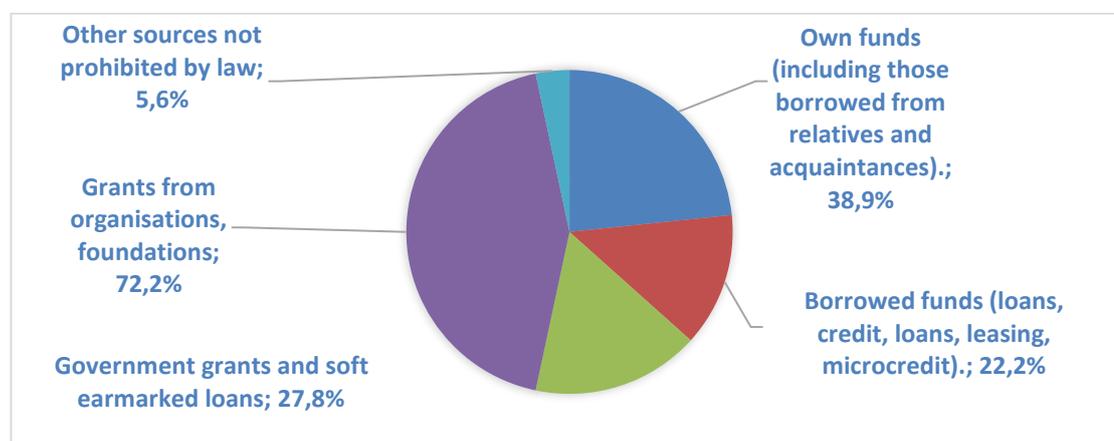
When asked whether the establishment of mandatory environmental requirements and conditions for economic activity for business entities in the CBT sector would reduce greenhouse gas emissions, respondents answered as follows:



4. Financial aspects of renewable energy production and EE growth in CBT industry

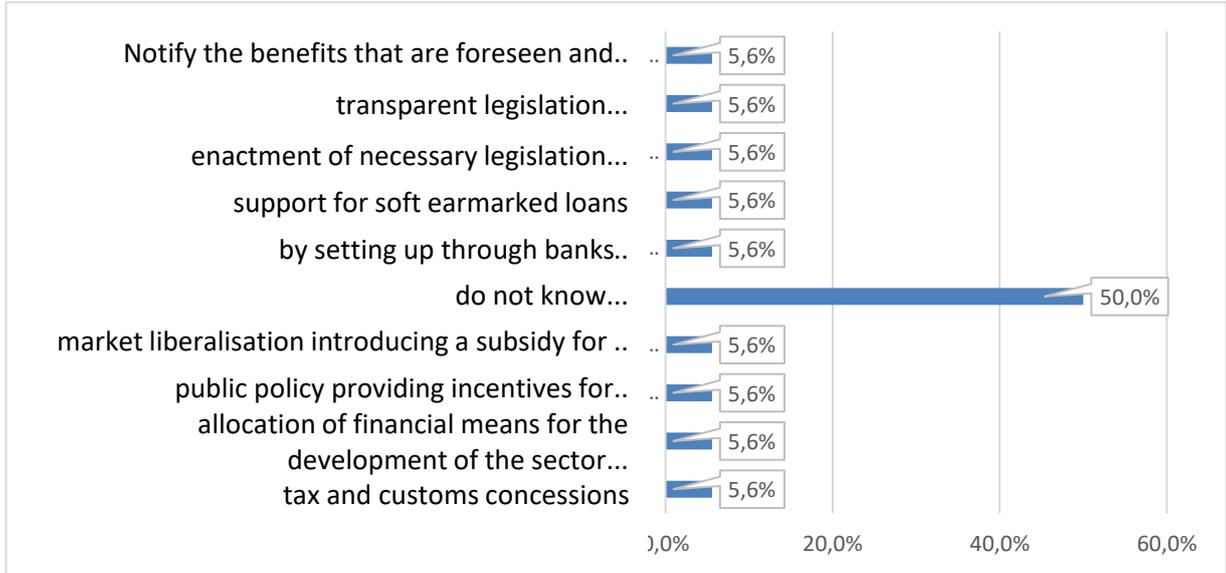
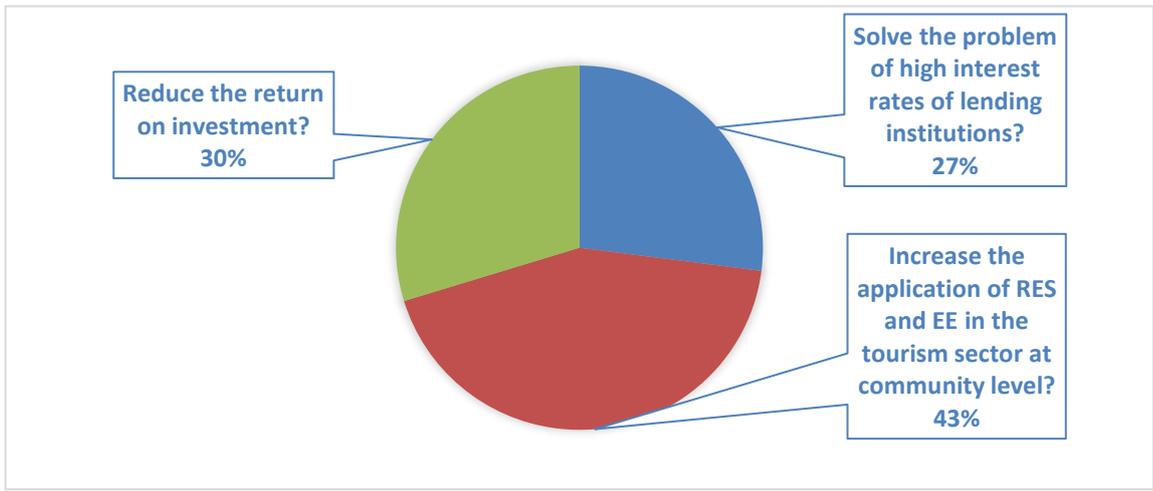
During the FGDs on the availability and accessibility of financial resources (working capital, investments, loans), tax and customs regime for producers and suppliers of RE and their consumers, in particular tourist firms providing community services, existing benefits, business and investment activity of "suppliers" and "consumers" of RE the following suggestions and recommendations were made by participants

- ✓ An investor can invest if there is a sound feasibility study, which is a time-consuming process. International organisations have the capacity to assist in this regard. It is advisable to start with a pilot project, where realistic recommendations on fundraising could also be developed. The implementation of this project will provide an impetus for action in this regard.
- ✓ The Association of Energy Workers of Tajikistan assisted the owners of several MHPPs in the calculation of tariffs. As the study showed, none of them had a complete set of authorisation documents in accordance with the legal procedures. In order to approve the calculated tariffs for these plants, all these documents had to be restored, otherwise the authorised body was not entitled to accept the tariff proposals for consideration. On the other hand, originally, the RES law established tariffs by the authorised anti-monopoly authority. Unfortunately, the legislation was subsequently amended to place this issue within the competence of the Government, which in turn makes it much more difficult to approve tariffs for small-scale power plants, and consequently the sale of RES-produced energy. This issue needs to be legally reconsidered and as Barki Tojik has been restructured and there is a need to establish a regulatory body and consider the sale of electricity directly to consumers.
- ✓ There is another aspect to the importance of developing a tariff policy. A feasibility study is needed to build RES, and the feasibility study should include a tariff to determine the payback period. A questionnaire survey on the issues discussed yielded the following results:
- ✓ To the question "What financial resources are more often used for RES construction and implementation of energy efficiency measures? 72.2% of respondents answered that they mainly use grants from organisations and foundations, 38.9% use their own funds (including those borrowed from relatives and acquaintances), 27.8% use state grants and soft targeted loans, 22.2% use borrowed funds (loans, credits, loans, leasing, micro-credits).



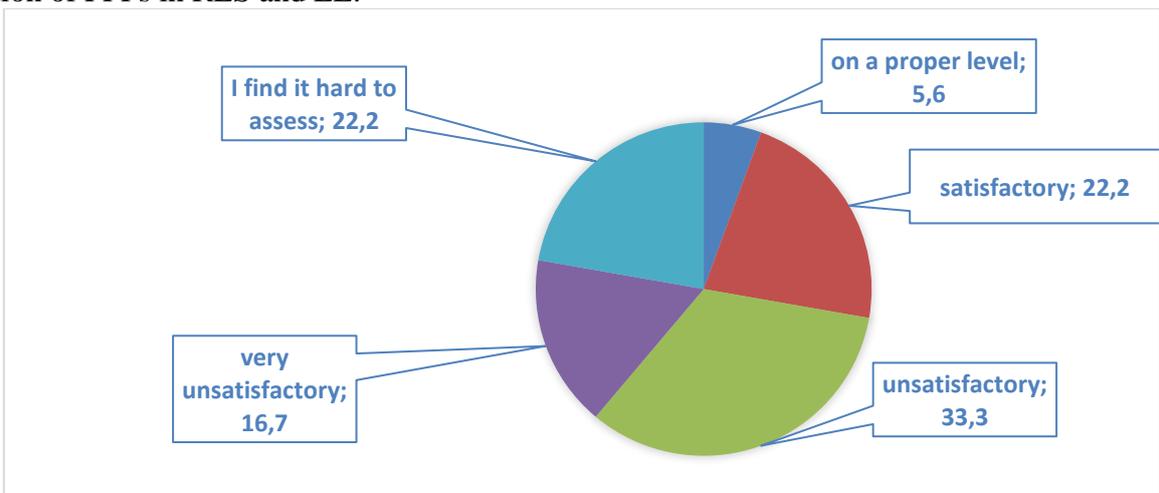
Respondents further noted that the allocation of soft targeted loans to RES, EE, CBT entities from special development funds would solve the following problems: increase the use of RES and EE in the tourism sector at community level (88.9%), reduce the payback period of investments (61.1%) and solve the high interest rate of lending institutions (55.6%).

To the question "How can the state stimulate the development of the RES and EE sector?" respondents listed the following incentives

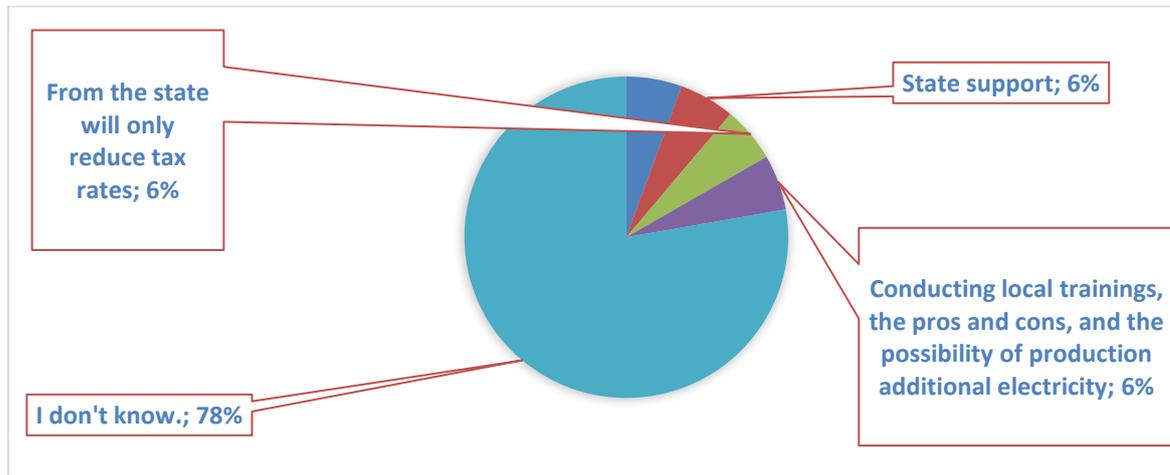


However, 50% of the respondents do not know how the state can stimulate the development of RES and EE.

To the question "How do you rate the application of public-private partnerships in RES and EE?" more than 72% of the respondents chose negative answers, which proves the low level of application of PPPs in RES and EE.



78% of the respondents could not provide recommendations for strengthening public-private partnerships in RES and EE in the context of promoting CBT and only 6% of them provided the following suggestions:



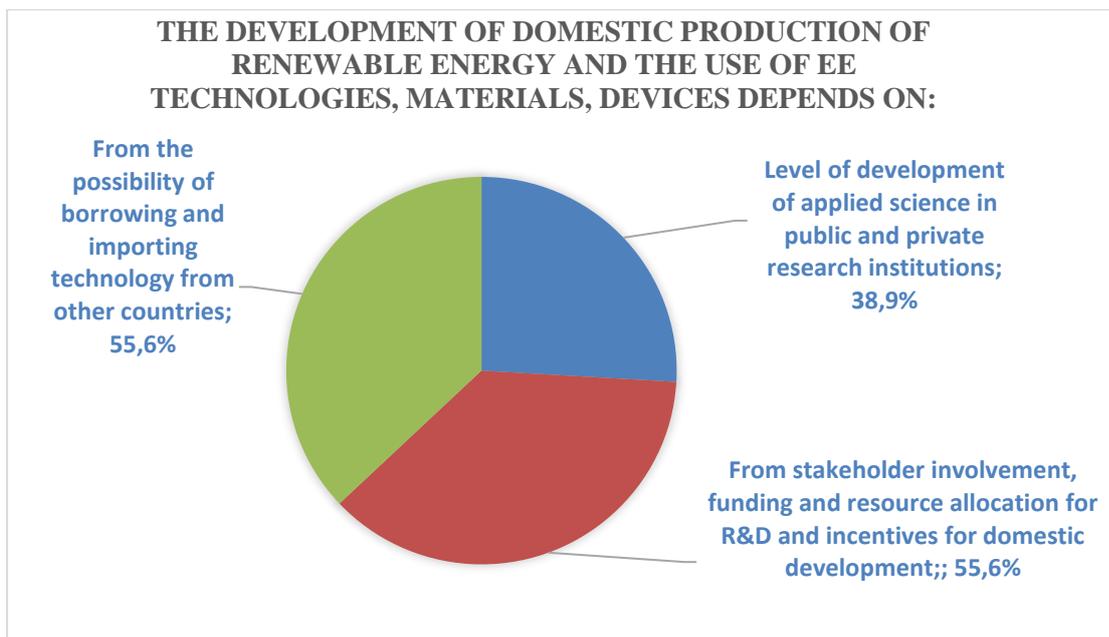
5. "Impact of the Technology Factor on the Growth of Renewable Energy Production, and EE Growth in the CBT Sector".

The following suggestions and recommendations were made by FGD participants during the discussion on the availability of technology, equipment, instrumentation, maintenance and operation services for high-tech equipment, application of energy efficiency materials and technologies and reduction of process losses; assessment of the impact of RES technologies on cost, price of energy produced, sales growth, return on investment:

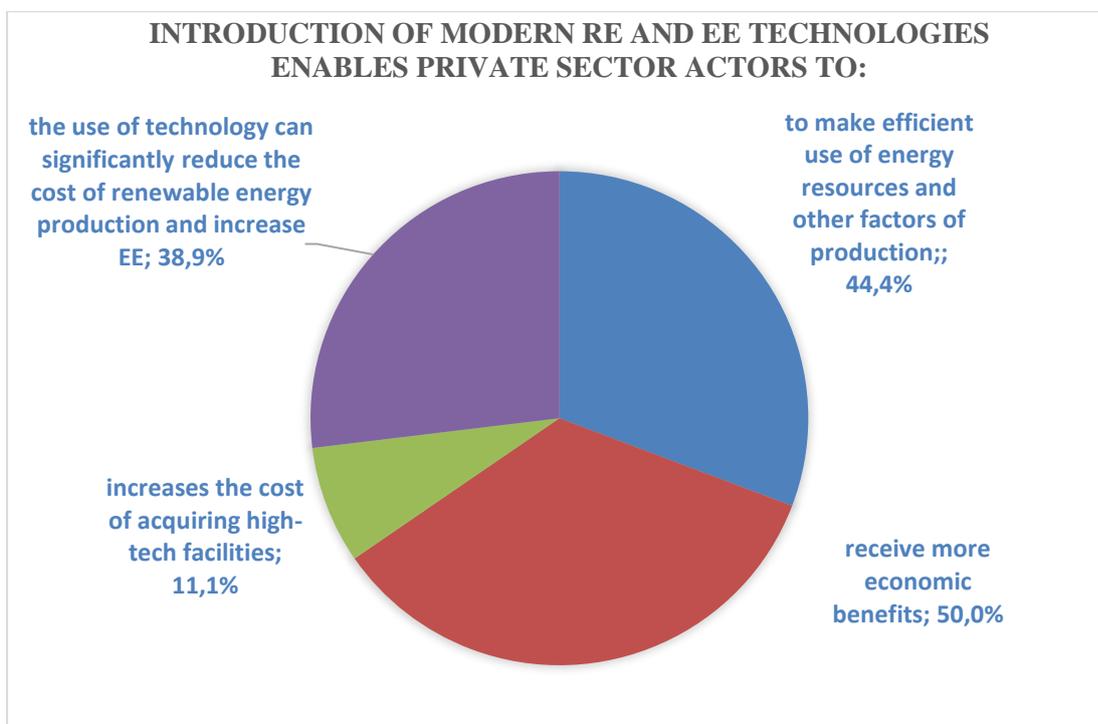
- ✓ The lakes are an important tourist destination. However, the infrastructure is underdeveloped and tourists take a day or two to visit. At the Centre for Innovative Development of Science and New Technologies of the National Academy of Sciences, much is being done to study different types of RES. For example, Turkey's experience in installing floating solar power plants, i.e. they are placed directly on the water surface, which increases the amount of energy produced by 10%, is noteworthy. Also of interest are hybrid power plants that will operate interchangeably in the evening and daytime, in winter and in summer. Diversified solar panels can close the supply gap in summer.
- ✓ Domestic manufacturers of RES equipment need state support. The cost of transporting imported raw materials is higher than the cost of the raw materials themselves, all of which affects the cost of production. Therefore, there are difficulties in selling the products. The sales market is also problematic.
- ✓ In other countries, the government protects and supports domestic manufacturers of renewable energy equipment. For example, Turkey requires the use of solar collectors and the installation of two-circuit systems.
- ✓ There are opportunities for support through tax preferences, setting standards for imported equipment. In terms of the market, we have not only a domestic market, but also an external market, Afghanistan, which provides ample opportunities to sell our competitively priced products in the context of RES. Pamirenerji, for example, sells surplus energy generated by the MHPP to Afghan border settlements.
- ✓ Tajikenergoremont has experience in producing generators for small hydropower plants, e.g. Romita, Nuroobod. All the MHPPs were built with grants, and the design and estimate documentation was developed by foreign companies, in particular Croats. Technical, geodetic and hydrological parameters were not taken into account when designing, taking into account the winter season. If the developers made mistakes, they should be sanctioned.
- ✓ There are also problems with the local population. For 2 years, there is no one to hand over the MHPP in Roshtkala. The local authorities refuse to take over the balance. It needs to be decided initially who will be the owner of the constructed plants
- ✓ Once again, the importance of state support must be emphasised. For example, in Armenia, builders are obliged to use domestic equipment. In Uzbekistan, it is forbidden to import equipment produced in the country. It is necessary to encourage the producer, for example, by tax incentives, which the law does not provide.

A questionnaire survey on the issues discussed yielded the following results:

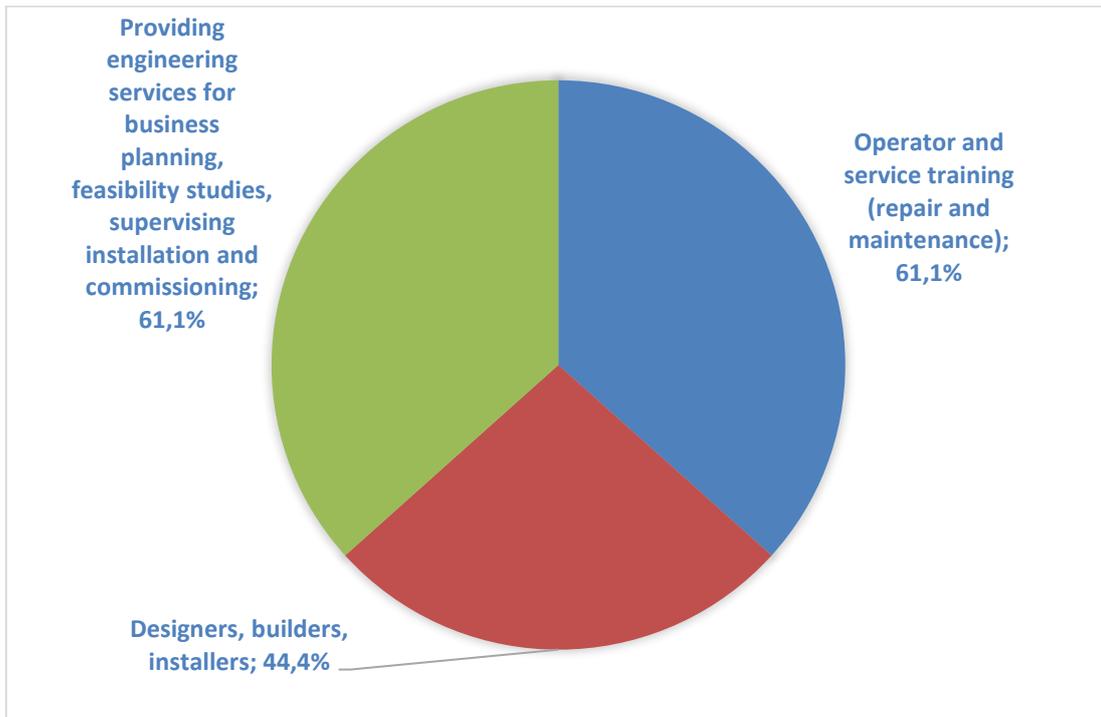
- ✓ When asked what the development of domestic production of renewable energy and the use of technologies, materials, EE appliances depends on, respondents answered as follows:



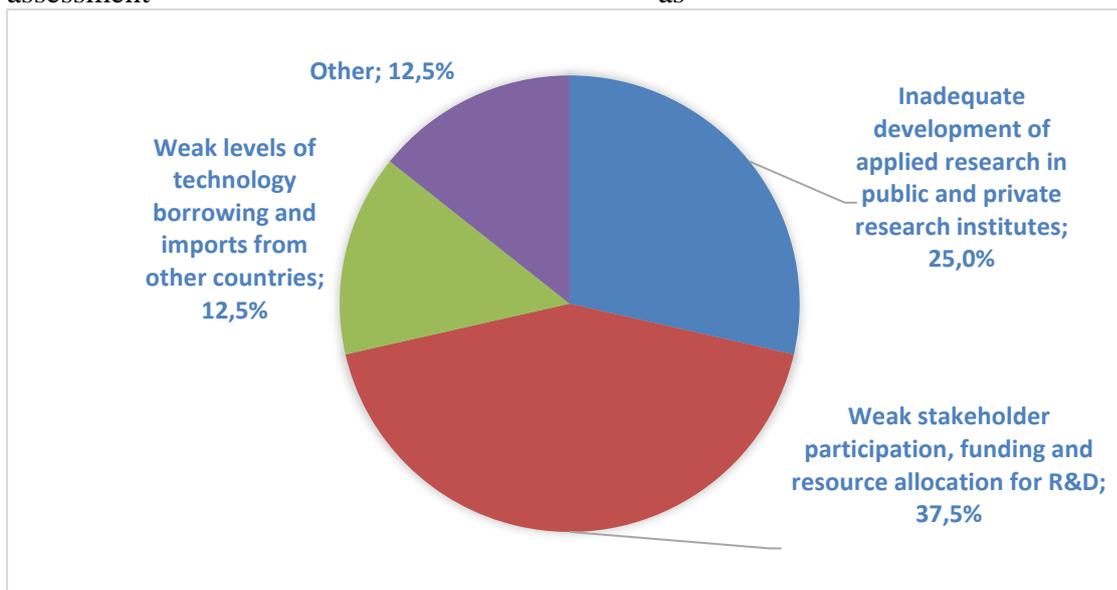
- ✓ When asked what the application of modern RE and EE technologies would enable private sector entities to obtain more economic benefits, 61.1% of respondents answered that it would create an opportunity to use energy resources and other production factors efficiently, 38.9% indicated that the application of technologies enables significant cost savings, and 11% considered that it increases the cost of purchasing high-tech facilities.



- ✓ According to 61.1% of respondents, the use and introduction of modern RES and EE technologies in the tourism sector will require the development of specialised services for training of operators and service workers (repair and maintenance), provision of engineering services at the stage of business planning, feasibility study development, supervision of installation and commissioning; 44.4% of respondents consider that it will require development of services of designers, constructors and installers;



✓ To the question "How do you rate the development of RES and EE technology?" 55.6% of the respondents answered unsatisfactorily and 44.6% rated satisfactorily. Respondents who rated the development of RES and EE technology as unsatisfactory explained the reasons for this assessment as follows:



6. "Workforce, design and operation of renewable energy facilities"

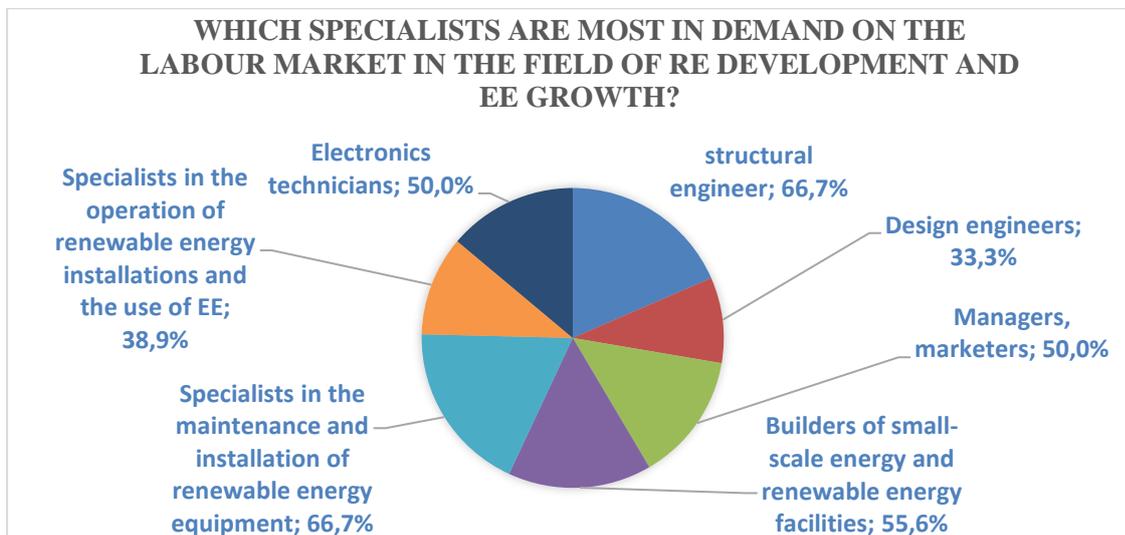
During the FGDs were discussed issues regarding the demand for use of and support for RES competences and specific training of personnel. The FGD participants noted the importance of training mid-level professionals as well as vocational training for the energy sector for the needs of the small-scale energy sector, and for the remote mountainous regions. There is a need to coordinate the work of several line ministries and agencies in the country to improve vocational training with a focus on the training of specialists in the production and maintenance of RES and EE.

A questionnaire survey on the aspects discussed yielded the following results:

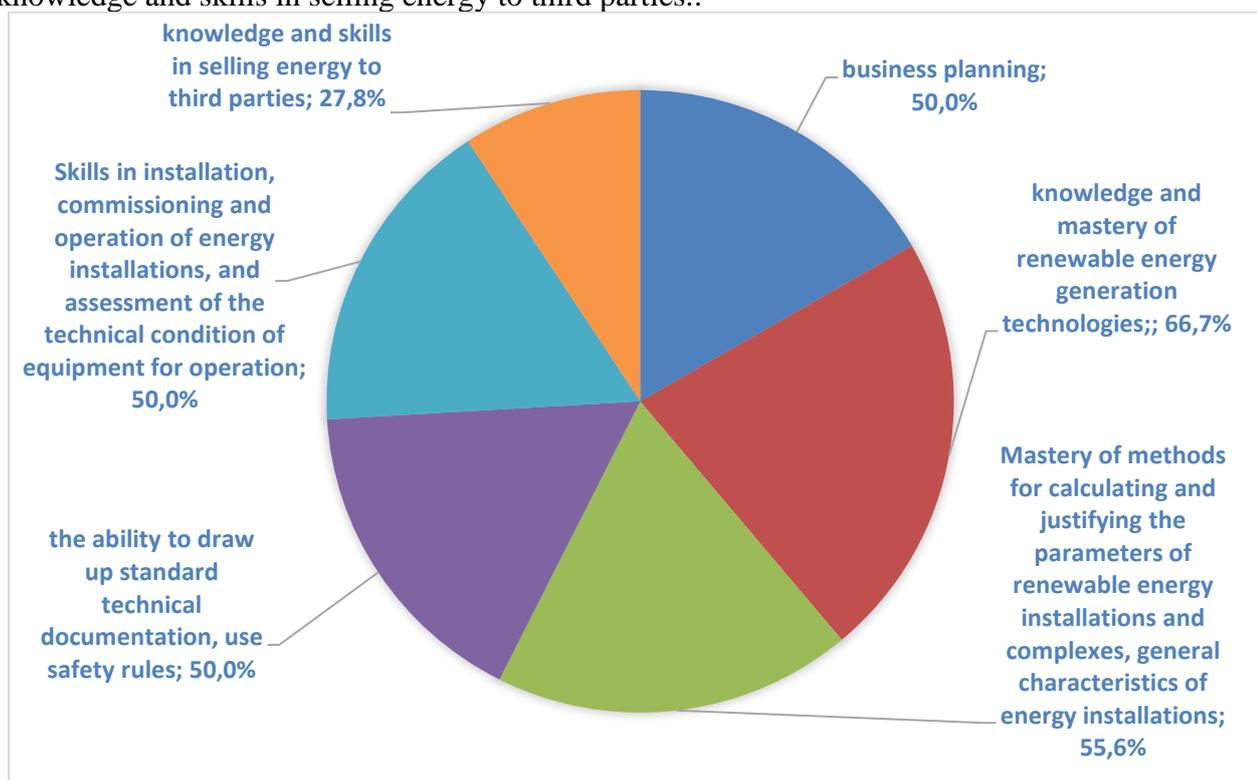
✓ Regarding the assessment of the availability of RES and EE sector specialists with the required qualifications, 55% of respondents answered that there are not enough specialists and in some areas there are no specialists at all, 27% of respondents assessed the availability as satisfactory

and 16.7% of respondents considered the level of training as not meeting the required competences as satisfactory.

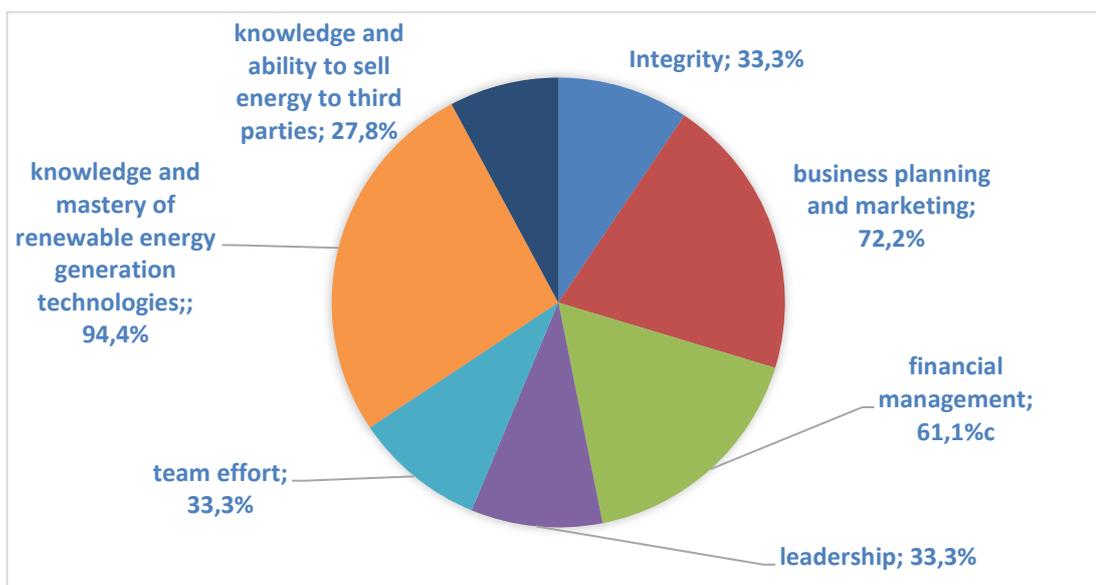
✓ When asked which specialists are most in demand on the labour market in the field of RE development and EE growth, 66.7% of respondents said that project engineers, RES equipment maintenance and installation specialists are in demand on the labour market, 55.6% believe that construction workers of small energy and RES facilities are in short supply, 50% pointed out the need for managers and marketers, etc.



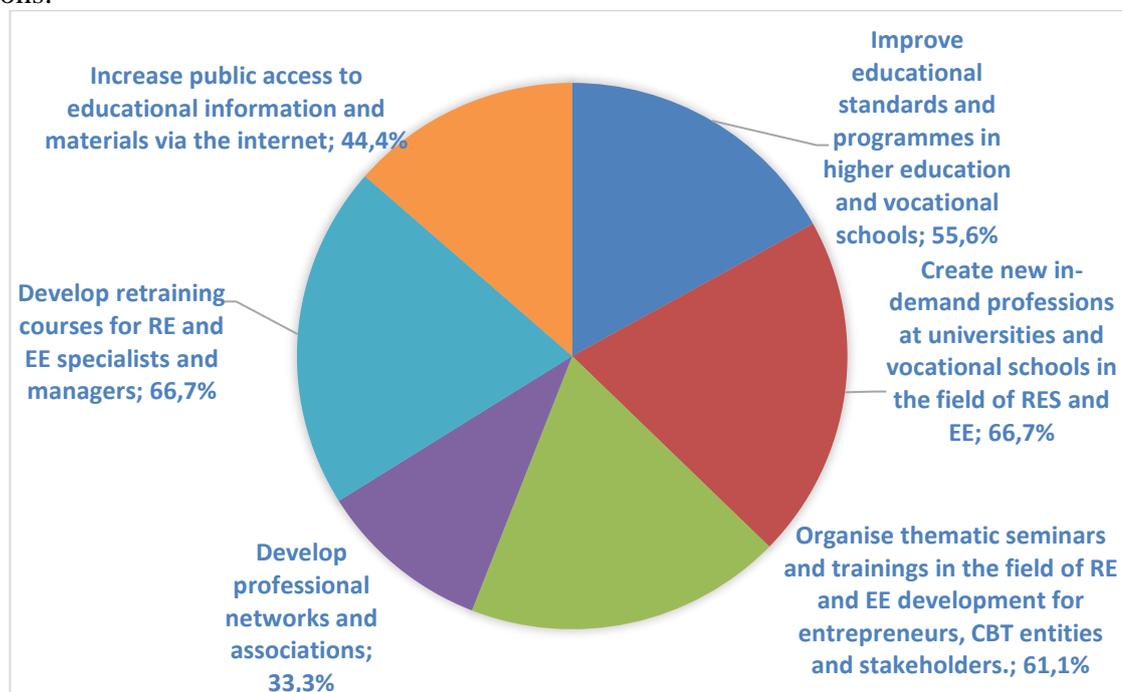
✓ To the question "What competences should the officials of the authorised state bodies have in RES and EE issues?" respondents answered as follows: 66.7% - officials should have knowledge and mastery of technologies of RES-based energy generation, 55.6% - competencies of calculation methods and justification of parameters of RES-based installations and complexes, knowledge of general characteristics of power plants, main and auxiliary equipment; 50% believe that officials should also have competencies of business planning, ability to draft and draw up standard technical documentation, use safety rules and compliance with fire safety and labour protection standards, as well as skills in installation, commissioning and operation of energy installations, assessment of the technical condition of equipment for operation, 27.8% have knowledge and skills in selling energy to third parties..



✓ To the question "What competencies should RES and EE entrepreneurs have?" 94.4% of the respondents indicated knowledge and mastery of renewable energy generation technologies; 72.2% - business planning and marketing, 62.1% - financial management and others.



✓ To the question "What should be done to provide the sector with specialists?" 66,7% of respondents propose to develop retraining courses for RES and EE specialists and managers, as well as to establish new demanded specialties in HEIs and vocational schools in the field of RES and EE; 61,1% of respondents - to organize thematic seminars and trainings; 55,6% - to improve educational standards and programs of HEIs and vocational schools; 44,4% - to expand public access to educational information and materials via Internet; 33,3% - to develop professional networks and associations.



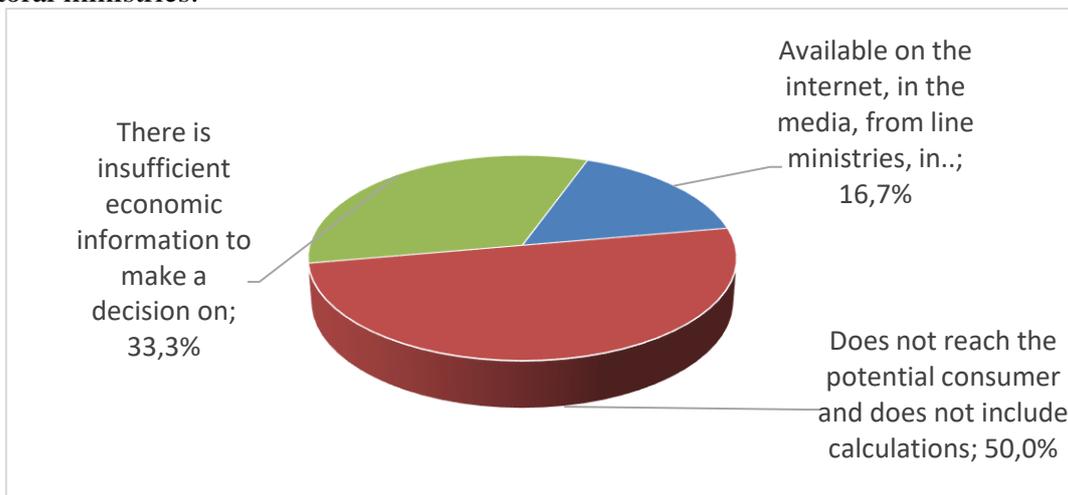
7. "The role of information in the development of renewable energy production and consumption and the widespread use of EE by CBT actors".

During the FGDs, the participants noted the need to raise awareness of all stakeholders through a differentiated approach. The Government Decree on the establishment and maintenance of the RES Inventory and the decision of the Ministry of Energy to create a relevant Catalogue of RES

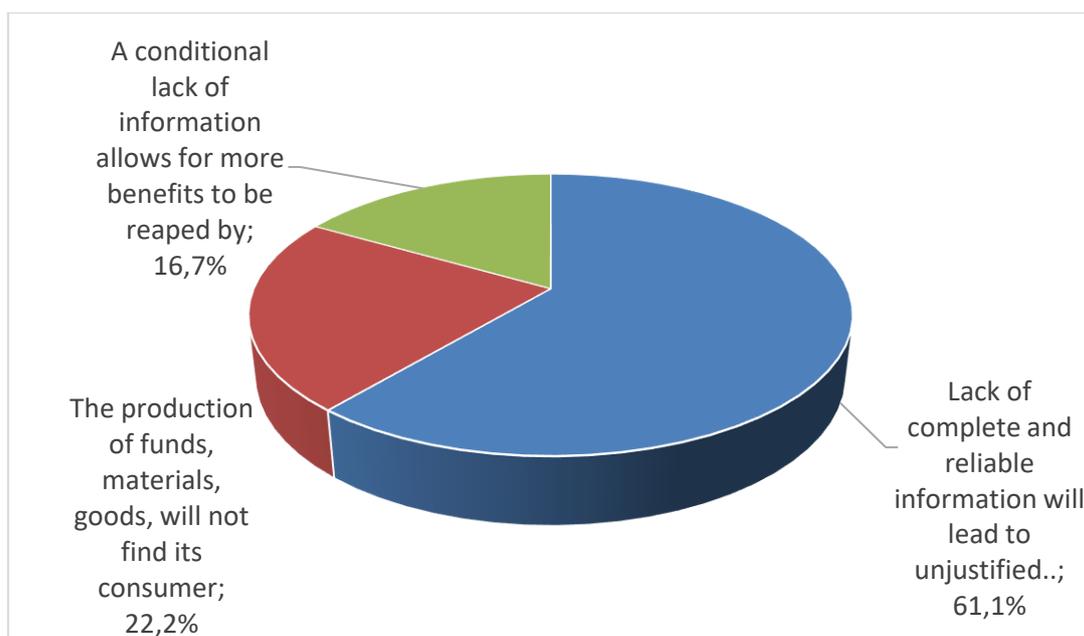
equipment has not yet been implemented, ACTED could start creating an appropriate database on possible equipment, pilot projects, types of plants for the tourism sector within the framework of this project.

A questionnaire survey on the aspects discussed yielded the following results:

- ✓ Regarding availability of information on application of technologies, materials, generating equipment, devices providing energy efficiency, 50% of respondents answered that information does not reach the potential consumer and does not contain calculations, 33% indicated insufficiency of economic information for decision making. Only 16.7% mentioned in their responses that the information is available on the internet, mass media, resources of sectoral ministries.

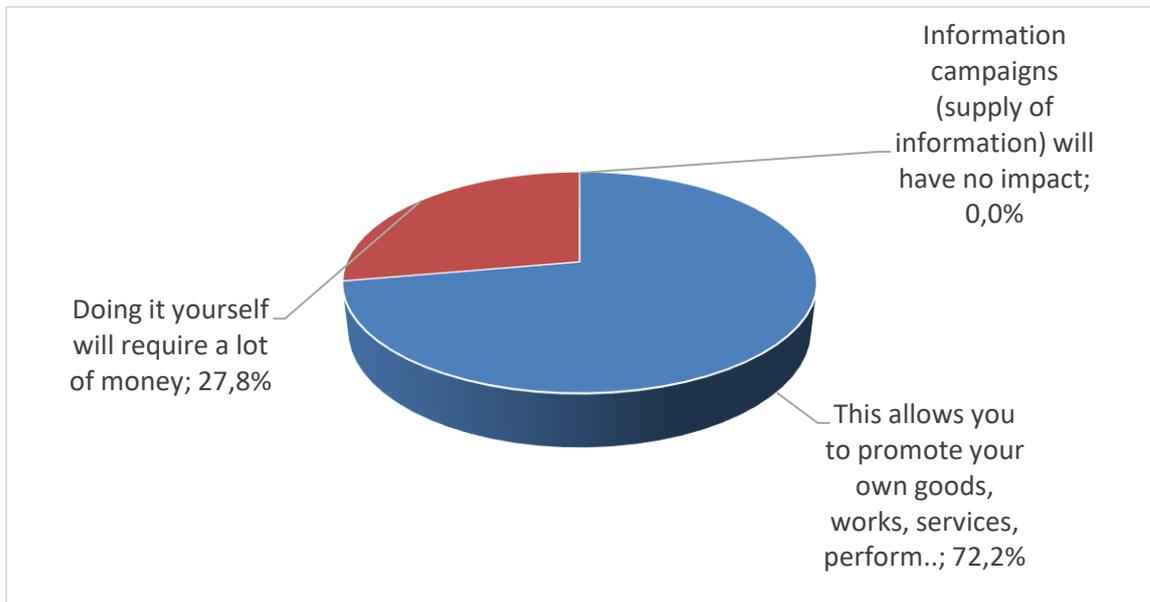


- ✓ When asked if the completeness and accuracy of the information will allow entrepreneurs to make choices and get additional income (benefits) or to save on costs, 61.1% of respondents answered that the lack of complete and reliable information will lead to unjustified costs without achieving EE or RES production, 22.2% confirmed that production of funds, materials, goods will not find their consumers and will not increase sales and only 16.7% thought that the conditional lack of information enables more benefits for suppliers, RE producers and EE production.

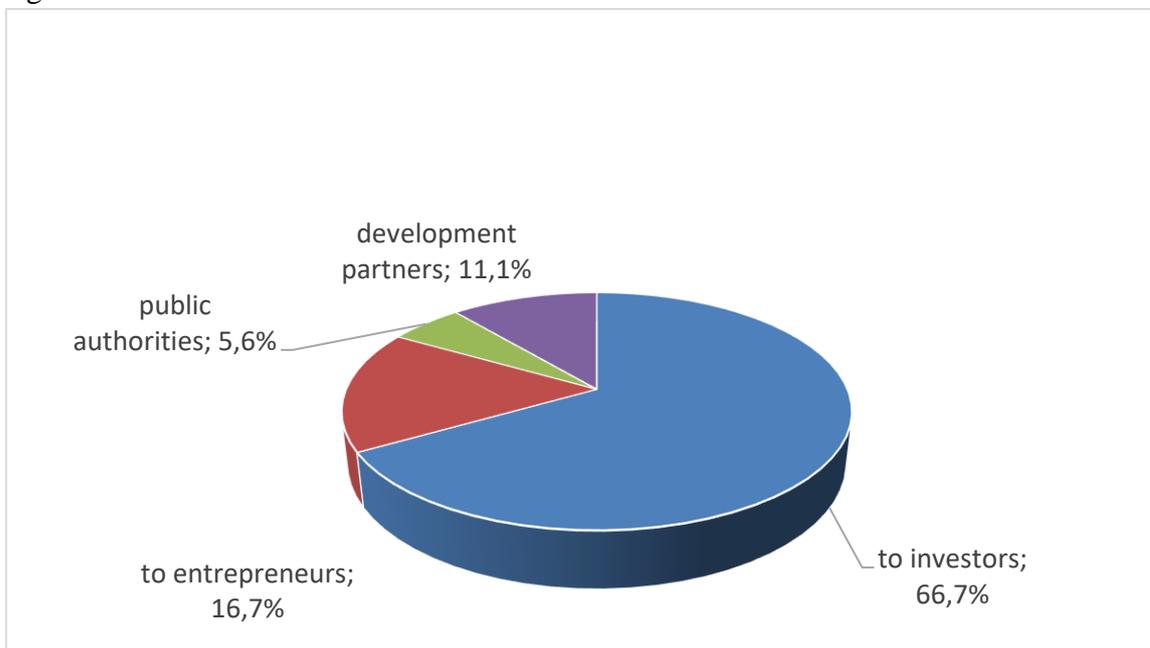


- ✓ Regarding how effective it is for dispersed business entities - suppliers of goods, works, services (RES and EE) to independently conduct information campaigns for potential

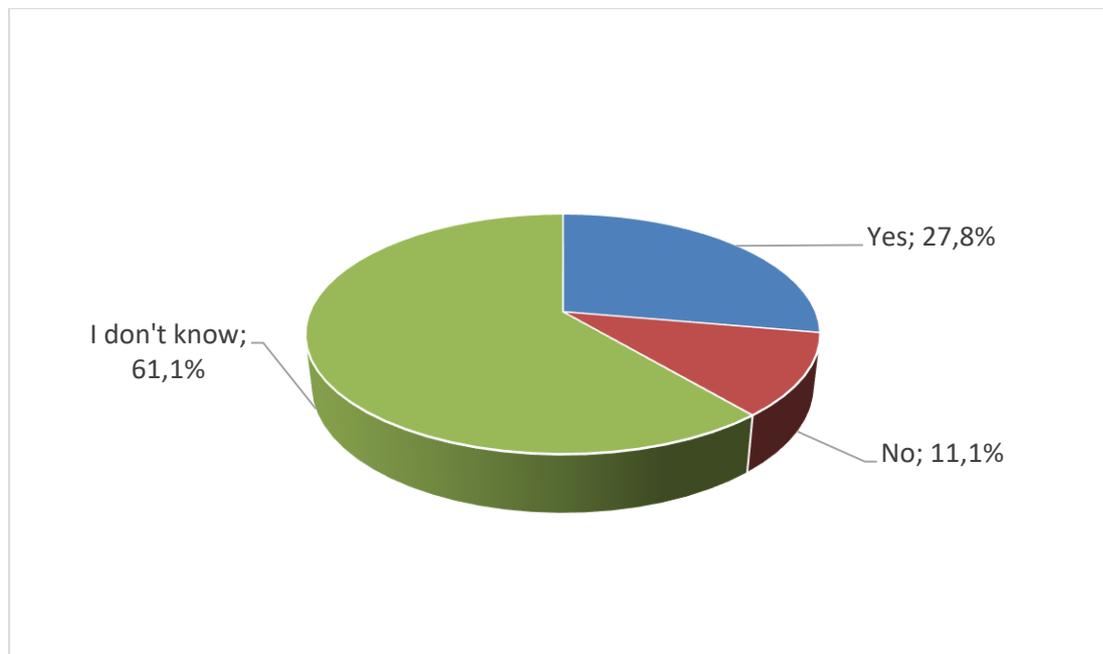
consumers about energy efficiency, economic prospects, achievements of science, technology in RES-based energy production, economic and environmental benefits, 72.2% confirmed that it allows to promote own goods, works, services, using information resources as a competitive advantage in marketing, RE production.



- ✓ Lack of information on the benefits, problems of the sector, presence/absence of legislative barriers, conditions for the use of RES, EE, does not allow to develop and take managerial decisions: 66.7% investors, 16.7% entrepreneurs, 11.1% development partners, 5.6% government bodies.



- ✓ To the question "Does poor awareness of producers and suppliers of the requirements (standards, norms) established in the technical regulations on the use of RES and EE?" 61.1% of the respondents indicated that they are not aware of it.



8. "The role of information in the development of renewable energy production and consumption by CBT subjects and the widespread use of EE at community level"

MAIN CONCLUSIONS AND THE PROBLEM TREE

Summary: The Problem Tree is a technique for analysing problems, widely used in planning, aimed at seeing the future, identifying possible problem areas, and identifying negative aspects of the situation¹⁷.

A "problem tree" refers to a chart, a system that shows the current difficulties, the reasons for them and the consequences that may follow.

Central to the hierarchical structure is its main problem. It feeds on the cause (roots) of the origin and gradually passes into the consequence (i.e. crown) of the crown. The final level of the system.

In accordance with the data obtained from the FGD and the questionnaire, and based on a cause-effect analysis, the main problems hindering the development of RES and EE production and use in the CBT sector have been tentatively identified.

Main/central problem: "Limited public access to electricity in inaccessible and high altitude areas of the country".

Reasons:

1. **Insufficient institutional and managerial capacity to develop the use of RES and EE in the CBT sector, which is the consequence**
 - a) Incomplete legislation and regulatory frameworks in particular:
 - i. *There is a need to amend the basic laws "On Energy", "On the Use of Renewable Energy Sources", "On Energy Saving and Energy Efficiency".*
 - ii. *Incomplete regulatory framework for tariff setting, need for a legislative definition of the tariff-setting regulatory body in the energy sector.*

¹⁷ LeadStartup. <https://leadstartup.ru/db/tree-of-problems>

- iii. *The legal status of RES producers, who are not protected and cannot directly sell surplus energy to electricity consumers, has not been defined and is not addressed in the Civil Code of Tajikistan.*
- iv. *Electricity use regulations do not fully take into account the interests of renewable energy users.*
- v. *Energy experts and analysts have repeatedly raised the issue of independent energy audits, but government agencies are blocking changes to the law.*
- b) tax and customs barriers:
 - i. *Lack of tax preferences, standards for imported equipment;*
 - ii. *Not all RES and EE equipment and components are exempt from VAT and customs duty.*
- c) Weak state support and insufficient incentives for the industry:
 - i. *The allocation of soft earmarked loans to RES, EE and CBT subjects from special development funds will solve the following problems: increase the use of RES and EE in the tourism sector at community level (88.9%), reduce the payback period of investments (61.1%) and solve the high interest rate of lending institutions (55.6%).*
 - ii. *50% of the respondents do not know how the state can stimulate the development of RES and EE.*
 - iii. *Low level of opportunities for application of public-private partnerships in RES and EE.*
 - iv. *In other countries, the government protects and supports domestic manufacturers of renewable energy equipment. For example, Turkey requires the use of solar collectors, the installation of two-circuit systems*
 - v. *The producer should be encouraged, for example, with tax incentives, which the law does not provide.*
 - vi. *Domestic manufacturers of RES equipment need state support. The cost of transporting imported raw materials is higher than the cost of the raw materials themselves, all of which affects the cost of production. Therefore, there are difficulties in selling the products. The sales market is also problematic.*
- d) imperfect environmental requirements, standards and lack of "green certification" of tourism facilities:
 - i. *Entrepreneurs are not aware of the approved RES and EE standards. Energy audits should be independent; this will also attract investors. There should be an alternative, competent energy audit companies will play a significant role in the implementation of energy saving and energy efficiency objectives by conducting energy audits of institutional facilities, including social facilities, production facilities, housing, of course, subject to legislative regulation of this issue.*
 - ii. *There is a lack of mandatory standards and regulations for energy efficiency and renewable energy rationing, which prevents increased sales.*
 - iii. *There is a lack of "green certification" of facilities and in particular of CBT subjects.*
- e) administrative barriers and difficulties in obtaining permits and in obtaining land for the construction of energy facilities:
 - i. *The main eligible entities creating unreasonably high administrative barriers in the use of RES and improvement of energy efficiency for TPS purposes are the authorized state bodies in the field of subsoil use (50% of respondents), local executive bodies of state power (Hukumats) (38.9%), authorized state bodies determining the policy in the field of energy production and RES use (33.3%), and Jamoats (local self-government bodies of settlements and villages) (27.8%).*
- f) Lack of competence of individual specialists, officials of authorised state bodies:
 - 1. *There is a low level of competence of the officials, in particular many of them are not aware of the technologies of renewable energy generation, methodology of calculation and justification of parameters of plants and complexes based on renewable energy. They should know general characteristics of power plants, main and auxiliary equipment, business planning, be able to draw up and draw up standard technical documentation, use safety and fire safety and labour protection regulations, as well as have skills in installation, commissioning and operation of power plants, assessment of technical condition of equipment*
- g) An imperfect human resources management system and inadequate specialist recruitment

- system based on the assessment of qualifications and competencies
- h) Inadequate strategic planning at national, sectoral and regional levels:
 - i. *The Tourism Development Strategy does not address the expansion of renewable energy use.*
 - i) Lack of reliable statistics and information for management decisions.
2. The inefficient use of resources in the RES and EE sector, which is the consequence:
- a) lack of financing and investment attractiveness of the sector, lack of targeted credit products and high credit interest rates and limited access to information on RES and EE:
 - i. *Lack of state grant support and soft earmarked loans.*
 - ii. *Dependence on imported technologies and equipment for RES and EE.*
 - iii. *The lack of preferential targeted loans to RES, EE and CBT subjects from special development funds is the reason for the low application of RES and EE in the tourism sector at community level, increases the payback period of investments and affects the high level of interest rates of lending institutions.*
 - iv. *Lack of public-private partnership in RES and EE in the context of promoting CBT.*
 - b) insufficient human resources capacity and availability of specialists in RES and EE:
 - i. *Training of mid-level specialists as well as energy sector workers is important for the small- scale energy sector, and for remote mountainous regions. There is a need to coordinate the work of several line ministries and agencies in the country to improve vocational training with a focus on training specialists in the production and maintenance of RES and EE.*
 - ii. *The availability of specialists with the necessary qualifications in the RES development and EE growth sector is low and the level of training does not correspond to the required competences.*
 - iii. *There is a labour market shortage of design engineers, RES equipment maintenance and installation specialists, small energy and RES construction workers, managers and marketers.*
 - iv. *Low level of competence of renewable energy and EE entrepreneurs in renewable energy generation technologies; business planning and marketing, financial management.*
 - v. *Lack of specialised retraining courses for RES and EE specialists and managers*
 - vi. *Insufficient attention to creating new in-demand specialities in HEIs and colleges in the field of RES and EE.*
 - vii. *Lack of thematic workshops and trainings for stakeholders and CBT subjects on the use of RES and EE.*
 - viii. *Incomplete educational standards and curricula of universities and colleges on the generation and application of RES and EE.*
 - ix. *Limited public access to educational and awareness-raising information and materials in the field of RES, EE through the internet.*
 - x. *Insufficient development of professional networks and associations.*
 - c) low interest of citizens and tourism entities in the use of renewable energy:
 - i. *Low awareness of citizens about the benefits and opportunities of renewable energy and EE.*
 - ii. *Lack of state protection and support for domestic manufacturers of renewable energy equipment.*
 - iii. *Unresolved issues of the subject of acceptance of small hydropower plants on the balance sheet.*
 - d) Weak research and development and innovation:
 - i. *Low level of technology development in the field of RES and EE due to underdeveloped applied research in scientific research institutions.*
 - ii. *Weak stakeholder involvement in funding and resource allocation for R&D.*
 - iii. *Weak levels of technology borrowing and imports from other countries.*
 - e) low business activity in introducing technologies and setting up production in the field of RES and EE:
 - vi. *No Renewable Energy, Energy Saving and Energy Efficiency Development Fund, foreseen by Article 38 of the Energy Saving and Energy Efficiency Act to support the state policy on energy efficiency and energy saving, has been established.*
 - vii. *There is a lack of legislation defining tax incentives for RES and EE production.*
 - viii. *Not a favourable climate for entrepreneurship and investment.*
 - ix. *Low level of application of the PPP mechanism in RES and EE.*

LIST OF PARTICIPANTS IN THE FGD

№	Organisation	NAME	Position	Phone	E-mail
Public sector					
1.	Ministry of Energy and Water Resources of Tajikistan	Tillojev Vaysiddin	Head of the RES department	2359824	
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Community organisations					
3.	Association of Energy Workers of Tajikistan	Rustam Rakhimov	AET member	935605959	rustam1953@gmail.com
4.	Association of Energy Workers of Tajikistan	Usmanov Sobirjon	AET board member	939498982	s_usmonov@mail.ru
5.	Tajik-Norwegian Foundation	Gulommukhiddinov Jovid	director	555552525	jovid@tajnor.tj
Universities					
6.	Tajik Technical University named after Academician M. Osimi	Abdurakhmanov Abdugarim Yakubovich	Associate Professor	918800664	up_energy@mail.ru
7.	Branch of the Moscow Power Engineering University	Hodjaeva Uguloi	Associate Professor	935605454	<ugul.kh@mail.ru> .
National Academy of Sciences of the Republic of Tajikistan					
8.	Centre for the Innovative Development of Science and New Technologies	Ilolov Mahmasho	academician, head of department	919295570	Ilolov.mamadsho@gmail.com
Import/export (supply and sale) of finished goods, equipment, devices, appliances, components using RES/EE					
9.	OJSC Sistemavtomatika	Kuddusov Mansur	deputy director, deputy chairman of the RES Association	372221456	m.kudusov@systemavto.tj
10.	Kazakh Export	Ramesh Khudojiev	director	935050777	rkhudoiev@yahoo.com
Production of finished goods, equipment, appliances, devices, components using RES/EE and energy saving, works and services					
11.	CJSC Energoremont	Rakhmatov Abadulo	production manager	935056470	<k.aliev70@mail.ru>
12.	Green Technologies Ltd.	Abdulloev Bahrulo	director	933743090	info@greentech.tj bahrulloh@gmail.com
Electricity generation-generation and sales					
13.	Pamir Energy	Kurbonshoeva Saodat	generation engineer	934539876	saodat.qurbonshoeva@pamirenergy.com

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ANNEX 4. OVERVIEW OF THE OUTCOME OF THE ROUND TABLE on the presentation of the analysis of the energy sector and the challenges of increasing energy production from RES, the growth of EE in the community based tourism industry

Prerequisites for the study

The roundtable was held within the framework of the European Union's SWITCH Asia programme "Promoting Energy Efficiency and Renewable Energy Production in the Community Based Tourism Sector in Central Asia" project, which aims to reduce the carbon footprint of the tourism sector in Kyrgyzstan, Uzbekistan and Tajikistan. The objectives of the Project are: to support MSME providers in RES/EE and the community-based tourism sector in introducing sustainable consumption and production of green energy practices, and to access financing and create an enabling environment to strengthen sustainable consumption and production of RES/EE and the community-based tourism sector.

Purpose of the Roundtable: to inform about the implementation of one of the Project objectives - "Analysis and assessment of the current state of legal regulations, strategic and policy documents, sectoral environment problems of RES and EE sector, and report on the findings in Tajikistan", as well as to clarify the list of problems identified in the analysis.

Date and venue of the Round Table: **04 May 2021, Dushanbe**, Kohi afsaron/ Officers' Palace, Number of participants at the round table: **31 (list attached)**.

Target audience: Stakeholder representatives and project partners, including: representatives of public authorities, civil society, industry associations, business entities, renewable energy producers/suppliers, equipment suppliers and importers, microfinance organisations, electricity consumers from the tourism sector, and representatives of academia and higher education institutions.

Moderator: R. Musaeva - National Consultant of the Project in Tajikistan, Chairperson of the Association of Energy Workers of Tajikistan, Ph.

The participants of the round table were welcomed by **Muminzod Kamoliddin**, Deputy Chairman of the Tourism Development Committee under the Government of the Republic of Tajikistan and **Sergey Chutkov**, Country Director of ACTED Tajikistan.

The following presentations were heard and discussed at the round table:

1. Problems of the status of renewable energy production and energy efficiency growth in the community-based tourism sector in Tajikistan, lack of experience, knowledge, information, technology".
2. Gaps in legislation and implemented policies of Tajikistan hindering the development of RES use, increasing EE in the community-based tourism sector.
3. green economy and CBT market analysis: Analysis of the value chain between the RES/EE and CBT sectors.
4. green finance market analysis, challenges, barriers to access and opportunities'.

During the discussion of the presentations, the following problems were noted and solutions suggested:

- Limited access to renewable energy statistics, in particular no data on total installed renewable energy capacity by region;
- The Rasht Valley as a whole is not a decentralised energy supply area; emphasis should be placed on the remote mountainous, inaccessible settlements in the region;
- aspects of the use of information technology are not addressed in the presentation, it would be desirable that the final report under discussion addresses the use/implementation of

innovative information technology and gaps in this context;

- To carry out a mapping of the country on the use of RES and to compare it with neighbouring countries in the region: Uzbekistan, Kyrgyzstan, Turkmenistan;
- in the context of renewable energy use, emphasis should be placed on the use of solar energy;
- note the potential for geothermal energy in the country;
- The GIZ project has developed energy efficiency standards for residential buildings in both urban and rural areas, but they have not been adopted. Energy audits of new buildings are not done, and observation shows that energy losses in new houses are high. The mentioned standards would greatly contribute to increased energy efficiency, including in tourist facilities;
- The adopted quality standards for solar energy equipment are not mandatory for imported equipment, and an examination by the Gosstandart for imported relevant equipment is not mandatory. It is suggested that Gosstandart should make such an examination obligatory; there are relevant Euro standards and they should be observed;
- The Tajikistan Energy Association developed and proposed standards for both renewable energy and energy efficiency, which are aligned with the standards of the European Commission; the proposals have been accepted and approved by Tajik State Standard; the main thing is to ensure compliance with them;
- The lack of access to up-to-date departmental regulations is particularly noteworthy for almost every problem highlighted;
- Lack of awareness is the main problem, today the information is mostly available on the Russian central TV channels. There is a need to create a platform to demonstrate modern energy saving methods and examples, use of energy efficient equipment, where examples of energy efficiency compliance could be shown, both in the city - in high-rise buildings and in rural areas - in private houses. Television could also organise a special section on energy efficiency and energy saving;
- The lessons learnt, both in previous studies and in the practice of renewable energy application, need to be taken into account. There is no generalised data base from which to continue the work, rather than starting anew, as on a "level playing field";
- The RES sector is very understaffed; the Tajik Technical University already trains engineers, but mid-level specialists and blue-collar workers are in short supply;
- The experience of other countries should also be studied; for example, in Switzerland, floating photovoltaic stations installed directly on the surface of mountain lakes are successfully used. Such stations could be used on the Pamir lakes Sarez, Yashilkul, Zorkul, because due to the lack of basic amenities tourists stay here for one night at best, in tents, while we need modules, houses with lighting, an opportunity to cook food and take a shower. This is a huge potential. The Centre for Innovative Development of Science and New Technologies of the National Academy of Sciences is doing a lot to study different types of RES and is ready to share information;
- Information tours could be organised to raise awareness, where CBT representatives could learn about existing practices and see for themselves that it is possible and profitable; for example, the RES Association, supported by UNDP, has equipped 50 facilities with solar energy;
- It would be useful to create a pilot guesthouse using microgeneration;
- There is also little information on land allocation and installation of micro-generation RES; for example, in practice the question arose as to whether permission is needed to install a 2 kW solar panel in the yard of a single household;
- the legislation gives gradation into micro, mini- and small power plants of up to 100 kW, 101 to 1000 kW and 1001 to 30,000 kW RES respectively, but the rules are the same for all installations, even for installations up to 10 kW, which would be appropriate to single out, as such facilities do not allow to bear the same tax burden as, for example, small hydro plants. As a result, in practice, users of micro-generation facilities face numerous claims from tax and land inspectors;

- There are many examples of small hydropower plants built with the support of international organisations that could not be connected to the electricity grid because they did not have all the necessary permits, starting with the assignment of a land plot;
- The main problem today is that 80% of the normative legal acts in the field of RES use and energy efficiency are not enforced, the issue of their promotion has been raised since 2010, and the problem is raised again today. At the same time, the emerging environmental situation requires increased attention to RES and energy efficiency issues, for example, this winter the country again needed to limit electricity supply as the Nurek reservoir did not fill up to the required level. Our hydropower plants are seasonal, climate change and the associated melting of glaciers may aggravate the situation, for which we need to be prepared and seriously engage in the diversification of energy resources used;
- There is an understanding at the level of the Government and Parliament, laws and programmes are adopted, but ministries and agencies are struggling to promote the necessary by-laws, and one of the reasons for this is the low literacy of responsible specialists in the field of RES. The position of the Ministry of Justice in refusing to issue an opinion on the establishment of the Provisions on the Renewable Energy, Energy Saving and Energy Efficiency Development Fund, which was drafted back in 2014, is unclear. The creation of the Fund is stipulated by law and is badly needed; the Ministry of Energy and Water Resources deals with these issues by a small department of three people, they are not physically able to solve the whole range of related problems;
- In building construction, a strict rule should be established, based on experience in other countries, that high-rise buildings should be mandatorily equipped with solar panels, and in rural areas, where the weather permits, with wind turbines; diversification of energy sources should be an imperative in order to reduce risks from seasonal weather and climate change and to improve energy efficiency;
- Green Technologies LLC (Green Technologies) produces turbines for micro HPPs up to 100 kW, mostly from 5 to 35 kW, for example in 2019 under ACTED-funded projects, but generators are imported from China. There is a need for micro HPPs in Rasht, Khovaling, Penjikent, Gornaya Matcha, etc. Payment for supplied energy is mainly handled at the mahalla level, which entrusts the collection of payments to one of the residents. Another problem is the operation specialist, although maintenance is not as complex;
- The legislation does not regulate the sale of electricity from RES: according to legal requirements, only a monopolist can purchase energy and then sell it to consumers, but this requires the collection of many documents. If RES are installed in an area where there is no centralized grid, the question becomes much more complicated as to whom to sell the energy and how - this is a significant gap in the legal and regulatory framework for RES use, which can be an insurmountable problem for mini and micro hydro plants. The only way out in practice today to pay for sold energy is to form a cooperative for the use of RES;
- In order to join the unified electricity grid, it is necessary to meet a number of power quality requirements, especially in terms of frequency, and the issue of reactive power metering is also complicated. Frequency control is very important because fluctuations, frequency hikes lead to premature wear and tear and even equipment failure, for example, in Russia there are already cases of claims against RAO UES precisely because of the quality of electricity. The way out could be automatic regulation of system switching;
- These issues inevitably require the introduction of independent energy audits, as monopoly-dependent supervisory organisations cannot be fully impartial in assessing renewable energy facilities. Despite numerous proposals by energy experts, the possibility of establishing energy auditing organisations has not yet been reflected in legislation;
- Most often small HPPs are not commissioned precisely because they do not comply with energy standards, which is why it is important to introduce a legal procedure for the acceptance of micro HPPs. It is also important to determine how the cost of electricity is calculated; calculations show that this cost is usually about 2 times higher than that of large hydropower plants;

- It is necessary to involve specialists in the development of energy quality issues, for example, such a specialist works at the MPEI branch;
- ACTED Tajikistan has assembled a group to study tourism standards. The existing standards are not up to date, and the Gosstandart staff have no idea what the standards should be, there is no knowledge, no defined approaches. Tourist organisations are certified and given a permit for a tourist product, but only for the product. If there is a guest house, where international tourism standards are observed, this is welcomed by the environmental organisations. It is not enough to declare environmental requirements at the legislative level, they must be observed in the activities;
- ACTED Tajikistan has established a Green Finance Working Group, which is developing three credit lines for RES, for energy efficiency in the CBT sector with an assumed rate of 24% for 36 months. The group has met 9 times. It is foreseen to present these credit lines by the end of the year and to discuss at a round table with investors, donors, in order to implement this product;
- The problem is that lending is difficult precisely where renewables are used, in remote mountainous areas, where there are no bank branches or banking centres. Also, high overhead costs are a problem. Moreover, in some areas there is no "real money", barter is needed and there is a need for an intermediary mechanism between the bank and these clients;
- In Armenia, similar green finance projects were implemented with grants from Germany, and a separate, specially created bank was involved; the loan rate was 10% for 10 years, and dozens of small power plants were built as a result.
- Of course, a preferential credit regime is needed for producers/suppliers of RES, CBT, but domestic banks do not have the possibility to reduce the rate. For small hydropower plants a rate of 10% for a period of at least 10 years is desirable.

At the end of the roundtable, it was recommended that the following issues should be taken into account in the final report of the expert group:

- There is no legal provision for an independent energy audit;
- Limited access to up-to-date departmental regulations and statistical data on RES, in particular there is no mapping of the country on the use of RES, no data on the total installed capacity of RES by region;
- aspects of the use of information technology are not covered;
- There is no information platform to demonstrate modern methods and examples of energy saving, energy efficiency, where examples of energy efficiency compliance can be shown;
- There is little evidence of previous research and practice in the application of RES;
- the experience of other countries should also be studied;
- little information on land acquisition and installation of RES micro-generation;
- It is important to introduce a legal framework for the acceptance of micro-hydropower plants and to define the procedure for calculating the cost of the electricity they generate;
- It is precisely where renewables are used, in remote mountainous areas, where there are no bank branches or banking centres, that lending is made more difficult;
- There is no mechanism in the legislation on how the authorised body organises the purchase of electricity from the owner of the power plant when the power supply company has no electricity distribution networks, no electricity metering system and no staff in the area of decentralised energy supply;
- For producers/suppliers of RES, especially micro-generation entities, complex conciliation procedures are defined, many of which are handled by central authorities;
- The work to develop the full package of necessary standards for the development of renewable energy and energy efficiency has not been completed.

All the opinions and concerns expressed today will be analysed and reflected in the minutes of the round table and summarised in the information material to be posted on the website of the project contractors.

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