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RESOURCES OF THE REPUBLIC OF  
TAJKISTAN



THE COMMITTEE FOR TOURISM  
DEVELOPMENT UNDER THE GOVERNMENT  
OF THE REPUBLIC OF TAJIKISTAN



**The European Union SWITCH Asia project “Promoting Energy Efficiency and Renewable Energy Production in the Community-Based Tourism Sector in Central Asia”**

# **Emissions Reduction and Green Tourism Development in the Republic of Tajikistan through the Clean Energy Production and Consumption and the Deployment of Energy Efficiency Technologies in the Community-Based Tourism Sector**

## **WHITE BOOK**



Dushanbe – May 2022 г.

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# What this book is about?

## INTRODUCTION

This White Paper is a summary of proposed changes, improvements in policies to increase renewable energy generation and consumption, widespread adoption of EE, and reductions in emissions from community-based tourism.

### *Project at a glance*

*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 (hereinafter the Project) 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 and sustainable renewable energy consumption and production by micro, small and medium-sized enterprises (businesses) in the community-based tourism sector.*

*The basis for the implementation of the Project in Tajikistan is the country's international commitments to reduce emissions into the atmosphere and reduce the negative impact on the environment. It is also important that the adopted national strategic and policy documents provide for the development of sustainable (green) tourism, including through the development of energy production and consumption based on renewable energy sources (RES) and increased energy efficiency (EE) in the tourism sector.*

*Please visit [www.switch-asia.eu](http://www.switch-asia.eu) for more information on the Project*

In the framework of the Project the national expert group at the first stage carried out the analysis and prepared a Report on the results of the analysis of the energy sector, energy production from RES in the community-based tourism sector in the Republic of Tajikistan, identified problems of RE development and EE growth in general and directly in the community-based tourism sector (CBT). The work has been carried out using Regulatory Impact Analysis (RIA) methodology - reviewing the regulatory framework, assessing the availability of key inputs (economic resources), the impact of policies (strategic documents) on development, allowing to separate sectoral (market) issues from policy gaps and to identify regulatory challenges. One of the principles of RIA is the openness of the process, which makes it possible to obtain data on regulatory impacts directly from private sector actors (stakeholders) and to develop appropriate solutions

Based on the Order of the Minister of Energy and Water Resources of the Republic of Tajikistan dated May 03, 2021, № 31, an Interagency Working Group (IWG) was established, which included representatives of the interested ministries and agencies, business structures and public organizations. One of the main tasks of the IWG was to develop a Road Map based on the analysis performed, to prepare proposals for amendments to the normative legal acts of Tajikistan in order to remove barriers to the development of MSMEs introducing RE and EE technologies and providing tourism services at the local community level.

With the assistance of a national expert group, the IWG in the second phase developed a roadmap for implementing actions aimed at increasing the production and consumption of renewable energy, the wide introduction of EE technologies in the CBT sector and the reduction of greenhouse gas emissions into the atmosphere. In accordance with the above-mentioned RIA methodology, recommendations have been developed, measures to address the problems have been justified, expected results have been projected and benefits have

*The purpose of the Roadmap is to create conditions for the introduction of renewable energy and EE technologies in the CBT sector in order to increase the clean energy production and consumption from RES and reduce the use of coal and wood for energy production, which will contribute to the reduction of greenhouse gas emissions into the atmosphere.*

been estimated. The Road Map was reviewed and approved at the IWG meeting on 28 December 2021.

The Road Map (RM) is a long-term (until 2030) development plan that defines the objectives and desired outcomes for the increased use of RE and EE technologies in the CBT sector in the Republic of Tajikistan and includes the steps and main actions needed to achieve them.

The RM also serves as a communication tool, a document that consolidates the views of a wide range of actors and stakeholders (responsible ministries and agencies, civil society and business representatives involved in the development of RE and EE growth in CBT, RE and EE equipment manufacturers, importers and exporters).

*This White Paper presents the proposed actions in the RM to change policies and legislation of the Republic of Tajikistan to consume clean energy from RES and to introduce energy efficiency technologies in the CBT sector.*

Section I of this document describes the state of the energy and tourism sectors, justifies the relevance of the chosen subject area, outlines approaches to identifying existing gaps in the country's policies and legislation regarding these sectors, articulates problems and outlines possible solutions.

In particular, the first chapter of this section highlights the results of a situational analysis of the energy and tourism sectors, energy potential, energy production and consumption, the status of RES use and EE, and the prospects for tourism development, including CBT and green tourism in Tajikistan. Further, an assessment of the state of greenhouse gas emissions in the country and ways to reduce them, profits of the state, entrepreneurs and households from the introduction of RE technologies in CBT are given. The chapter concludes with targets for the implementation of the Road Map.

The second chapter includes a brief overview of the current mechanisms of state regulation in RT in the areas of RES, EE and tourism. It is noted that in order to fully assess and analyse the environmental problems and to identify market failures and gaps, the opinion of the Project stakeholders has been studied and presented the results of the survey, focus group discussion and round table discussion conducted with their participation.

The third chapter contains a description of the tasks to address the identified gaps and recommendations for policy (policy documents) changes aimed at creating conditions for the comprehensive development of renewable energy production and consumption, EE growth in the CBT sector and a significant reduction of greenhouse gas emissions into the atmosphere.

The fourth chapter assesses the risks that can hinder this process and identifies tools to minimise them.

Sections II and III of the White Paper describe the financial and management aspects of the implementation of the Road Map.

The annexes to the document include an Action Plan for improving policies to increase renewable energy production and consumption, wider introduction of EE technologies in community-based tourism and emissions reduction, as well as, a table of proposed amendments and benefits of implementation, lists of terms and definitions used and abbreviations.

*A white paper is an authoritative document designed to keep the interested audience fully informed on a particular topic.*

In developing this White Paper, the authors were guided by publicly available white paper guidelines available on the Internet <sup>1</sup>.

<sup>1</sup> [https://club.cnews.ru/blogs/entry/white\\_paper\\_cho\\_eto\\_takoe\\_kak\\_napisat\\_beluyu\\_knigu](https://club.cnews.ru/blogs/entry/white_paper_cho_eto_takoe_kak_napisat_beluyu_knigu), <https://tutdenegki.com/white-paper>, <https://contenteam.ru/blog/belye-knigi/>, <https://blog.calltouch.ru/white-paper-cho-eto-dlya-kakih-czelej-nuzhna-belaya-kniga>

## I. ROADMAP TARGETS AND INDICATORS

### 1. Overview of the scope of implementation of the Roadmap

#### 1.1. Energy Sector Situation Analysis. Capacity, production and consumption of energy, including renewable energy and EE growth

Tajikistan is a mountainous country. The country borders Afghanistan, China, Kyrgyzstan and Uzbekistan. At the beginning of 2020, the country's population reached 9.835 million people with an average annual growth rate of about 2-2.2%. The country's gross domestic product in 2020 was 82.5 billion somoni and its real growth rate 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 of Tajikistan does not have significant proven oil and gas reserves and is an importer of almost half of the hydrocarbon resources (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.

Tajikistan has 4% of the world's total hydropower potential and is one of the world's leaders in renewable hydropower resources, which could theoretically generate up to 527 billion kWh of electricity per year. Currently, less than 5% of technically feasible hydroelectric resources are in use.

*Tajikistan ranks first and second respectively in terms of specific hydro-energy potential per km<sup>2</sup> of territory and per capita, and is among the top six countries in the world in the use of "green energy" production resources.*

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. Active growth in the use of various RES (with the exception of hydropower) has not yet started. An important aspect is that the country has set targets for RE development. The strategic goals and priorities indicate Tajikistan's intentions to introduce solar energy technologies and other available renewable energy sources.

The potential for energy efficiency in the country is high. Increasing EE has been declared a national policy priority. Energy efficient technologies for street lighting and energy efficient bulbs for residential and public buildings are being introduced and the sale of incandescent bulbs has been discontinued. However, energy saving measures and energy efficient technologies in industrial enterprises and the residential sector, which could potentially increase energy efficiency in the country, are underused, as they require investments and their implementation is much more difficult than modernisation of lighting systems.

Tajikistan has a rather extensive system of centralised electricity supply, covering more than 98% of the inhabited territory of the country. The Unified Energy System of Tajikistan was established in 2011, connecting the southern and northern energy systems of the country. However, assets of the transmission system have not been adequately maintained and upgraded, which has had a negative impact on ensuring a reliable supply of electricity to household consumers. There is a high level of electricity losses: losses in the transmission system are 3.7% and in distribution networks 26%.

#### **Electricity production**

Two companies, Barki Tojik and Pamir Energy, are involved in power generation in Tajikistan's energy system. Barki Tojik controls the power plants and networks, electricity production, transmission and distribution throughout the country, with the exception of the Gorno-Badakhshan Autonomous Oblast (GBAO). In December 2002, the GBAO power grid was transferred by Barki Tojik to a

private company, Pamir Energy, under a 25-year Concession Agreement. The GBAO electricity system operates in isolation and is not yet connected to the main electricity system of the country.

State-owned Barki Tojik has 6 large, 5 medium and 16 small HPPs and 3 thermal power plants. Pamir Energy operates 13 small and mini HPPs with a total capacity of 44.79 MW and 35/10/0.4 kV transmission lines with a total length of 2,609 km. In addition, the company has one solar power plant with installed capacity of 200 kW.

*As of 1 January 2021, the total installed capacity of the country's energy system, excluding the Rogun hydropower plant, is 6,484,119 MW, of which 5,766,119 MW or 88.92% of total capacity comes from hydropower plants and 718 MW or 11.08% from thermal power plants.*

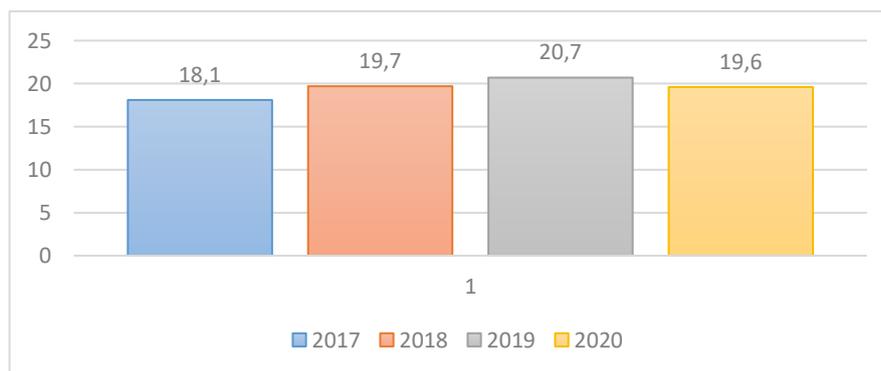
Hydropower is so far the most highly efficient of the RES, and hydropower generation is the cheapest of all existing forms of energy production in Tajikistan. Hydropower accounts for about 92% of the country's electricity production.

Due to the construction of new and modernisation of old HPPs and TPPs, the production capacity of the country's energy system has increased by 1,900 MW over the last 10 years. 12 substations and 1,390 km of 220-500 kV high-voltage transmission lines have been commissioned.

Construction of Roghun HPP with a total capacity of 3,600 MW is underway. Currently, 2 units with a capacity of 760 MW have been commissioned. The design capacity of the plant will be reached after the completion of the dam.

According to the MEWR, 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 was 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: Electricity production in the Republic of Tajikistan in 2017-2020 (billion kWh)**

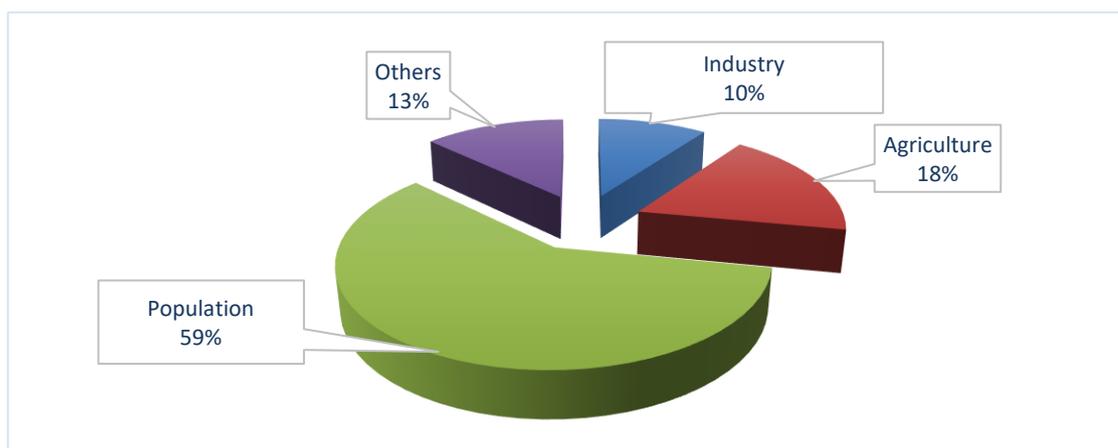


### Energy consumption

Over the last 25 years, there have been significant changes in the energy consumption structure of the country. Thus, before 2018, there were problems of unstable energy supply to rural settlements (4-5 hours per day), deteriorated and low EE of power plants, and increased electricity losses.

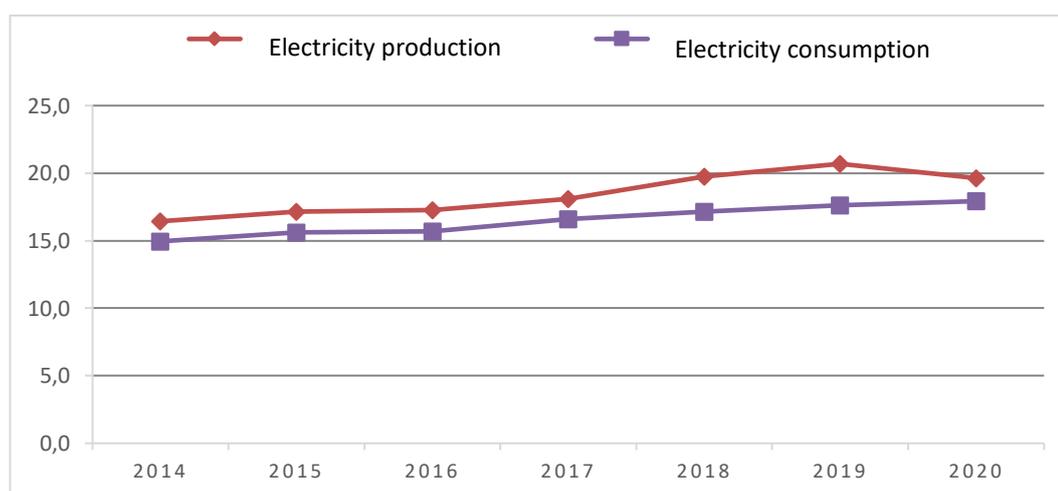
The share of industry in energy consumption exceeded other consumer categories (households, agriculture, etc.) until 2015, and then gradually began to decline due to falling production volumes, deteriorating financial condition of enterprises and other internal and external negative factors.

**Figure 2: Electricity consumption in RT in 2018**



The main consumer of electricity in Tajikistan is the population, accounting for 59% of total electricity consumption in the country. The second largest consumer of electricity is the agricultural sector, which accounts for 18% of total electricity consumption, 10% is consumed by industrial enterprises and 13% by other sectors. 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. Statistics on electricity consumption by MSMEs and CBTs are not available at the moment, but there is an increase in consumers (MSMEs) in areas where no capacity was anticipated to meet business (manufacturers) needs.

**Figure 3: Electricity generation and consumption in Tajikistan in 2014-2020 (billion kWh)**



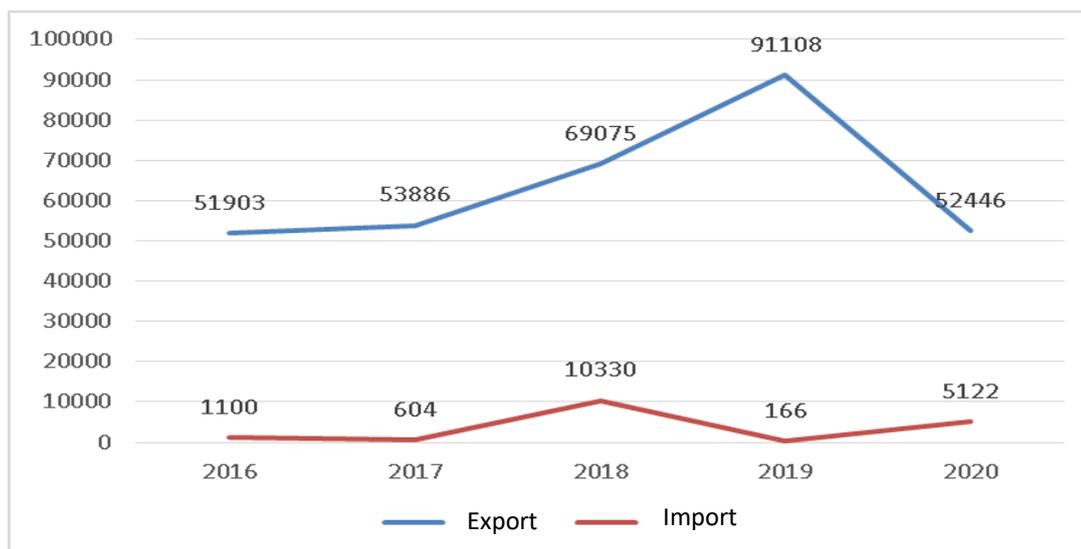
In addition, inter-country electricity exchanges are being established. The main importers of Tajik electricity are Afghanistan, Uzbekistan and Kyrgyzstan. In the autumn-winter season, during the low-water season, Tajikistan, in turn, purchases small amounts of electricity from Uzbekistan and Kyrgyzstan.

For export-import supply of electricity between Tajikistan and neighbouring countries, there are 13 transmission lines of different voltages. With 3,500 MW, the transmission lines between Tajikistan and Uzbekistan, 500 MW between Tajikistan and Kyrgyzstan, and 570 MW between Tajikistan and Afghanistan

In 2019, electricity exports to the Republic of Uzbekistan amounted to 1.42 billion kWh, to Afghanistan 1.46 billion kWh and to the Kyrgyz Republic 44 million kWh. 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%.

**Figure 4: Electricity exports and imports in Tajikistan (thousand USD)<sup>2</sup>**



### Potential and production of electricity from RES

**Small hydropower.** The most comprehensive assessment of Tajikistan's hydropower potential was carried out in the 1960s<sup>3</sup>, which noted their design study, feasibility of using water energy resources.

**Table 1: Energy resources of small hydropower in Tajikistan**

Districts	Potential		Industrial	
	N MW	E TWh	N MBr	E TWh
Sughd province	1288,0	11,28	450,8	3,95
Districts of republican subordination	16056,0	140,65	5619,6	49,23
Gorno-Badakhshan Autonomous Region	3713,0	32,53	742,6	6,51
Tajikistan TOTAL	21057,0	184,46	6813,0	59,69

According to experts, the use of energy from small rivers can meet the needs of about 500-600 thousand people living in remote regions of the country by 50-70%, and in some cases by 100%. Today, the population of mountainous regions itself is actively building micro and mini HPPs, using both their own and donor funds.

**Solar energy.** Tajikistan is located between 36th and 41st degrees north latitude and east longitude, 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/m<sup>2</sup> in the foothills and from 360 to 1120 MJ/m<sup>2</sup> in the mountains. Experts estimate Tajikistan's solar energy potential to be around 25 billion kWh/year.

**Wind energy.** There is little wind energy potential in Tajikistan. Winds are strongest in mountainous regions such as the Fedchenko and Anzob glaciers, as well as around Khujand city

<sup>2</sup> Exports and imports of the Republic of Tajikistan by TN VED item.

<sup>3</sup> 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\\_ocenka\\_v\\_Tadzikistane](https://www.researchgate.net/publication/336056537_VIE_i_ih_ocenka_v_Tadzikistane)

and Faizabad district, where the average annual wind speed reaches 5-6 m/s. In the open plains and valleys, winds with an average speed of 3-4 m/s occur. Economically, wind power in Tajikistan today cannot compete with the dominant hydropower industry. The use of wind power, as a complement to the main hydro power, is justified in these locations.

**Hydro-thermal energy.** Tajikistan has a large number of thermal springs, especially in the Pamirs. Geothermal resources in Tajikistan are poorly explored, although there are already examples of their use, e.g. at the Khoja Obi-Garm resort.

Experience in a number of countries shows that thermal waters are of interest for power production, provided that their temperature does not fall below 150 °C or even 300 °C. For heating, thermal water sources with a temperature of more than 60 °C are needed. Other sources can only be used for thermal water supply

**Biomass energy.** 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 of 204.34 MW with an annual electricity production of 1,790 million kWh<sup>4</sup>.

Table 2 shows the renewable energy potential of Tajikistan. Even a partial utilisation of the existing 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 of Tajikistan, Mtoe per year**

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

In Tajikistan, of the RES, mainly small hydropower plants of up to 5 MW are used. According to the MEWR, there are 297 registered small energy facilities in the country, which include the Murghab solar power plant. The total installed capacity of all types of RES power plants is 69.5 MW and they generated a total of 211206.4 thousand kWh of electricity in 2020, including 211164 thousand kWh by small hydropower plants and 42.4 thousand kWh by Murgab solar power plant. As it can be seen, the amount of energy generated from RES is mainly attributed to SHPPs, and its share in the final energy consumption in the country is only 1.08%. There are no other official data on RES-based energy generation (micro-generation) by other entities, including the cost of this energy, except for isolated examples.

Most of the MHPPs operating in the country are owned by the private sector or local communities, and their construction has been partially financed by UNDP, ADB and other organisations.

<sup>4</sup> See Petrov G. H.

**Key challenges and priorities of Tajikistan in RE development**

Electricity generated in Tajikistan's hydropower plants is seasonal in nature and depends to a large extent on the flow of water in the rivers. Water flows differ significantly between spring-summer and autumn-winter periods, resulting in overproduction of hydropower in the first period and deficit in the second period. The lowest level of electricity generation is from October to April/May, when the demand for electricity is highest. In summer, however, electricity supply is most reliable and, moreover, there is a power surplus of 3-5 billion kWh .

73% of Tajikistan's population lives in rural areas, of which more than 10% live in remote mountainous areas, along the valleys of widely scattered small rivers and streams. The population density in these areas is sometimes only 2-3 people per km<sup>2</sup> . There is limited access to infrastructure, as well as significant deterioration of energy equipment, utilities and capacity shortages, resulting in periodic power outages<sup>5</sup>.

According to Barki Tojik's estimates, it is not economically feasible to build power lines, separate transformers and substations in such areas. In addition, it is the responsibility of the local executive authorities (LEAs) to organise this work, but they do not have the necessary funds and resources. The best option for energy supply in these settlements today seems to be the installation of solar panels, but other types of RES may also be used.

Widespread use of RES (especially in rural and mountainous areas) will contribute to improving the energy security of the population in Tajikistan, reducing poverty, preserving the environment, and ultimately developing human potential through improved access to well-functioning economic sectors, housing and sanitation services, and modern technologies.

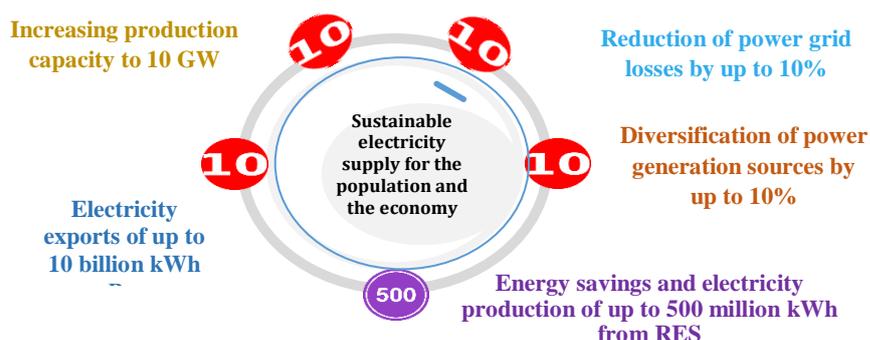
Energy efficiency and energy conservation as a less capital-intensive and rapidly feasible way of solving energy problems are also important objectives. The energy saving potential in the country is about 3.8 billion kWh.

In NDS 2030, the target is to increase the share of energy generated from alternative energy sources, including renewables (small-scale energy, solar, wind, thermal water, biomass) to 10% of total electricity generation.

*According to experts, about 2.5% of the population of the republic, over 700 villages have no access to electricity at all. Most of these settlements are newly established settlements in remote and inaccessible areas.*

*Today, innovation in energy saving and the introduction of energy-efficient technologies is not just a trendy topic, but a real urgent need. Renewable energy issues are becoming increasingly important in our country.*

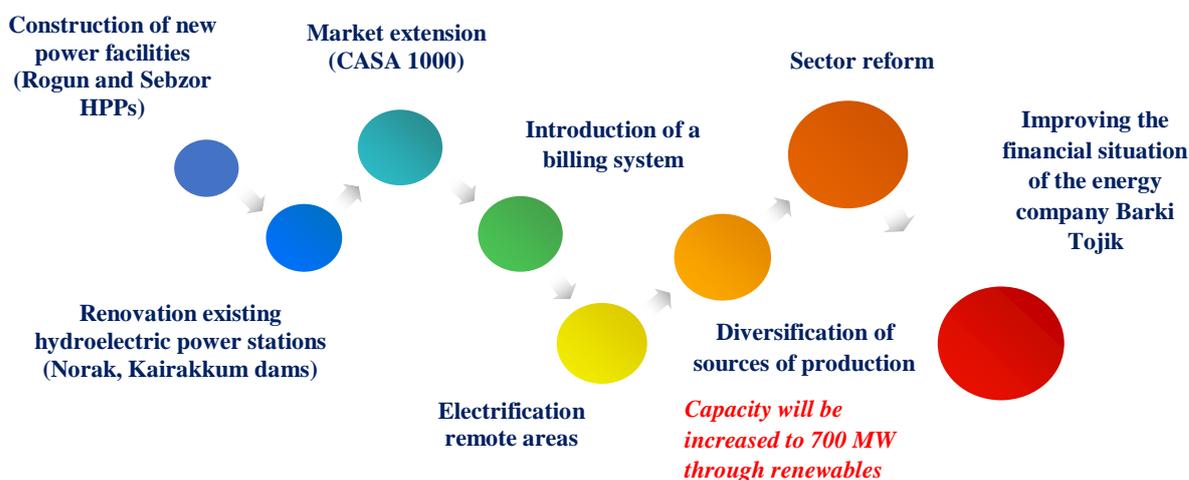
**Figure 5: Key indicators of energy sector development in Tajikistan until 2030**



<sup>5</sup> More than 700 villages in Tajikistan have been counted without electricity. STANRADAR, 16.02.2018r. <https://stanradar.com/news/full/28465-v-tadzhikistane-naschitali-svyshe-700-sel-bez-elektrichestva.html>

NDS-2030 establishes key indicators for the development of the country's electricity sector 10/10/10-500: increase the design capacity of the electricity system to 10 GW; increase annual electricity exports to neighbouring countries to 10 billion kWh; diversify capacity of the country's electricity system (increase capacity of other energy sources, including coal, oil, gas and RES) by at least 10% and generate over 500 million kWh a year from RES and energy-saving technologies; reduce technical and energy consumption by at least 10%.

**Figure 6. Sequence of development of the energy sector in Tajikistan**



## 1.2. State of the Tourism Sector and Strategic Objectives of the Republic of Tajikistan for its Development

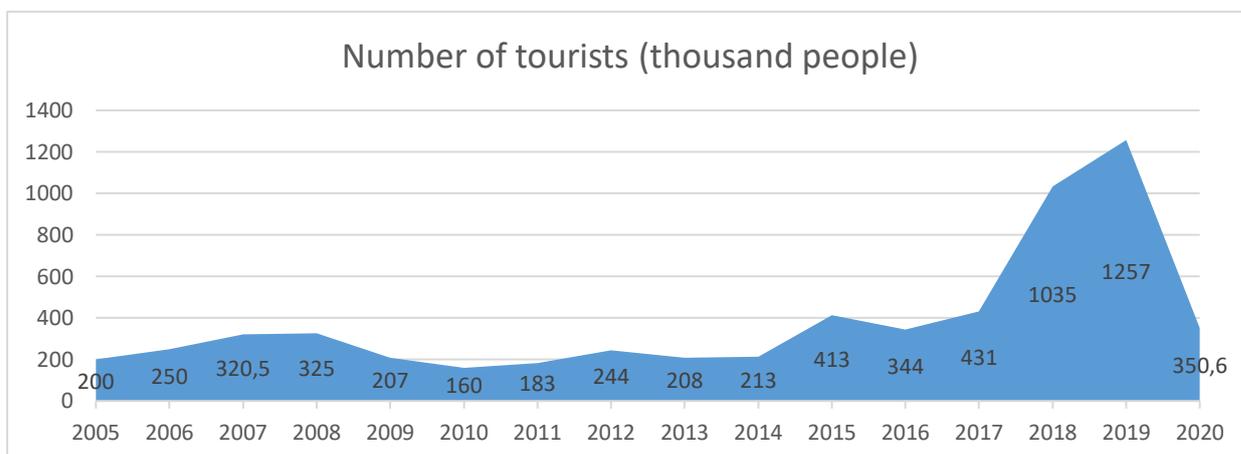
The tourism industry in today's world is one of the lucrative sectors of the economy and plays an important role in generating employment and raising living standards. Tourism's ability to create jobs, stimulate economic growth, accumulate foreign exchange, improve infrastructure and promote environmental protection makes the industry an attractive means to alleviate poverty and accelerate local development. Tourism has therefore become a key priority in Tajikistan's sustainable development agenda.

It is noteworthy that among the priority actions in NDS-2030 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 is identified, which directly echoes the objectives of the Project. It is noted that this will ensure new jobs, availability, affordability and sufficiency of food; reduction of the number of labour migrants; formation and development of the middle class in rural areas.

In implementing the tourism development measures outlined in NDS 2030, the Government of Tajikistan has granted tax and customs benefits to tourism companies by exempting them from profit tax for the first five years of operation and reducing the import duty by 50%. Imports of equipment, machinery and construction materials for the construction of tourism facilities have also been exempted from value-added tax and customs duties. In order to attract more tourists to Tajikistan, a simplified electronic visa system has been introduced for citizens of more than 80 countries. As a result of the implementation of a systematic tourism policy, 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.

All this has contributed to an increase in tourist arrivals to the country in the last five years. In 2019, the number of tourists visiting the country reached 2.1 million and, compared to 2014, increased sixfold. Global restrictions imposed due to the spread of COVID 2019 have significantly reduced this figure for 2020. Tourism's contribution to Tajikistan's GDP has fallen accordingly, from 2.5% in 2019 to 1% in 2020. In general, it should be noted that other post-Soviet countries are far ahead of Tajikistan in this indicator, for example, the share of tourism in GDP is: in Georgia - 27.1%, in Azerbaijan - 14.6%, in Armenia - 14%, in Kazakhstan - 6.2%, in Belarus - 5.9%, in Ukraine - 5.6% and in Russia - 5%. In developed countries this indicator reaches an average of 40-55%.<sup>6</sup>

**Figure 7: Trend in the number of tourists visiting Tajikistan**



Much of this lag is due to the fact that the republic's tourism resources are not used properly, in accordance with modern international tourism standards, nor are favourable conditions for tourists created.

To improve the situation in the country, the Strategy for Tourism Development in the Republic of Tajikistan until 2030 (STD-2030) was adopted, the main goal of which is to ensure sustainable development of tourism in the country, and ambitious targets have been set to increase significantly (by 2.5 times compared to 2019) the flow of tourists to the country and the contribution of tourism to the socio-economic development of the country.

STD-2030 includes a set of measures to achieve its objectives, including:

- > Development of road transport infrastructure, including modern roadside facilities for sanitation and technical services, signs and symbols in Tajik, Russian and English;
- > Development of the infrastructure base for tourism, encompassing sports and recreational facilities, recreation and entertainment;
- > Development of modern network infrastructure for hotels, restaurants, museums and libraries, theatre and film institutions in accordance with national traditions;
- > Development of mountain and eco-tourism infrastructure;
- > Development of information and communication and financial services;
- > Increased efficiency in the use of natural and recreational resources;
- > Environmental protection and environmental safety.

<sup>6</sup> [Tourism contribution — Forbes Kazakhstan](https://forbes.kz) URL: <https://forbes.kz>

**Table 3: Target Indicators of the Tourism Development Strategy of the Republic of Tajikistan until 2030<sup>7</sup>**

№	Name of indicators	2025	2030
1.	Number of tourists visiting the country (in thousands)	1600,0	2500,0
2.	Tourism contribution to GDP (%)	6,5	8,0
3.	Tourism contribution to exports (%)	12,0	15,0
4.	Share of capital in the tourism sector in the investment mix (%)	5,0	10,0
5.	Share of tourism in government revenue (%)	1,6	3,0
6.	Volume of services provided in the tourism sector (million TJS)	7080,0	11862,6
7.	Number of registered providers of recreation and treatment services	410	500
8.	Employment in the tourism sector (in %)	5,0	10,0
9.	Tajikistan's position in the World Economic Forum's Hospitality Index	75/136	50/136

The conceptual component of STD-2030 is the development of the tourism industry in the context of a "green economy". The following types of tourism have been prioritized in the country: eco-tourism, health tourism, recreational tourism, historical and cultural tourism, mountaineering and hunting.

Studies show that one job is created for every 30 new tourists at the sites. In 2019, the total contribution of the tourism sector to employment in the country was recorded at 182.1 thousand people, taking into account the jobs created while providing various services for tourists in other sectors of the economy (e.g. handicrafts). Based on the strategic objectives for tourism development, employment in the tourism sector should increase by 5% by 2025. Employment related to the provision of tourism services to tourists should reach 10% in 2030, which in turn requires training of specialists in the tourism sector.

*Tourism in the context of a green economy*

In a green economy, green technologies, which include alternative energy, green transport and waste management, are becoming the defining factor of production.

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.

Research shows that travelers' choices are increasingly influenced by environmental considerations - more and more people are considering environmental health when planning travel and prefer to stay in an environmentally friendly hotel. Criteo analysts surveyed more than 13,000 travellers worldwide and found that 87% of travellers choose greener options when possible and 67% are willing to overpay by 5% or more if their travel has minimal impact on the environment<sup>8</sup>.

*Today, the level of development of a green economy is one of the determinants of national economic competitiveness.*

Today, the World Tourism Organisation estimates that the number of ecotourists in the world is increasing by 7-20% annually. Eco-tourism is one of the fastest growing sectors of the global

<sup>7</sup> Strategy for tourism development in the Republic of Tajikistan until 2030. URL: <https://ctd.tj/ru>

<sup>8</sup> [Study] Ecotourism trends in 2020 | RU - Criteo.com

tourism industry<sup>9</sup>. Such consumer preferences provide additional impetus to green tourism initiatives.

Tajikistan has rich natural and recreational resources for the development of green tourism, which should be maximised for sustainable development as progress in tourism will stimulate the development of other sectors of the economy (agriculture, food and processing industry, transport and infrastructure, construction, services, etc.).

Many settlements and local communities in remote mountainous areas of Tajikistan, due to their wealth of natural resources and cultural identity, have a unique potential for CBT organization, the full use of which would reduce unemployment and poverty among the local population and solve other social problems at the community level and in the district as a whole. However, the lack of energy constrains the socio-economic development of these settlements, local communities. In addition, the provision of services to tourists is associated with increased energy consumption, which in the absence of an adequate energy supply means an increase in the consumption of firewood, coal, liquid fuels and consequently increased greenhouse gas emissions into the atmosphere, and ultimately contributes to the aggravation of climate change.

The Medium Term Development Programme of the Republic of Tajikistan for 2021-2025 (MTDP-2025) envisages comprehensive development of a "green economy" and effective use of the country's transit and tourism potential. In particular, green economy objectives include the launch of industrial production of solar panels and equipment in manufacturing plants using domestic raw materials (silicon raw materials) in order to reduce the cost of electricity production from this source.

#### ***RES potential in the CBT sector***

Among foreign tourists eco-tourism and mountain tourism are very popular, whose facilities are mainly located in remote and inaccessible mountainous areas belonging to the zones of decentralised energy supply, which due to low population density and scattered settlements cannot be supplied with energy from centralised energy generating sources. The suppliers of tourist services in these areas are the CBT entities, for which RES can be the most efficient sources of energy supply.

***According to various estimates, tourism currently contributes around 5.2-12.5% of all greenhouse gas emissions.***

From this perspective, for tourist facilities located in the valleys of small rivers and streams, it is advisable to use mini and micro-HPPs located in close proximity to CBT facilities, potential consumers. This will allow the rational use of RES and avoid large investments in the construction of expensive transmission lines and step-down transformer substations.

The possibility of using solar energy efficiently is also increasing for CBT facilities located in decentralised energy supply areas. At a time when energy prices have risen sharply, the costs of using solar energy for domestic purposes are becoming comparable with the costs of using electricity from other energy sources. The big advantages of solar energy for this sector are that no power lines are necessary, it can be used quickly and is targeted at individual consumers, and it can provide sufficient micro-generation for a single household. The surplus energy produced is transferred to the grid (if available) and the shortfall in generation is made up from the grid and can also be sold to other consumers.

The wind energy potential in Tajikistan can be used for tourism facilities in selected areas of the country as stand-alone or supplementary sources of small power. 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.

<sup>9</sup> Afanasyev O.V., Afanasyeva A.V. The concept of "ecological tourism" in world and Russian practice: comparative analysis and cases // Modern problems of service and tourism. 2017. Vol. 11. № 4. C. 7-25.

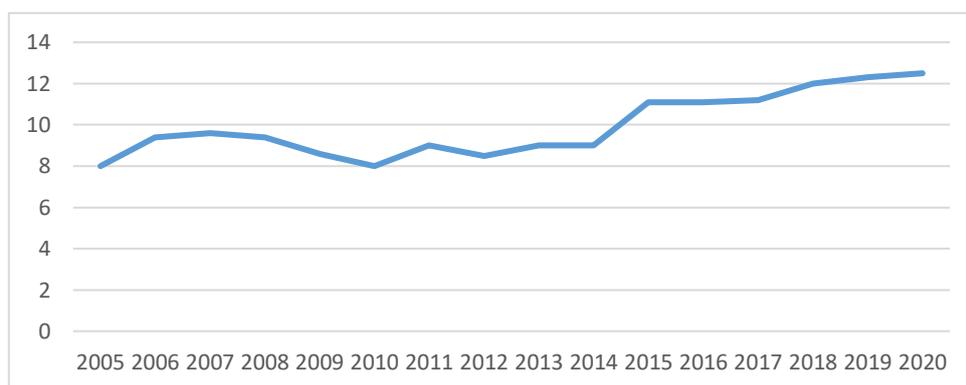
Along with other RES, introduction of thermoelectric converters for obtaining electric energy, as well as utilization of low temperature potential of land and water streams using heat pumps can be promising for CBT in mountainous areas of Tajikistan. Calculations have shown that, for example, under conditions of Pamir, thermal sources are very competitive in comparison with coal and oil products imported into the region. The main advantages of geothermal developments are their renewability and environmental safety.

### 1.3. Assessment of the status of greenhouse gas emissions and ways to reduce them at national level and in the tourism sector

Tajikistan, which has ratified a number of international environmental documents, has obligations to reduce emissions, to reduce the negative impact on the environment.

Due to the use of hydro-resources that provide clean energy, Tajikistan's GHG emissions are less than one tonne per person per year, and the country's share of regional emissions is only 5%.<sup>10</sup> However, although Tajikistan ranks the lowest in the world ranking for GHG emissions, according to experts, the country's GHG emissions have recently been increasing.

**Figure 8: Dynamics of greenhouse gas emissions (CO2) in the Republic of Tajikistan**



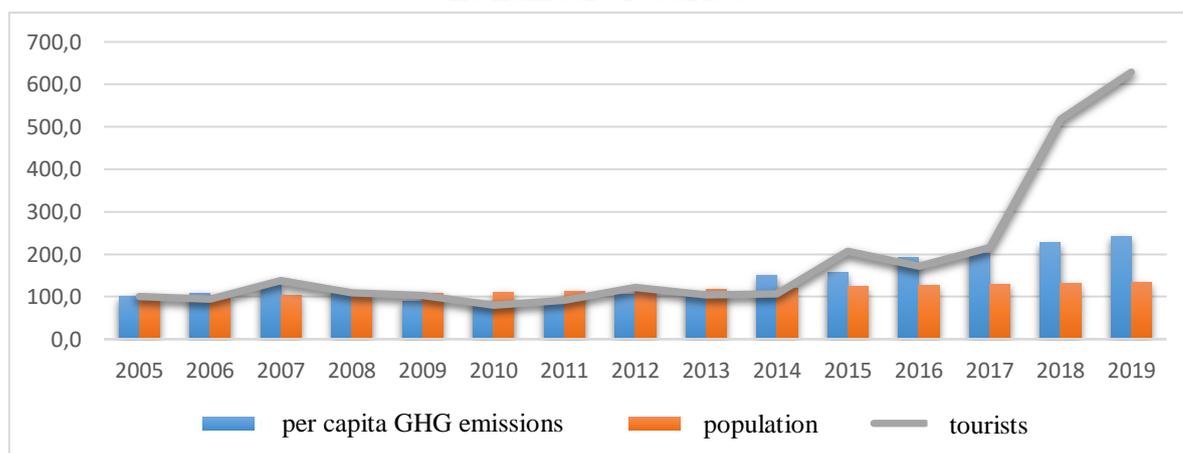
As shown in Figure 8, GHG emissions have increased from 8.5 million tonnes to 12.5 million tonnes, a 1.47-fold increase compared to 2013.

Experts estimate that about 20% of total GHG emissions come from the energy sector. The increase in GHG emissions from the energy sector has the following reasons:

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

A comparison of population and tourist growth rates and GHG emission trends is therefore of interest.

**Figure 9: Dynamics of GHG emissions in relation to population growth and the number of tourists**



<sup>10</sup> Tajikistan Climate: Facts and Policy, Analyses and Zoi Environment Network's own information. 2016

Figure 9 shows that the growth rate of GHG emissions and the growth rate of tourists up to 2017 are roughly the same. In 2018 and 2019, however, there is an increase in GHG emissions as a function of population growth and an increase in the number of tourists.

An econometric model based on the multivariate method also shows significant dependence of GHG emissions growth on another, third, factor: coal production and consumption.

**Table 4: Estimation of multiple regression coefficients**

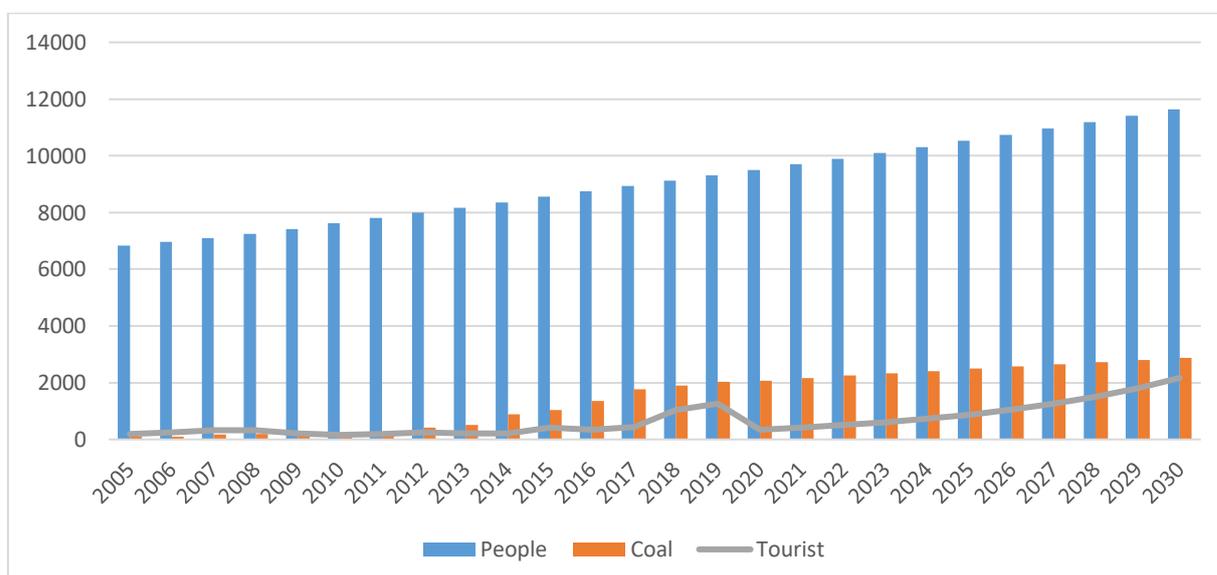
Dependent variable: CO2

Variables	Coefficients	Std. errors	t-statistics	Probability
Coal	2.363515	0.129075	18.31119	0.0000
Population	0.272914	0.017347	15.73245	0.0000
Tourists	0.313369	0.102674	3.052088	0.0100
R-square	0.978499	Average dependent variable		4122.667
Adjustment. R-square	0.974916	Stand. offsets of the variable		1929.902
Odd regression error	305.6591	Akaike information criterion		14.45967
Sum of squares residuals	1121130.	Schwarz criterion		14.60128
Logarithm. Probability	-105.4476	Hannan-Quinn Test.		14.45817
Stat. Durbin-Watson	2.841653			

As shown in Table 4, according to the value of the multiple regression coefficients, the greatest influence on GHG emissions comes from coal production and consumption (the coefficient of influence is 2.36).

By 2030, coal production in Tajikistan is projected to increase by 38.5%, the population will reach more than 11.5 million and the number of tourists will reach almost 2.5 million.

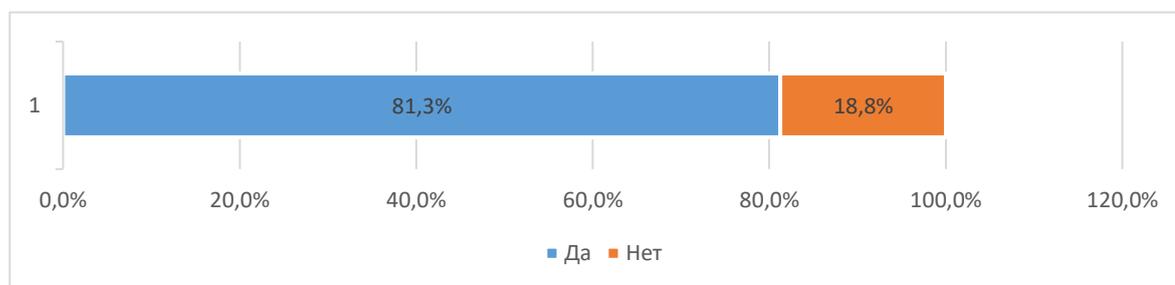
**Figure 10: Forecast of influencing factors**



According to the 2013 Central Asia Multi-Year Inclusive Social Survey (CALISS) 11, there is a significant difference in energy consumption by urban and rural population as well as by territories of Tajikistan. The population of densely populated and large cities mainly used electricity, while in rural areas, particularly in Khatlon and GBAO, wood was the main source of energy for heating, and in Sughd and DRS most families heated their homes using coal. Characteristically, the use of hydrocarbons and other fuels for heating prevailed over electricity consumption. Coal and agro-fuels accounted for the bulk of the population's energy expenditure.

A survey of CBT entities conducted by the Project expert group in February-March 2021 showed that they use hydrocarbon fuels for heating, cooking and hot water supply to a greater extent (81% of respondents).

**Figure 11. Do you use hydrocarbon fuels for heating, cooking and hot water?**



GHG emission reductions in the energy and CBT sectors can be achieved by:

- improving EE, which involves improving insulation and reducing energy losses by introducing energy efficient technologies such as double-glazed windows, insulation materials, appliances (smart home);
- introduction of an alternative option for electricity and heat production - based on RES, i.e. using the energy of small watercourses, solar, wind and geothermal sources, respectively construction of mini and micro power plants for micro-generation.

#### **1.4. Estimating the benefits to the state, entrepreneurs and households of implementing RES**

By introducing RES in the tourism sector, the state will benefit from the following:

##### **1. Increase in the number of tourists**

As mentioned above, ecotourism is developing very rapidly (annual growth rate of 6%). Therefore, the introduction of green technologies in Tajikistan's tourism sector (based on RES) will increase the interest of tourists to visit the country, which in turn will contribute to an increase in tax revenues.

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

On the one hand, an increase in tourists will correspondingly expand the field of service provision for them. On the other hand, the use of RES as micro-generation will require specialists in the design, installation and maintenance of appropriate equipment. All this will increase employment in the tourism sector and lead to lower unemployment. In 2019, it was recorded that the total contribution of the tourism sector to employment in the country is 182.1 thousand (taking into account jobs created by the tourism sector for other sectors, such as handicrafts).

As for the entrepreneurs (importers/exporters of RE technology, micro-generation producers), both their revenues and profits from the introduction of RES will also increase. As the

<sup>11</sup> 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.

demand for EE technologies and equipment for the use of RES has increased due to the transition to a green economy in all countries of the world.

The introduction of RES will create a new market for the supply of RES technologies and equipment and maintenance services, which in turn will encourage domestic producers to produce RE technologies and equipment, creating a new market segment.

Also, owners, producers of electricity from RES have the opportunity to increase their profits by connecting to the public grid and selling the surplus electricity produced.

Households, hostels, in turn, with the appropriate legal status, can gain additional benefits and competitive advantages from the implementation of green standards and compliance assessment for the Green Certificate, provide services to tourists, including the production of goods and handicraft products demanded by tourists in the new quality. In this way, households will be able to improve their social status and quality of life and provide themselves with clean energy.

### **1.5. Defining the Roadmap Objectives**

The target is defined on the basis of strategic documents, sectoral and sectoral plans, commitments made (in this case on climate change), intentions to achieve the desired state in the development of sustainable (green) tourism, in particular the development of those business activities, which have inter-sectoral linkages and on which the growth of clean energy production and consumption, EE growth for the period and for the milestone dates of the Roadmap measures are dependent. Based on the above, as well as on the data from strategic and sectoral programmes, assessments and conclusions given in the previous sections, key indicators of the Roadmap implementation targets can be identified.

#### ***The objectives of the 2030 Roadmap are:***

1. Reduction of GHG emissions through the introduction of RES and the growth of EE in the CBT sector.

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

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

This indicator is derived from the NDS 2030 goal of "ensuring diversification of the country's electricity system capacity by at least 10% by increasing energy sources, including from renewable energy sources".<sup>12</sup>

3. Sustainable financing of RES and EE projects at TSO level

- Increased investment in micro-generation development for CBT facilities from clean energy sources (solar, wind and thermal energy) by 10%.

If favourable conditions for RE development are created, as defined in NDS 2030, there is a strong possibility that the share of renewable energy in final consumption of CBT entities could increase by 10%. This implies a 10% increase in investment in renewable energy development.<sup>13</sup>.

4. Create conditions for large-scale application of renewable energy technologies in the tourism sector

- Increasing the revenue share of tourism companies by building their own power plants using RES by 5%.

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<sup>12</sup> National Development Strategy of the Republic of Tajikistan until 2030. p.66.

<sup>13</sup> Ibid.

According to a study by Criteo Analysts, 87% of tourists choose greener options when possible and 67% are willing to pay 5% or more extra if their travel has minimal environmental impact.<sup>14</sup>

#### 5. Sustainable development

- employment growth in the tourism industry of 10%<sup>15</sup>;
- a 15% reduction in poverty<sup>16</sup>.

## 2. Assessment of the actual performance of RT policies on RES, EE in the CBT sector and justification of proposals for their improvement

### 2.1. Overview of existing state regulation mechanisms of RT in the areas of RES, EE and tourism

Tajikistan has a set of laws regulating a wide range of energy relations, including the use of RES. A legal framework for the tourism sector has also been established.

*Brief description of the basic NLAs in the fields of energy and tourism*

The main laws of Tajikistan regulating the use of RES are the Law "On Energy" of 29 November 2000, No. 33 (amended on 28.12.2013) and "On the Use of Renewable Energy Sources" of 12 January 2010, No. 587 (amended on 23.11.2015). Practical aspects of the use of RES and EE are regulated by by-laws - resolutions of the Government of Tajikistan, decisions of boards of ministries and agencies, orders and directives of heads of state bodies. A general list of relevant normative legal acts, strategic and policy documents of Tajikistan is given in the Report on Analysis of the Energy Sector, Energy Production from RES in the Tourism Sector at Community Level in the Republic of Tajikistan<sup>17</sup>.

However, energy law in Tajikistan, despite its importance in the social dimension for business development and investment attraction, including for CBT development, still has gaps. As the volume of work undertaken in this area increases and investors' interest in energy and tourism facilities in Tajikistan increases, 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.

It should be noted that the current strategic programme documents do not sufficiently highlight the development of CBT entities as a priority and do not specify measures to improve the quality of their services through the application of RE and EE technologies. The issues of creation of local networks and systems of heat, water and energy supply, production and consumption are not considered. This is considered to be the subject of sectoral energy programmes, which reduces the synergy effect. The programme documents do not link the planning of RES and EE use and generation with the budgeting process. The main focus is 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 volumes, there are not even prerequisites for the development of entrepreneurship in the RE sector.

Most of the tourist facilities (households) serving tourists, especially ecotourists, are located in the zones of decentralized electricity supply, where low-power electricity plants (microgeneration) from 5 to 30 kW, including SHPPs, solar panels and water-heating sources should be used. However, the current legislation of Tajikistan lacks the concept of

<sup>14</sup> [Study] Ecotourism trends in 2020 | RU - Criteo.com

<sup>15</sup> Strategy of tourism development in the Republic of Tajikistan until 2030.

<sup>16</sup> National Development Strategy of the Republic of Tajikistan until 2030. p. 83

<sup>17</sup> <http://bizexpert.kg/wp-content/uploads/2021/05/Отчёт-о-состоянии-энергосектора-РТ.pdf>

"Microgeneration", which entails complicated, sometimes unjustified legal procedures for the use of small capacity RE plants, which create insurmountable barriers to their expansion and development.

Inadequate environmental requirements, lack of "green certification" in the tourism sector, insufficient human capacity and low availability of RE and EE specialists, especially in the decentralised electricity supply areas, limited access to information on RES and EE are not consistent with the introduction of "green tourism".

At the same time, state support and improvement of legislation on the use of RES, including in the tourism sector, legal and regulatory regulation of micro-generation facilities, tax and customs preferences for entities using RES in CBT, in particular, exemption from certain taxes and duties when importing RE goods and equipment, tariff regulation, introduction of green standards and green certification based on independent energy audits are important.

In accordance with Article 34 of the Law of RT "On Regulatory Acts" (30.05.2017, No. 1414), regulatory impact analysis (RIA) procedures as a process of reviewing and optimising the permissive regulatory framework in this area should be implemented to further remove administrative obstacles and restrictions in the field of business and investment activities.

The Concept of the Regulatory Impact Analysis in the Republic of Tajikistan, adopted by the Government of Tajikistan, obliged national and local authorities and local self-governments to be guided by the RIA methodology when developing normative legal acts regulating business activities.

## **2.2. Identification of legal actors. Assessment and analysis of environmental issues, identifying market failures and gaps**

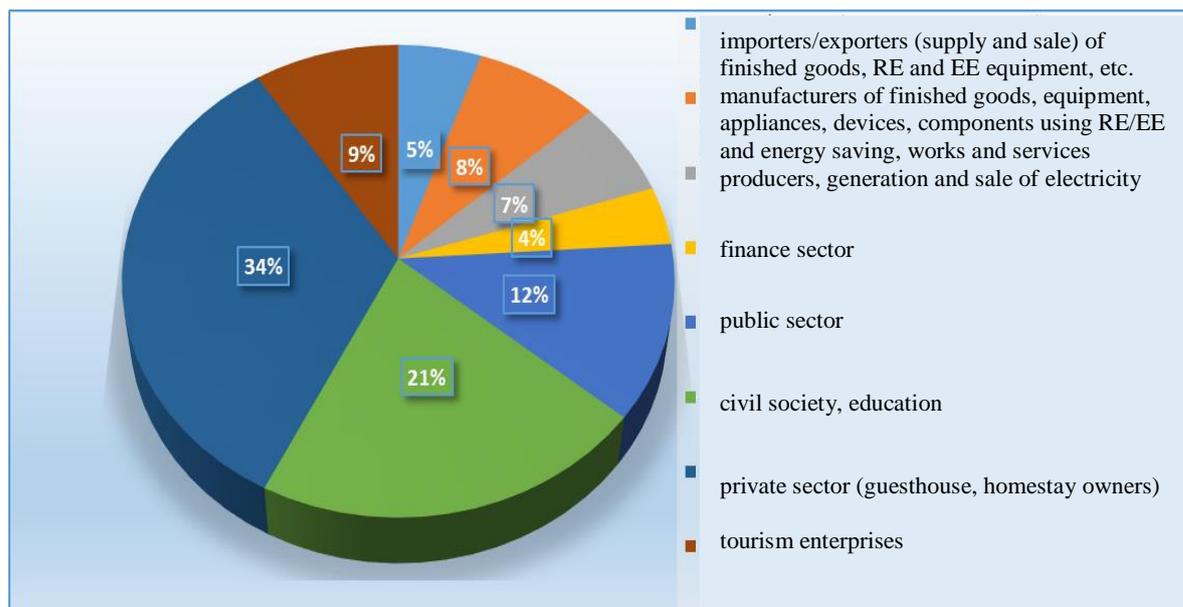
### *Target areas*

Evaluation of the actual impact of RT policies on RES, EE in CBT sector has been carried out based on the views of stakeholder representatives through questionnaires, discussions with their participation at the focus group discussion (FGD) held on 2 April 2021 and the Roundtable held on 4 May 2021, for which the following target areas of legal relations have been identified:

- Import/export (supply and sale) of finished goods, equipment, devices, appliances, components using RES, EE;
- production of finished goods, equipment, appliances, devices, components using RES/EE and energy saving, works and services;
- electricity production and supply;
- financial and credit sector;
- public sector;
- civil society;
- CBT entities.

The main objective of the questionnaires and FGDs was to clarify the current situation and identify the problems of the business environment, RE production, EE in the CBT sector. For this purpose two questionnaires were developed: 1) for representatives of state authorities, public organisations, academic and university circles, manufacturers, importers and exporters of RE and EE equipment, RE producers; 2) for CBT entities (representatives of tourism firms and owners of hotels, hostels, guesthouses at local community level).

**Figure 12. Fields of activity of Survey respondents**



Seventy-five people were interviewed, including 43 respondents in the first questionnaire, of whom 4 were women (10%), and 32 respondents in the second questionnaire, of whom 7 were women (22%).

Twenty-one people participated in the FGD, including 5 women (23%), and 31 people participated in the Roundtable, including 7 women (23%).

### *Targeted MSMEs entities*

The next step was to identify the range of MSMEs involved in RE and EE provision in the CBT sector, who are subject to government support and regulation, on whose activities the targets depend, who will be affected by the policy changes, and who has an interest in the changes.

As a result of discussions at the IWG (Minutes No. 2 of 12 October 2021) it was determined that these subjects are:

- **legal entities, individual entrepreneurs of the CBT sector** with the intention to use technologies, equipment, resources to generate clean energy based on RES and apply technologies and materials for energy efficient consumption of resources (owners of hotels, hostels, guest houses, motels) that provide services to tourists (accommodation, transport, food, internet service, heating), located in mountainous areas and not having access to electricity;
- **owners** - producers of small and microgeneration from RES;
- **owners of local renewable energy systems**, autonomous energy generation, transmission, storage and consumption complexes;
- **service providers and entrepreneurs** who provide on-site engineering services, for technical support of individual activities from the design phase, through facility creation to operation, maintenance and repair of the facility;
- **Suppliers** - firms, companies, organisations, individual entrepreneurs, producers of goods, works, services of RE equipment and energy efficient technologies, including:
  - Importers/exporters (supply and sale) of finished goods, equipment, devices, appliances, components using RES and EE;

- Manufacturers of finished goods, equipment, appliances, devices, components using RES and EE and energy saving (solar installations, generators, manufacturers of appliances (smart house), glazing, insulation materials, convectors, recuperators, heat pumps, etc.)
- **consumers (households)** located in decentralised areas where electricity, heat is generated by very small capacity facilities, on-site or near the place of consumption, regardless of size, technology or fuel - both off-grid and in parallel with the grid.

The analysis of the responses received from the participants of the survey, FGD and Round Table (hereinafter referred to as respondents) conducted by the national project expert group in February-March 2021 showed that most of the respondents from the CBT entities know the main RES types and EE opportunities. They indicated which of them can be developed on their territories. The majority of the respondents identified 3 types of renewable energy for their business development and opportunities: hydro energy (47%), solar energy (33%) and wind energy (20%).

The following issues that most hinder the development of renewable energy and EE growth in the tourism sector were mentioned by the survey participants:

- 69.4% - weak investment attractiveness and low business activity in introducing technologies and setting up industries in RES and EE,
- 52.8% - insufficient human resources capacity and low availability of RES and EE specialists,
- 50% - weak state support and insufficient incentives for the industry,
- 50% - limited access to information on RES and EE,
- 36.1% are dependent on imports of technologies and equipment for RES and EE, and 33.3% say there is a lack of strategic planning,
- 30.3% - imperfect environmental requirements, lack of "green certification" of tourism facilities,
- 27.8% - low interest of citizens and tourism entities in using renewable energy.

The study revealed that the country is not effectively using RES and EE resources to meet the needs of MSMEs in CBT located in remote and inaccessible regions of the country for a number of reasons.

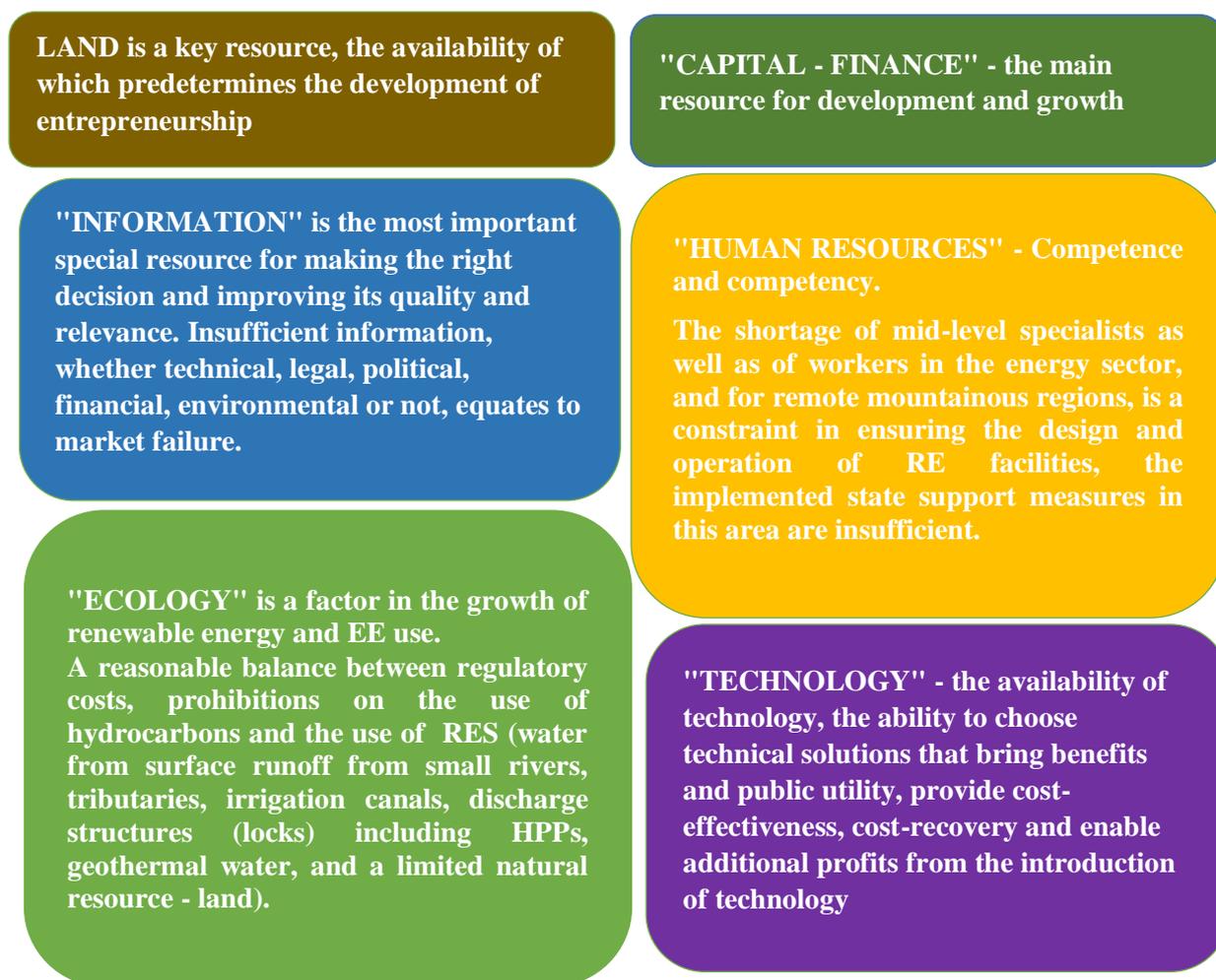
### *Problem identification*

During the development of the RM, the expert group analysed all the identified unfavourable events, phenomena, facts, processes that cause dissatisfaction of the stakeholders and the solution of which will contribute to the development of recommendations and necessary actions to increase the use of RES, increase EE in the CBT sector. An analysis of stakeholders' opinions in each category has also been carried out: entrepreneurs, natural persons and their associations, public authorities.

In general, the conducted legal analysis, the results of the Survey, FGD and Round Table allowed highlighting the gaps and deficiencies in the legal framework and implemented policies of Tajikistan in the field of RES based energy production and consumption, increasing EE in the CBT sector. It was identified that there are key problems and gaps that constrain the development of entrepreneurial initiatives related to uncertainty of their legal status, limited access of MSMEs in the CBT sector to resources such as land, finance, labour, information, technology, which are discussed in detail in the Report on Analysis of the Energy Sector, Energy Production from RES in CBT Sector in Tajikistan<sup>18</sup>.

<sup>18</sup> <http://bizexpert.kg/wp-content/uploads/2021/05/Отчёт-о-состоянии-энергосектора-РТ.pdf>

**Figure 13. Resources under study**



The problems have been identified by the relevant stakeholders and are listed in Table 5, with the number of problems reported.

**Table 5. Number of applications from parties to the legal relationship.**

Participants	Number of issues, problems and gaps
Public sector representatives	22
Non governmental organisations	25
Academia and universities	21
Importers and exporters of renewable energy equipment	25
Equipment manufacturers	23
Generators of RES and EE	26
Finance and credit sector	13
Travel companies	14
Subjects of CBT	13
<b>TOTAL:</b>	<b>182 problems and gaps identified</b>

The RIA methodology also involves the use of indicator scoring to identify sensitivities in data assessment and analysis. For example, if an indicator is equal to or greater than 50%, it is recognised as sensitive. The results allow the identification of trends and confirm the validity of expert approaches in identifying current sector issues and policy gaps.

From the total list of problems (182 problems) the most urgent and priority problems were selected, the solution of which is necessary to achieve the set objective of the Project. For this purpose, all the problems indicated in the respondents' questionnaire were grouped by sectors and areas of activity, the sensitivity percentages were determined, and the results of this work are shown in Table 6.

**Table 6: Main sectors and activities**

№	Main sectors and activities	Total problems and gaps	Including with a sensitivity index		
			30%	40%	50% or more
1	Land and water use regulation	20	6	10	4
2	Licensing and permits regulation	19	6	8	5
3	Control and supervision	19	5	6	8
4	Tax and customs regulation	23	8	7	8
5	Prices and tariffs, pricing	16	5	5	6
6	Ecology, Tourism - Transition to "green economy"	25	7	9	9
7	Sufficiency of state support measures	21	8	5	8
8	Information and workforce	23	8	8	7
9	Technology and entrepreneurship	16	5	6	5
<b>Total</b>		<b>182</b>	<b>58</b>	<b>64</b>	<b>60</b>

Thus, 60 sensitive problems with sensitivity rates above 50% are identified, on the implementation of which solutions to problems with rates of 30-40% depend.

The description of these 60 sensitive issues and gaps was subjected to semantic processing, which included:

- correcting the wording of the problems, identifying their similarities;
- bringing in line the legislation of Tajikistan with regard to the regulation of the analysed relations, especially the law enforcement practice and identifying the state or self-governing bodies that have influence on the situation;
- formulation of objectives related to legal requirements, strategic goals of state and industry development, availability of financial and time resources and other constraints.

Of the 60 issues above, those relevant to the business activities that will be affected are also highlighted, issues and gaps that are the same in meaning and significance, not related to microgeneration and CBT development are cut out, and single-type sentences are grouped into one sentence with the appropriate meaning.

**At the second meeting of the IWG (of 12 October 2021) with the participation of stakeholders, which included key partners, representatives of all stakeholders, including business entities and business associations, the list of priority areas of regulated relations was discussed, approved and recommended for use in developing the RM:**

- **regulation of land and water use;**
- **licensing and permitting;**
- **control and supervision;**
- **tax and customs;**
- **sufficiency of state support measures;**
- **tariff regulation.**

### 3. Objectives and proposed amendments to improve policies for increased renewable energy production and consumption, widespread adoption of EE in the CBT sector and emission reductions

As a result of the work carried out, the actual range of specific tasks that ensure the achievement of the selected priority areas of regulated relations has been defined, detailed solutions for each task (regulatory mechanism and its features, regulatory tools to be applied, main measures to implement the regulatory option, their sequence and specifics of implementation of the given regulatory option) have been developed

#### 3.1. Improving the legal and regulatory framework for renewable energy

##### *Legal status of RES entities*

It should be noted that 65% of the survey respondents indicated the need to introduce the legal status of "energy supplying organisation" for renewable energy entities.

The term "energy supply company" is used in the Civil Code of the RT – in Section 5 "Energy Supply" of Chapter 29 "Purchase and Sale", which sets out conditions for conclusion, performance, amendment and termination of an energy supply contract. However, the Civil Code of the RT does not define this term.

"Power supply company" is also mentioned in the 1998 Electricity Use Rules, but the term is not mentioned in any energy law.

The following definition seems possible: an "energy supplying organization" is a commercial organization selling both produced and purchased electricity and (or) heat to consumers. Such entities are generating plants using RES, but there is no unambiguous recognition of this in the legislation of Tajikistan.

As such, RES entities are not entitled to: conclude a purchase and sale contract; obtain a license for generation, distribution and sale of energy; or obtain a quality certificate for the electricity (heat) produced.

The concept of "energy supply company" should be contained in both the Civil Code of the RT, as it is essential for concluding energy supply contracts, and with respect to RES in the Law of the RT "On the Use of Renewable Energy Sources".

##### **RECOMMENDATION**

To introduce amendments to the:

- in the Civil Code of the RT - the concept of "energy supplying organisation";
- to the Law of RT "On the Use of Renewable Energy Sources" - the concept of an "energy supplying organisation"; define the legal status of RES entities as an "energy supplying organisation" and equate power plants, including micro-generation entities, to energy supplying organisations generating, distributing and selling electricity and heat using RES.

##### *Microgeneration based on RES*

51% of respondents pointed to the lack of a definition of "microgeneration" in Tajikistan's legislation.

Microgeneration is the production (generation) of electricity, heat by very small capacity facilities. By 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.

Since there is no concept of "micro-generation" in the legislation of Tajikistan in the energy sector, there is accordingly no mechanism for implementing state support measures for the development of micro-generation in non-core entities - CBT.

As defined by the World Alliance for Decentralised Energy (WADE), a MICROGENERATION is the use of a small-scale decentralised generation facility, which is sufficient for just one private home. In this case the surplus produced energy is transferred to the grid and the lack of generation is made up from the grid. Micro-generation must provide at least the needs of a backup power supply. The limitation to the needs of the private home derives from the very principle of decentralised energy, which is to bring generation as close to the consumer as possible. The economic objective and business benefit of microgeneration is to be able to connect to the public grid and to sell the surplus energy produced to the guarantee supplier.

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

It should be noted that a number of countries have introduced this term in their legislation.

In the Russian Federation legislation, micro-generation includes power plants with a capacity of not more than 15 kW, and in Ukraine - up to 30 kW. Russian legislation stipulates that a micro-generation facility is an electricity generation facility owned or otherwise legally owned by the electricity consumer and operating, including on the basis of RES, with an installed generating capacity not exceeding the maximum capacity of power receiving devices of not more than 15 kW. Technological connection of micro-generation facilities may be carried out to electricity facilities not exceeding 1 kW. Decree of the Government of the Russian Federation No. 299, March 2021 "On Amendments to Certain Acts of the Government of the Russian Federation Regarding the Specifics of Legal Regulation of Relations for the Operation of Microgeneration Facilities," which legalizes this concept. The economic purpose and business benefits of this are that there is a legal possibility to connect to the public grid and sell the surplus of micro-generation energy produced to the supplier of last resort.

Tax incentives for micro-generation facilities have been established - the sale of energy by the owner of a micro-generation facility is not considered a business and is not subject to personal income tax (PIT) until 2029.

#### RECOMMENDATION

- To make the following amendments and additions to the Law of Tajikistan "On the Use of Renewable Energy Sources":
  - to define the concept of 'microgeneration';
  - to establish that microgeneration includes power plants with a capacity of no more than 15 kW;
- to identify the conditions that support the functioning of microgeneration.
- to determine that the technological connection of microgeneration facilities may be carried out to electricity facilities not exceeding 1 kW;
- Develop Rules for the Qualification of a generating facility operating on the basis of RES.
- Study the adoption of a Microgeneration Development Programme (development of engineering infrastructure for CBT tourism facilities) based on a decentralised model and submit it to the authorised body for consideration.

*Decentralised model  
for energy sector  
development*

48% of FGD participants noted the lack of a mechanism in the legislation to connect RES facilities to the centralised electricity grid in remote mountainous areas of decentralised energy supply and the possibility (supply) of selling electricity to the grid.

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

An example of decentralized model of power supply is the use of "Sorvo" SHPP located in the territory of dekhhot Sorvo Jamoat of Romit Vahdat district, which is located at a distance of 130 km from Dushanbe city in the remote mountainous area. Installed capacity of SHPP is 30 kW, it was built with the financial support of UNDP in the RT, the owner is Romit Jamoat of Vahdat district.

Dekhot Sorvo is located in a mountain gorge in one of the most picturesque places in the area at an altitude of 2,200 km above sea level. Prior to the construction of the Sorvo HPP, the population of Dekhot had no access to electricity supply, as the settlement was not covered by a centralised electricity system. The Sorvo River with its turbulent watercourses runs through the territory of Dekhot, where a micro hydro power plant with two 15 kW units is installed, which is connected to the houses of the residents and the social facilities of Dehot by a 0.4 kV transmission line.

Since its launch, the Sorvo SHPP has provided electricity to the residents of Dekhot (67 households), a local school with 89 pupils, a health centre and a shop. The electricity generated has been sufficient to light the houses of the residents of Dekhot, operate a television, a computer and recharge mobile phones (430 watts per house).

Thanks to this, the inhabitants of Dekhot were aware of what was happening in the country and the world, they could watch various programmes, children could go to school, prepare lessons, communicate by telephone, and the entire population could receive medical care. The weather conditions and terrain allow residents to do without household refrigerators and air conditioners. The women do handicrafts at home and the men do cattle-breeding, gardening and potato growing. Dekhot residents also provide services for tourists, lending them rooms and providing them with the necessary living conditions. Thanks to the micro-hydro station, people are provided with labour, which contributes to poverty alleviation.

The owners of households and social facilities in Sorvo District pay for the electricity consumed according to the electricity tariff set for the electricity generated by the MHPP. The funds collected are used to maintain the operation of the power plant, staff, repairs, etc.

The Renewable Energy Law obliges energy network operators and wholesale consumers to purchase energy produced from RES on a contractual basis, while maintaining the established balance of production and quality of energy produced from RES. The sale of energy produced from RES is subject to the following requirements and conditions:

- the existence 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.

However, the Law does not answer the question of how the authorised energy authority arranges for the purchase of electricity from the owner of the power plant in the area of

decentralised energy supply, where the authorised authority (energy supplying organisation) has no electricity distribution network.

The Law also regulates the sale of energy generated from RES only to the authorised energy authority, i.e., the owner of the plant is not allowed to sell the generated energy on its own in decentralised electricity supply.

The "Regulation on the Procedure for Connection of Renewable Energy Plants to the Common Energy Networks" does not stipulate that for owners who use the energy produced for their own needs, there is no need to obtain technical conditions (TU) for connection from the grid organisation.

## RECOMMENDATIONS

- Amend the Law on the Use of Renewable Energy Sources of Tajikistan to specify a mechanism for purchasing electricity produced from RES directly by the consumer in the absence of an electricity distribution network in the areas of decentralised energy supply.
- Allow the producer of electricity (heat) from RES to conclude direct contracts directly with electricity consumers for the sale of electricity, specifying the approved tariff.
- To make an addition to the "Regulation on the procedure for connection (connection) of renewable energy installations to the common energy networks" to exclude the owner of microgeneration from the list of recipients of TU from grid organisations when using the generated energy only for their own needs.

## *Development and implementation of RE, EE standards, norms and regulations*

Standardisation issues in the area of RES, energy saving and energy efficiency are regulated by the laws of Tajikistan "On Standardisation", "On Use of Renewable Energy Sources", "On Energy Saving and Energy Efficiency" and "On Energy", the Decree of the President of Tajikistan of 24 April 2009, No 653 "On Additional Measures for Economical Energy Use" and several decrees of the Government of Tajikistan.

Based on directives and norms of European Union standards, taking into account the norms of the Customs Union of the Eurasian Economic Union and in order to implement Article 18 of the Law of RT "On Use of Renewable Energy Sources", since 2011 the Agency for Standardisation, Metrology, Certification and Trade Inspection under the Government of Tajikistan (ASMSTI) has adopted 14 additional national standards in the field of RES and EE. However, the development of the entire necessary package of normative and technical standardisation documents has not been completed, which prevents the proper and qualitative development of RE, energy saving and EE. In addition, the development of standards for RE does not take into account the concept of "microgeneration" due to its absence in the country's legislation.

## RECOMMENDATIONS

- Explore the inclusion of RES performance indicators in technical regulations, standards and other technical normative acts of Tajikistan.
- Supplement micro-generation issues with the entry into force of technical regulations, standards and other technical normative acts of Tajikistan that establish the methodological, organisational and technical basis for the efficient use of RES.
- Explore the inclusion of energy quality parameters aligned to international standards recognised by RT for micro-generation in the technical regulations and standards of RT.
- Analyse the need for mandatory certification of energy and products from RES, including micro-generation.
- Develop standards for the use of low-power units and define conditions for the quality of the energy produced from RES.

### **3.2. Legal and regulatory framework for siting of microgeneration facilities based on RES**

61% of the respondents indicated the absence (ignorance) of a regulatory document on the siting of small energy facilities (microgeneration) based on RES on land plots that are part of the residential development, as well as the siting of CBT entities within local areas and consumers.

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

It should be noted that the Land Code of the RT does not directly indicate the category of land provided for the construction of energy facilities, nor does it reflect the issue of placement of small-scale energy facilities in residential areas. From comparison of Articles 3, 77 and 86 of the Land Code of the RT we can conclude that the land plots provided for use for construction of RES facilities refer to "lands of industry, transport, communication, main pipelines and other purposes in cities" and "lands of communication lines, radio communication and power transmission" and be guided by the rules corresponding to this status of lands. At the same time, Article 86 stipulates that land plots for overhead transmission line towers, buildings, structures and other devices shall be provided to enterprises, institutions and organisations engaged in the operation of transmission lines in accordance with technical designs and norms. As of 01.01.2021, the total amount of land allocated to this group is 176,816 hectares.

The categorisation of lands and their transfer from one category to another shall be carried out in accordance with the procedure established by the Government of the RT; the transfer of ploughland, perennial plantations, hayfields and pastures to non-agricultural land of agricultural designation shall be carried out by decision of the Government of the RT.

It is determined that it is prohibited to use a land plot until the registration of the right to land use - until the relevant land surveying authorities establish the boundaries of the land plot on the ground and issue documents certifying the right to use the land. At the same time, land plots in Tajikistan are provided to individuals and legal entities by local executive bodies. For the allocation of land plots, a land management record shall be prepared by specialists of the state body of land management of the RT, its local bodies, specialized design institutes and their enterprises. The basis for submission of the application for withdrawal of a land plot is a project of prospective development or a decision of a higher body.

*The allocation of construction sites is made on the basis of district planning projects, draft master plans of settlements, as well as other prospective projects upon submission by local architecture and town planning authorities. The allocation of a land plot for the construction of a RES facility is confirmed by a resolution (decision) of the respective MIOHV.*

The acquisition and transfer of land plots for any purpose is approved by the Land Code of the RT, as well as the Rules for Granting Land Plots to Individuals and Legal Entities, approved by Resolution No. 342 of the Government of the RT, dated September 1, 2005.

Order of the Minister of Energy and Industry of Tajikistan No.111 of December 3, 2010 approved "Methodological guidelines on the procedure for obtaining permits for installation and location of energy facilities functioning on the basis of RES on the territory of Tajikistan". However, this Order has not undergone state registration with the Ministry of Justice of Tajikistan and therefore does not entail legal consequences and, as it has not entered into force, cannot serve as a basis for the regulation of relevant legal relations and application of sanctions for non-compliance with the prescriptions contained therein, and cannot be referred to when resolving disputes.

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

Thus, the procedure for allocation of land for RES requires clarification and substantial revision. The legislative norms should clearly and specifically describe all aspects of land allocation for RES use; in this context, it seems appropriate to make appropriate amendments to both the Land Code of the RT and the Rules on allocation of land plots for individuals and legal entities, and, respectively, to the Methodological Guidelines on the procedure for obtaining permits for installation and location of energy facilities operating on the basis of RES. It is important to complete the state registration procedure at the Ministry of Justice of Tajikistan of the mentioned methodological guidelines.

**The land legislation of Tajikistan provides for a complicated and multi-stage procedure of obtaining a certificate for a land plot intended for construction of RES facilities. In addition, it is necessary to obtain a package of permits and approvals to meet the requirements of urban planning, master plans of detailed project plans, SNIps that do not take into account the specifics of RES facility construction and EE features, especially for RES installations up to 100 kW capacity.**

Respondents to the Survey and the Roundtable questioned the need to undergo a State Environmental Expertise and Environmental Impact Assessment for the installation of solar microgeneration equipment.

## RECOMMENDATIONS

- Develop a legal and regulatory framework for the siting of RES-based microgeneration facilities on land that is part of a residential development.
- To amend the Land Code to allocate a land plot for the construction of microgeneration in residential areas with appropriate preferences for RES micro plant installations up to 15 kW:
  - to eliminate the obligation for a State Environmental Expert Review (SEER) and Environmental Impact Assessment (EIA) procedure for the installation of solar equipment with a capacity of up to 15 kW;
  - to address the need for a certificate for a generating station for own needs of up to 15 kW;
  - to allow the use of the land plot for microgeneration facilities without changing its legal status and category;
  - to determine the normative area of land plots reserved (used) for siting, erection, construction of small-scale energy facilities.
- To amend and supplement the relevant NLAs to create legal conditions for CBT entities, producers of clean energy, to locate them within local areas and consumers.
- To amend the SNIp - spatial planning norms to take into account the location of micro-generation facilities.
- To establish a "one-stop-shop" mechanism for interaction between the MIOGV and state organisations involved in the preparation of permits for the installation of RES facilities.
- To determine the rules and procedures for functional and purposeful designation of land plots, regulation of placement of micro-generation facilities in cities and towns and beyond: a) using solar energy b) using water energy c) biogas d) wind energy.

- To develop norms regulating space-planning conditions, technical requirements, regulations based on the parameters of the required (augmented) capacity of installations based on RES ( microgeneration).
- To develop and adopt regional programmes for the development of engineering infrastructure, general plans, detailed planning projects, taking into account the need for micro-generation facilities.

### 3.3. Improvement of tariff regulation and tax and customs incentives for the introduction and development of microgeneration from RES

The tariff policy of Tajikistan for sale/supply of energy produced from RES has been developed based on the Civil Code of the RT (Part Two) dated December 11, 1999, No. 884, laws of the RT "On Energy", "On Use of Renewable Energy Sources", "On Natural Monopolies".

Section 5 "Energy Supply" of Chapter 29 "Purchase and Sale" of the Civil Code of the RT regulates the purchase and sale of electricity, establishes the procedure for concluding energy supply contracts, the quantity and quality of energy supplied, the responsibilities of the customer for maintenance and operation of networks, devices and equipment, payment for energy, etc.

Decree No. 112 of the Ministry of Energy and Industry of Tajikistan dated December 10, 2010, approved the "Contract on sale and purchase of electricity generated from renewable energy sources".

The Decree of the Ministry of Energy and Industry of Tajikistan dated December 28, 2010, #131 approved "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 has revealed shortcomings in the proposed formula, which does not take into account a number of factors. In particular, a possible tariff calculation for electricity generated from solar energy is not separately identified. The proposed calculation method also does not take into account the cost of installation and maintenance services.

Decree No. 329 of the Government of Tajikistan, dated June 22, 2019, approved tariffs for electricity and heat. However, there are no tariffs for energy produced from RES in the tariff schedule, as according to the above-mentioned rule of law, different prices have to be calculated for each type of RES. It should be noted that at present, on the one hand, tariffs for conventional energy are increasing and, on the other hand, with the development of technology, the cost of electricity generated from solar energy is gradually decreasing.

#### *Efficient electricity tariff*

In order to determine the effective feed-in tariff for electricity from renewables, it is proposed to calculate the cost per kWh of electricity based on the payback method. This method is widely used in European countries.

The calculation of the tariff is based on the formula:

where 
$$P_{ener} = \frac{P_{eq} + P_{ser} + Tax + P_{inv} * A}{Pr * CUF * 24 * 365 * A}$$

$P_{ener}$  – cost per kWh

$P_{eq}$  – cost of equipment

$P_{ser}$  – installation and maintenance costs

$Tax$  – tax and customs payments

$P_{inv}$  – % of value (investor's profit) for 1 year

$Pr$  – productive capacity

CUF - Capacity Utilization Factor

24 – 24 hours a day

365 - days used in production (365 days)

A - depreciation period of the equipment

To the cost of the equipment, add  $P_{ser}$ , the cost of installation and service (maintenance), which is normally 50% for the lifetime of the equipment.

The cost of electricity is calculated to determine the profit (5-10% annual return on investment) from the sale of electricity.

**Table 7. Cost of equipment**

Model (type of plant)	Power, kW	Price, somoni.
Micro HPP-10Pr	up to 10	127676,47
Micro HPP-15Pr	up to 15	142697,2
Micro HPP-50Pr	up to 50	570788,9

Source: INSET Company (inset.ru)

For a micro HPP - 10 pr. the electricity tariff will be:

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

In this calculation, 50% of the total amount, i.e. 63838.23 Somoni, was used as a cost of installation and maintenance services, and a 10% annual income from the invested amount was also assumed. Thus, selling electricity at tariff 0.29 somoni per 1 kWh investor will get 10% (12767,64 somoni) profit from the invested amount every year.

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

In the second example, selling electricity for 0.21 somoni would give the investor an annual income of 5% (6383.82 somoni).

In this method of calculating the cost of electricity produced from RES, the main factor is the profit of the RES investor (owner of the technology):

The Lolagi SHPP was already in operation and was supplying electricity to local consumers without a set electricity tariff. Most of the power was supplied in winter when the centralised power supply was restricted. Residents of the village used electricity from the MHPP for lighting, cooking, water heating, communication and mass media (television, radio, telephones, computers). However, the generated electricity was supplied to consumers free of charge as the electricity tariff was not calculated and approved. This situation did not contribute to the investor's interest in maintaining the MHPP. At the request of the owner of the SHPP, a tariff was calculated for the electricity.

Calculation of a regulated tariff is based on standards specified in paragraphs 1, 2 and subparagraphs 4.1, 4.2, 4.3, 4.4 and 4.5 of "Guidelines for calculating regulated tariffs and prices for electricity (heat) generated by RES power plants" approved by Decree of the Minister of Energy and Industry of Tajikistan dated 28.12.2010 #131, According to this methodology, the main indicator in calculating the tariff is the investment costs. Since the plant was constructed at the expense of the owner, interest payments on loans have not been taken into account in the calculation. The operating costs, which consist of the cost of operation, repairs and maintenance as well as the amount of produced electricity, and the mode of operation, which are considered to be the main factors, are determined by a simplified formula. Thus, the following calculation formula is adopted to calculate the tariff:

$$T_p = [3u/W + (3u/W \times K_p)] : T_c + [3v/W + (3v/W \times K_p)] \text{ (сМН/ кВт}\cdot\text{ч)}$$

where  $3u$  – the investment component (grant (non-repayable) investments, interest-free loan investments or credit investments).

$T_c$  – the payback period of the investment (8-12 years).

З<sub>э</sub> – operating costs, consisting of the operating and maintenance costs of the MHPP, which are determined to be up to 6% of the cost of the facility.

W – Volume of electricity produced by the MHPP per year, kWh

K<sub>p</sub> – the profitability factor for power plants, which corresponds to 15% of the unit cost of production for MHPPs.

The cost of the facility is 396,000 somoni.

For the purpose of full payback and taking into account all costs, the calculation of tariff on the example of Lolagi SHPP was made for uninterrupted operation of the plant for one year with the amount of 614952 kW·h generated.

The tariff rate including profit factor (15%) = 11.8 dirams.

Operational costs (up to 6% of the cost of the facility) are 23760 somoni.

Electricity losses on 0.4 kV line - 614952x0.12 = 73794 kWh

Useful supply - 614952 - 73794 = 541158 kWh

Cash flows from the sale of electricity at a tariff of 11.8 Dirams will be 541158 x 0.118 = 63856.6 somoni

The full payback and the amount of profit for the development of the plant annually is:  
63856.6 - 23760 = 40096 somoni.

The calculation shows that the tariff depends on the installed capacity of the generators, the operation of the plant, the amount of produced electricity and the size of the investment. The higher the generator capacity and the operating time of the plant, the lower the tariff for the electricity generated. Energy produced by owner-operated micro-generation based on RES, without electricity transmission, will have a lower cost of production, and therefore a lower cost of service. The sale of surplus electricity is a profit, with lower tariffs lowering the cost of service.

AET carried out a tariff calculation for the electricity generated by the Lolagi SHPP in the Gissar region in order to justify the benefits of its use.

This SHPP is located in the territory of Navobod Jamoat of Gissar District, 53 km from Dushanbe city, installed capacity 75 kW, the customer, investor and owner of the project is a private entrepreneur.

It should be noted that originally, in Article 17 of the Law on the Use of Renewable Energy Sources, the setting of energy prices and tariffs was the responsibility of the authorised anti-monopoly authority. However, in 2015, the Law was amended to transfer this issue to the competence of the Government of Tajikistan, which significantly hampers the possibility to approve tariffs and consequently the sale of renewable energy to small energy entities, especially to microgeneration. This issue should be reconsidered legislatively. As the Barki Tojik restructuring has taken place, the establishment of a regulatory body is being considered, and there is a need to explore the issue of selling electricity directly to consumers.

### *Fixed tariffs*

The most common mechanism for stimulating renewable energy development is the establishment of fixed tariffs (FT). This practice is common in the European Union, Russia, Kazakhstan and other countries. The setting of the tariff is entirely the responsibility of the state. In the EU, the tariff is set according to the characteristics of the different RE technologies (see Table 8).

**Table 8: Fixed tariff in EU countries for solar power plants:**

Country	Power	Tariff, EUR/kW	For a period of
Austria	5-200 kW	€0,12	13 years
Serbia	up to 50 kW	€0,17	12 years

Bulgaria	up to 5 kW	€0,11	20 years
Croatia	up to 10 kW	€0,26	14 years
France	36 kW	€0,14	20 years
Germany	up to 10 kW	€0,12	20 years <
Lithuania	up to 10 kW	€0,16	12 years
Spain	up to 20 kW	€0,28	30 years
Switzerland	up to 30 kW	€0,22	25 years
United Kingdom	up to 4 kW	€0,12	25 years

### USA

In 1978, US President Jimmy Carter signed a series of laws on national energy and public utilities. Among other things, the acts encouraged the development of alternative energy sources and initiated such a concept as "feed in tariff" (Green Tariff). Currently, the average feed-in tariff rate in the US for 0.5-50 kW plants is \$0.02/kW.

### Russia

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

### Kazakhstan

Fixed tariffs in Kazakhstan are set in accordance with Decree No. 645 of the Government of the Republic of Kazakhstan dated 12 June 2014 "On Approval of Fixed Tariffs".

According to Article 8-1(2) of the Law of the Republic of Kazakhstan "On Support of the Use of Renewable Energy Sources", fixed tariffs are annually indexed to account for inflation.

Fixed tariffs are differentiated depending on the installed capacity of renewable energy facilities, as well as on the types of renewable energy: 1) solar energy; 2) wind energy; 3) hydrodynamic water energy (small and large hydroelectric plants); 4) energy derived from biogas.

**Table 9: Fixed Tariff in the Republic of Kazakhstan**

№	Renewable energy technology used for electricity production	Tariff value, USD/kWh (VAT excluded)
1	Wind power plants, excluding fixed tariff for Astana EXPO-2017 100 MW wind power project, for wind energy conversion	0,05
1.1.	Astana EXPO-2017 wind farm with a capacity of 100 MW, for wind energy conversion	0,14
2	Photovoltaic solar energy converters, excluding fixed tariff for solar power plant projects using Kazakhstan silicon based photovoltaic modules (Kaz PV), for solar energy conversion	0,07
3	Small hydropower plants	0,03
4	Biogas plants	0,07

### Uzbekistan

In December 2021, a Presidential Decree approved tariffs for the purchase of electricity from SHPPs (up to 5 MW) and solar, wind, biogas power plants (up to 1 MW).

The rates are linked to the tariff for consumer group II, according to Spot, is \$0.04 per 1 kWh. From January 1, 2022, energy companies will be guaranteed to buy the surplus energy produced by the above-mentioned power plants at \$0.03 per 1 kWh.

Private investors can directly supply energy from SHPPs and RES-based small power plants to legal entities and individuals without connection to the unified power system - through a local network. Such networks will be built on a contractual basis at agreed prices.

In view of the above, for the development of RE in Tajikistan, it is advisable to consider the establishment of a FT for electricity produced by RES facilities. In this case, the setting of a tariff by the Government of Tajikistan, as established by the Law, would be justified. It would also relieve a significant burden on the owner of the RES-based power plant to collect the necessary package of documents and go through complicated conciliation procedures when the Government sets the tariff for each specific power plant related to small-scale energy.

## RECOMMENDATIONS

- To support the development of clean energy production from RES, consider the applicability of tariff regulation (tariff policy), based on best practices of the countries and economic opportunities of the parties.
- Develop and adopt the Resolution of the Government of the RT "Rules for determining fixed tariffs and ceiling auction prices".
- Provide for annual indexation of FT with regard to inflation and approve by the Resolution of the Government of the RT.
- Apply the European methodology to calculate tariffs based on the investor's (RES installation owner's) benefit before transition to the FT system, in accordance with the current legislation, and legally allow the antimonopoly body of Tajikistan to set these tariffs for microgeneration.

## Tax and customs incentives

The analysis shows that the leading renewable energy producing countries have supported renewable energy development for quite a long time through a range of measures based on price, cost and volume.

**The Tax Code** dated 3 November 2021, No. 549 defines the conditions and procedure for taxation of RES-related activities and tourism activities and contains a number of the following preferences for business entities in the field of RES and tourism:

- for manufacturing activities, including the production of electricity, the income tax rate is set at 13%;
- from 1 January 2022 to 1 January 2027 the value-added tax rate will be reduced from 18% to 15% and further reduced to 13%;
- the social tax rate for commercial entities will be decreased from 25% to 20%;
- Under Article 353, in order to support renewable energy production, land on which renewable energy equipment (rated capacity of 0.1 MW or more) is installed will not be taxed for 5 years from the date of commissioning;
- Income from tourism activities, within 5 years from the date of state registration, if licensed to perform tourism activities, is not subject to income tax;
- imports of equipment, construction materials and other materials to meet the needs of tourism facilities (including hotels, health resorts, tourist bases, etc.), except for goods produced in the republic, are not subject to value added tax.
- Chapter 56 provides for a simplified taxation system for technological innovation activities, under which entities engaged in such activities are exempt from paying any types of taxes stipulated by the Tax Code, except for social tax as a taxpayer-insurer, payment of personal income tax and social tax-insurer, and when income is paid at source, including dividends

as a tax agent. The import of technological innovation equipment by entities that will be used directly for the entity's own needs is exempt from value-added tax.

Decree of the Government of the Republic of Tajikistan dated 08 August 2018, No.399 "On the rates of import customs duties of the Republic of Tajikistan" established a free trade regime and at a zero rate of import customs duty upon import of goods originating from the member states of the Agreement on Free Trade Zone dated 18 October 2011 and from countries with which bilateral agreements on free trade are concluded, except for the goods exempted from free trade regime. Regardless of the person, no customs duty is levied on imports of RES equipment or goods from countries such as the Russian Federation, Republic of Kazakhstan, Uzbekistan, Kyrgyzstan, Belarus and Ukraine, and customs duty rates for RES equipment and goods from other countries outside the free trade zone range from 5 to 10 percent of their value.

Decree No. 189 of the Government of the Republic of Tajikistan dated 12 April 2018 approved the list of tourism facilities for the establishment of which the import of equipment, machinery and construction materials is exempt from value added tax and customs duties.

Taking into account the tax and customs duty exemptions provided for MSMEs in the tourism sector, it can be noted that certain work has been done to encourage the use of RES in Tajikistan. These preferences should be communicated to the stakeholders, individuals and legal entities.

#### *Financial incentives*

In terms of RES and EE financing, 50% of the total number of respondents (of which half are entities importing/exporting finished goods, equipment, manufacturers of finished goods, equipment, appliances, devices and representatives of electricity producers) indicated that they mainly use grant funds from organisations to develop RE and EE, 40% indicated using state grants and soft loans, 40% use own funds and 15% use borrowed funds from financial institutions (loans, credit, leasing, microcredit).

Respondents' assessment of the accessibility of the factor "capital" shows an almost proportional distribution of opinions: 27.8% rated accessibility as "low"; 22.2% as "very poor"; 22.2% as "good"; 22.2% as "very good" and 5.6% as "satisfactory".

In their questionnaires, respondents prioritized managerial, legislative and institutional problems of the RES and EE sector in a separate cluster and as a result, 55.6% mentioned tax and customs barriers as a sector problem, and 50% considered poor governmental support and insufficient stimulation of the sector as a problem.

In the EU countries and the USA, administrative and economic methods are used to stimulate the development of RE, which are highly effective.

The administrative method includes:

- conducting information and promotional campaigns and exhibitions in support of RE technologies;
- conducting tenders for development of new technologies;
- holding tenders for implementation of energy production projects;
- setting obligatory quotas for RES production;
- issuing licenses for construction of RES facilities and approval of project documentation.

The economic method provides for:

- tax incentives or tax reductions;
- public financing of R&D in RE production;
- public-private partnerships for construction of RE facilities;
- provision of grants for development of RE technologies;
- tax exemption for producers of RES-based energy;
- surcharges on tariffs for energy obtained from RE installations;
- application of accelerated depreciation methods for renewable energy installations.

The following financing measures have been successfully applied to stimulate the development and deployment of renewable energy technology in the CBT sector:

- investment tax incentives - provided to private investors for income tax reimbursement when investing in renewable energy facilities;
- Micro-crediting - under the micro-crediting model, buyers (households, small businesses) take out a small loan from a bank to cover the cost of supplying the equipment. This model avoids the high upfront costs usually associated with RE systems, as users pay for them in instalments over an agreed time period;
- Interest free loans, e.g. some government agencies in the UK provide interest free loans for the purchase of renewable energy generating equipment;
- Low-interest loans for the purchase and deployment of renewable energy technologies by MSMEs in CBT located in mountainous areas with no access to the electricity grid.

### *Green finance*

« Green finance is an emerging but rapidly growing segment of the financial market. The impetus for a stronger role for the financial sector in supporting sustainable development and addressing climate change was provided by the G20, and then reinforced by the Financial Stability Board and the Paris Agreement, as well as related nationally determined contributions (NDCs).

It should be noted that green finance has not yet been definitively defined. The G20 Green Finance Study Group defines green finance as "the financing of investments that provide environmental benefits in the broader context of environmentally sustainable development". The term "green finance" is generally used to refer to a broader phenomenon than climate finance, as it encompasses other challenges and risks related to the environment. "Green finance" encompasses a wide range of financial institutions and asset classes and includes both public and private finance.

Although green finance as a segment of the financial market is still in its infancy, financial instruments such as green loans, green bonds, green investment funds and green stock indices are showing rapid development.

While there has been some progress in green finance, only a small proportion of loans provided by banks can be clearly classified as green according to national definitions.

ACTED conducted a market analysis of green finance for MSMEs in the CBT, renewable energy and EE sectors in 2020, which found that over 60% of MSMEs used their own funds for their business activities. In addition, it was found that MFIs are not very popular among these MSMEs due to high interest rates and small loan amounts, as well as the absence of MFIs in the regions where MSMEs operate. The data confirms that only 7% of the MSMEs surveyed have experience of lending to MFIs. However, among the MSMEs that had used MFI loan products, 57% of the respondents were from the CBT sector, indicating a high demand for credit finance in this area.

A number of green finance projects of international financial institutions are currently being implemented in Tajikistan.

For example, the Asian Development Bank (ADB) and the Ministry of Finance of the RT signed a Memorandum of Understanding on May 2, 2012 on the project "Access to Green Finance", one of the conditions of which was the establishment of the State Institution "Project Implementation Centre". The project has a total value of \$11.870 million. Most of the financing is from an ADB grant of \$10 million. The major part of the financing is the ADB grant of \$10 million, the sub-borrowers' contribution amounted to \$980,000. The major part of the financing is comprised of an ADB grant of \$10 million and the contribution of sub-borrowers amounted to \$980,000. In addition, technical assistance is provided by the Japan Fund for Poverty Reduction in the amount of \$750,000.

Another project is being implemented by UNDP jointly with the Committee of Environmental Protection under the Government of Tajikistan since 14 July 2021. This \$2.7 million project is aimed at increasing the country's resilience to climate change. The project will last for three years with the support of the Green Climate Fund and will help the Government of the Republic to strengthen climate change adaptation planning at national and sectoral levels and increase the country's capacity to mobilise private and public sector finance from domestic and international sources.

Most of the loans received by MSMEs in CBT sector are up to 10,000 TJS, MSMEs in RES and EE sectors have larger amounts of up to 50,000 TJS. But for long-term investments in CBT, RE and EE, these amounts are clearly insufficient. They do not cover the main commercial costs and can only be used to cover small running costs. According to the results of this analysis, the average desirable 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 their attractiveness to CBT, RES and EE entities.

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

## RECOMMENDATIONS

- Create new products for MFIs and the banking sector. Expand remote customer service (given the COVID-19 pandemic), improve customer service and increase the practical knowledge of staff, taking into account the digitalisation of the economy.
- Promote financial literacy of MSMEs from CBT, RES and EE sectors in developing business plans to obtain credit resources from MFIs, and establish closer cooperation with lending institutions.
- International financial institutions, international and non-profit organisations to financially support the National Strategy for Financial Inclusion, the implementation of which will improve access to credit for MSMEs and improve financial literacy in all sectors of the economy.
- Consider lowering the average interest rate on loans to MSMEs in the CBT, RES and EE sectors, while increasing the size and maturity of the loan disbursed.

When asked about the impact of the environmental factor on investment decisions for renewable energy and EE, 61.1% of respondents indicated the absence of mandatory standards and regulatory and technical requirements for EE and RE. This prevents an increase in sales. While

50% believe that environmental requirements of EE and RE legislation provide benefits and added value and influence decisions on investment in renewable energy and energy efficiency.

It seems advisable to link environmental impacts with the development of MSMEs using RES in the tourism sector, for example through the allocation of subsidies from environmental funds, financing of special credit lines.

Under the Kyoto Protocol to the UN Framework Convention on Climate Change, each country is allocated a separate annual quota for GHG emissions into the atmosphere. The respective quota is also determined for Tajikistan. According to the World Bank (A. Haidarov - representative of the World Bank) currently Tajikistan is using about 30% of the emission quotas, while the remaining 70% can be sold to other interested countries. According to the World Bank's forecasts, Tajikistan could receive from 70 to 80 million USD annually from the sale of quotas<sup>19</sup>. For this purpose, Tajikistan needs to keep its GHG emissions at current levels, which can be achieved by encouraging MSMEs in CBT to adopt RES by allocating subsidies from the proceeds of quota sales to other countries.

## RECOMMENDATIONS

- Explore the possibility of incentivising MSMEs in CBT to implement RES by allocating subsidies from the proceeds of the sale of GHG emission quotas to other countries.
- Explore the possibility of incentives based on total remuneration of MSMEs in CBT operating in remote mountainous areas and for the provision of services using RES technologies from environmental funds (from the sale of quotas).
- Introduce forms of incentives based on green environmental certification.

### 3.4. Introduction of green certification in Tajikistan's tourism sector

According to 44.4% of respondents, the development of "green certification" of tourist facilities will attract more tourists and increase income of RE providers, increase EE and improve environmental performance. At the same time, 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 the competitiveness of the tourism business.

#### International Green Certification Experience

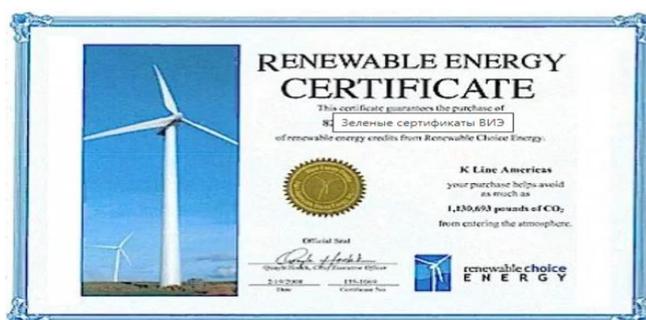
cooperation.

In international practice, green certification is used to create conditions for environmentally friendly economic and other activities, as well as for participation in international economic

Some common certifications are Renewable Energy Certificates and LEED.

**Renewable Energy Certificates** are a financial and regulatory instrument used worldwide to implement a quota mechanism for renewable energy and support its development.

The certificate allows consumers to define the standard and quality, the tourism entity to have a competitive advantage.



**LEED (Leadership in Energy and Environmental Design)** is an internationally recognised green building certification system that provides third-party verification that a building

<sup>19</sup> [https://www.kt.kz/rus/economy/vibrosvi\\_parnikovih\\_gazov\\_v\\_tadzhikistane\\_sostavljajut\\_4\\_tis\\_gigatonn\\_vb\\_1153465399.html](https://www.kt.kz/rus/economy/vibrosvi_parnikovih_gazov_v_tadzhikistane_sostavljajut_4_tis_gigatonn_vb_1153465399.html)

and its interior space are designed and built using strategies to improve performance on all critical indicators:

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

LEED is a system for energy and environmental protection using solar panels.

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



The benefits of LEED - using and supporting clean energy production through green targeted credits

It should be noted that in developed countries green certificates are widespread and actively used to support renewable energy development.

The **UK** uses green certificates called Renewables Obligation Certificates. This form of certification is of a compulsory type, and it supports a quota system set by the government. State-licensed suppliers of electricity are obliged to supply consumers with a percentage of their electricity generated from renewable energy sources. If they are unable to meet their

obligations, they can either purchase green certificates at market price or pay a penalty of £30 for each MWh under-supplied or not covered by a purchased certificate, which acts as a kind of limit to speculation in green certificates, preventing their market value from rising above a certain limit.

The **US** uses its own version of renewable portfolio standards, the Renewable Portfolio Standards, which are maintained in twenty-one states and the District of Columbia. It resembles a quota system in the way green certificates are used. Each state, according to territorial and other characteristics, sets appropriate targets for renewable energy use, and consumers can purchase Green Certificates instead and do so independently of suppliers. "Green certificates" are provided to producers of energy from alternative sources in the form of grants, and suppliers must purchase them if they fail to meet their obligation to supply energy from renewable sources in a given quantity.

In **Japan**, Green Certificates operate under the New Energy Certificates system, in which they certify the production and supply of energy from renewable sources and are designed to stimulate and develop new alternative energy technologies. Obligations under this system are imposed on electricity suppliers and power plants or installations using wind, solar, biomass, organic waste, geothermal, including steam recycling, and damless hydroelectric power plants with a capacity of less than one mW are eligible to issue certificates. These certificates are valid for two years, and penalties for non-compliance by supplying companies can be as high as one million yen.

In the **European Union**, green certificates are called Guarantees of Origin. Their issuance is regulated by the Renewable Energy Directive (Directive 2009/28/EC). The European Energy Certificate System (EECS), developed by the Association of Issuing Bodies, is used to implement the directive.

**Table 10. Green certification in some European Union countries<sup>20</sup>**

Countries and name of certificates	Application
Australia - Renewable Energy Certificates Italy - Certificati Verdi Belgium - Groenestroom Certificaat Netherlands - Green Certificates Sweden - Guarantees of Origin	The obligation to produce and consume green energy is shared between all retail suppliers and wholesale buyers. Prices for green certificates are set on the basis of agreements between all participants in this market, and there is no term limit. The objectives of these certificates are to support clean energy production, increase the use of renewable energy technology in end-use consumption and develop renewable energy technology.

In Mexico, 2 certification schemes are applied:

1 scheme: Clean Tourism Destinations, which provides for the certification of organisations operating in the tourism sector to ensure integrated water and solid waste management.

Scheme 2: A tourism environmental quality programme targeting organisations operating in the tourism industry (hotels and motels, restaurants, sports facilities, holiday centres, natural areas, theme parks, resorts, golf clubs, etc.) which have demonstrated compliance with environmental legislation and self-regulation requirements.

The certification process includes environmental audit planning, environmental audit implementation and follow-up monitoring.

*The legal framework for implementing green certification in Tajikistan*

In Tajikistan, a number of policy, legal and organisational measures are being actively implemented to reduce the administrative burden and improve the overall "business environment". Among other things, these measures relate to environmental regulatory mechanisms and enforcement of environmental legislation, in terms of issuing environmental permits and carrying out inspections. Undoubtedly, some of the changes have had a positive impact on the country's business environment. However, self-regulation in the production environment and voluntary compliance with environmental regulations by business entities without effective government environmental regulation and enforcement cannot provide a favourable environment for life and health and sustainable development of the country, including tourism development.

In this regard, it should be noted that the country is still taking tentative steps in applying such tools to promote voluntary compliance with environmental legislation as environmental audits, labelling and voluntary environmental reporting of business entities, green certification. When implementing these tools in practice, difficulties arise, primarily due to the lack of legal conditions in the legislation for the development and implementation of "green certification" in the tourism sector.

Ecology and environmental issues in the country are regulated by the Law of the RT dated June 22, 2011, № 485 "On Environmental Protection".

The law uses the concepts of "environmental certification", "environmental expertise", includes "environmental requirements for construction, reconstruction of enterprises, structures and other facilities" and "environmental requirements for energy facilities". However, there are no "green economy" concepts, such as "green standard", "green certification", "green construction", etc.

<sup>20</sup> Experience with green certificates in foreign countries - the example of the EU (nomitech.ru)

In order to create legal conditions for the development and implementation of "green certification" in the tourism sector of Tajikistan, first of all, it is necessary to introduce the definition of "green certification" into the country's legislation. At the same time, it should be established that green certificates are confirmation of the production and supply of energy from renewable sources and are designed to stimulate and develop the new technologies of alternative energy and EE of facilities in the CBT sector.

In order to carry out environmental certification in various sectors of the country's economy it is necessary to adopt national "green standards" and identify an authorized body that establishes environmental requirements for properties and issues "green certificates".

According to ACTED Tajikistan, a working group formed by them to study standards in the tourism sector has found that the existing standards do not meet current requirements, and staff at the Agency for Standardization, Metrology, Certification and Trade Inspection under the Government of Tajikistan have no idea what the standards should be, no knowledge, no defined approaches. Tourist organisations are certified, they receive permission for the tourism product, but only for the product.

The certification procedure includes examination of the design documentation at the facilities with an on-site inspection of the building and facility itself for compliance with the established standards. In the course of such work the following parameters are determined:

- effectiveness of environmental management;
- the quality and infrastructure of the external environment;
- the layout of the building and the quality of the architectural design;
- eco-friendliness of the internal environment of the site;
- efficiency of the waste management and sanitation system;
- ensuring rational use of water, electricity from RES and other resources;
- energy saving, water efficiency, reduction of CO2 emissions
- overall energy efficiency of the building;
- ensuring environmental protection during the construction, operation and disposal of the building;
- safety of human life during the operation of the facility.

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

- energy audits and certification of buildings;
- improving the thermal insulation of buildings, reducing the thermal conductivity of walls (external envelopes);
- consideration of regulatory requirements and new technologies in the construction of new properties and modernisation of existing ones;
- additional use of alternative energy sources;
- attracting investment;
- improvement of ecology and reduction of emissions.

The benefits of energy saving for households and SMEs in CBT are also important, and include the following:

- reduction of heating and hot water costs by 40-50%;

*"Green certification" is a system for assessing compliance with environmental and efficiency requirements that applies to buildings. The purpose of the certification is to characterise the energy consumption of the building, to identify the energy saving potential and to propose energy saving measures to the building owner, as well as to present the evidence base for the use of RES.*

- reduction of electricity consumption;
- increase in possible sale of surplus generated electricity;
- reduction of the maintenance costs of the house;
- increase in the market value of the house;
- increase in the life cycle of the building.

Those entities wishing to obtain a green certificate apply to the authority responsible for issuing green certificates. It should be kept in mind that green tourism certification is not a mandatory procedure, and the applicant must undergo an energy audit in order to obtain this certificate.

Thus, in Russia, the Green Tourism Certificate is issued in accordance with GOST R 56642-2015, i.e. certification of ecotourism is a procedure not mandatory, as this mechanism is only intended to increase competitiveness and attract customers.

Green certificates allow the control and monitoring of the production, supply and consumption of renewable energy and reflect the environmental value of the renewable energy.

**A national Green Certificate should be developed to certify the production and consumption of clean energy using appropriate systems, in particular energy conservation and environmental protection using renewable energy sources. The Green Certificate should contain the following data:**

- **information identifying the generating facility;**
- **type of renewable energy (solar, wind, small hydro, etc.);**
- **location of the generating facility;**
- **installed capacity of the facility;**
- **name of the facility;**
- **unique identification number;**
- **period of time during which the energy was produced;**
- **energy efficient and energy saving technologies used (list).**

MSMEs in CBT sector will be rewarded for their contribution to the green economy and environmental protections if they meet all the requirements of the Green Certificate, i.e. the Green Certificate is a market-oriented tool for environmental stewardship.

However, the certificates are not subject to securities legislation and are not as such.

Having a Green Certificate will allow the entrepreneur to become one of the first in the green tourism market and gain a strong foothold in this highly profitable segment.

The green certificate could become a strong argument to attract foreign investors, who could then contribute to the development of environmentally friendly CBT facilities, as well as eco-tourism-oriented tourists. The advantages of such a tourist area designed and built according to "green standards" are the demonstration of a resource-saving, zero-emission, livable, environmentally friendly, harmonious and non-aggressive to the natural environment, and for its visitors is a comfortable safe and favourable living and recreational environment.

#### *Independent energy audit*

A number of experts who took part in the survey, FGDs and the roundtable persistently raised the issue of enshrining in the national legislation of Tajikistan the possibility of conducting an independent energy audit. It was noted that this proposal has been repeatedly put forward before, during the implementation of other projects in the field of energy and RES, but the authorised state bodies block the introduction of relevant changes in the legislation.

International experience shows that the main criterion for establishing tourism facilities (owners of hotels, hostels, guest houses, motels, etc.) on the principles of green tourism is energy efficiency. In order to obtain a certificate, the CBT entities have to conduct an energy audit, the purpose of which is to evaluate the efficiency of renewable resources and to develop measures to reduce the costs of tourism facilities. The results of the energy audit will not only confirm the ability to save energy, but accordingly will reduce electricity costs and ensure the growth of ecotourism.

The study found that energy audits can reduce energy costs by almost 30%. This makes it clear in practice that saving fuel and energy resources can have a tremendous economic impact.

As power inspection (power audit) is one of activity of subjects of managing, its purposes are defined by the customer. The customer is most often interested in answering some practically important questions or helping to develop a feasibility study for energy- and/or resource-saving projects.

Energy audits are used to assess the level of energy efficiency by comparing the specific consumption with the current norms and standards for the development of energy saving projects.

At present, in accordance with the legislation of the country, supervision of compliance with technical regulations and standards, norms and rules during 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 types of energy resources. But there should be an alternative in the form of an independent audit. Competent energy audit companies will play essential role in realization of tasks on energy saving and EE by conducting energy audit of facilities including social, tourist facilities, production facilities and housing. A document on the energy audit carried out will increase the interest and confidence of both consumers of services and investors.

## RECOMMENDATIONS

- To introduce the following amendments and additions to the laws of Tajikistan "On Environmental Protection", "On the Use of Renewable Energy Sources" and "On Tourism":
  - the notion of "green environmental certification" in the context of control and traceability of renewable energy production, supply and consumption;
  - to define the authorised body to issue the Green Certificate;
  - define the requirements and legal conditions for the implementation of the Green Certificate.
- The authorised body in cooperation with ASMSTI to develop Green Standards for the CBT sector taking into account international standards.
- To prepare draft NLAs of Tajikistan on amendments to relevant legislative and by-laws regulating the procedure of environmental expertise, environmental certification.
- To develop a policy document on "green economy" taking into account all ecosystem processes of the country.
- Define in the corresponding laws the priority of RES introduction and use as the most environmental resource.
- Introduce amendments and additions to the Law of the RT "On Environmental Expertise", which should define the following for the Green Certificate:
  - overall status;
  - determine that the Green Certificate is proof of its carbon-free origin,
  - the list of data to be included in the Green Certificate;
  - the procedure and conditions for obtaining a Green Certificate by MSMEs in the CBT sector;

- the norm and procedure for the application of preferential payments (a certain amount) as remuneration for the contribution to the green economy and environmental protection, while fulfilling all requirements of the Green Certificate;
  - the source of the preferential payments for the Green Certificate.
- Develop and adopt appropriate by-laws clarifying the content, data, requirements and conditions for obtaining a Green Certificate for MSME entities in CBT.
  - Define in the law that green tourism certification is not a mandatory process; in order to obtain a Green Certificate, entities must undergo an energy audit by an independent energy audit company.
  - Amend and supplement the Law on Energy Saving and Energy Efficiency to permit energy audits by independent companies, define their registration procedure, powers, responsibilities, duties and service provision.
  - Introduce relevant amendments and additions to legal acts related to the registration of legal entities, licensing, tourism sector and energy audits.
  - Develop and implement measures to stimulate energy audits.
  - In cooperation with ASMSTI, promote the introduction of green tourism standards, including the application of internationally recognised green tourism standards and raise awareness of CBT entities about energy audits.
  - Provide training to certified specialists and accredited organisations for external evaluation.

### **3.5. Development of technical and technological support infrastructure for CBT entities (services to MSMEs)**

#### *RE production in Tajikistan*

Small HPPs with a capacity of up to 5 MW are mainly used in Tajikistan among RES. 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.

Equipment for small and mini-HPPs is mainly imported from abroad, although it is also produced in the country. In recent years, a number of national companies have been successful in the production, installation and maintenance of RES facilities and have contributed to the growth of RES use in the country.

Technologies Sabz LLC designs and installs small hydro power plants (up to 100 kW) and produces hydro turbines and control systems for them. An example of the construction of an SHPP by this company is a 35 kW plant in the village of Rogich, Penjikent district. It was designed and installed by Technologii Sabz LLC at the request of the German AgroAction within the framework of a European Union project. Prior to this, there was no electricity in the village of Rogich, which is home to 55 households, due to its difficult accessibility.

The company also supplies high-quality equipment for other alternative energy sources (solar panels, batteries, inverters, solar pumps, solar water heaters), and designs and installs solar and wind energy systems.

The company's staff consists of domestic and foreign specialists with many years of experience in the field of green (renewable) energy. Some of the company's specialists have been involved in many projects both locally and internationally (in Germany, Afghanistan, Iraq, Sri Lanka, etc.) since 1996. The company has been operating in Tajikistan since 2016 and has won many tenders from international organisations such as Welthungerhilfe, ACTED, MSDP, IOM, UNDP, OSCE.

The country has technological developments for the production of solar water heating units with a capacity of 0.1 to 1 tonne of hot water (50-70°C) per day. For example, JSC "Sistemavtomatika" and the RES Association have established the production of single-circuit solar collectors. Sistemavtomatika installs solar panels and solar-thermal technologies in various offices and residences in urban and rural areas. Sistemavtomatika OJSC, with financial support from development partners, has commissioned 117 micro-SPPs with a total capacity of 116.5kW to power over 40 social and domestic institutions in 17 target cities and districts of the country during 2018-2020 and has 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 of the country.

An assembly of solar collectors has been organised in the Sughd Free Economic Zone. In addition, the State Unitary Production Enterprise "Tajiktekstilmarsh", State Unitary Enterprise "Vostokredmet" and CJSC "Energoremont" have opportunities to organize the technological process for the production of solar collectors. In order to implement these opportunities, appropriate investments are needed.

There are developments of various solar furnaces based on a simple technology, which allow reaching temperatures up to 130°C. Chinese-made solar kitchens, mainly for boiling water, have become widely used in rural areas.

*Sistemavtomatika OJSC has implemented a number of projects in RT including 11 small hydro power plants, more than 200 solar systems for homes, 20 solar systems for school electrification, more than 30 professional business systems, 30 solar pumping systems for water supply and irrigation.*

Micro HPPs are used in roadside canteens along mountain trails.

There are individual cases of using solar collectors in sports complexes, educational and budgetary institutions.

The use of geothermal energy (heat pumps) has not found a wide application today. There are some examples of using geothermal sources for heating of sanatoriums in mountainous regions (Obi Garm sanatorium, etc.).

According to 67.4% of respondents, application of modern RE and EE technologies allows tourism service providers to efficiently use energy resources and other production factors. 14% believe that it will allow getting more economic benefits. 14% of respondents mention that it would significantly reduce the cost of energy production and increase EE, and only 4.7% of the respondents think that it would increase the cost of purchasing high-tech facilities.

However, 75% of their respondents consider that the main barriers preventing the growth of RES usage are their high cost and lack of own funds for design, installation, purchase of equipment, RES, materials, EE technologies. About 50% believe that RES equipment is technically complex and they lack skills for maintenance and operation of such equipment, 50% confirm their low awareness of the benefits of using RES and EE technologies, 16,7% believe that taxes and customs duties result in significant increase of the cost of RES and EE and this decreases accessibility to these technologies.

*Stimulating demand for the products of domestic producers supplying renewable energy*

When asked about their willingness to invest in renewable energy, 39.5% of the total respondents indicated that they are willing to invest if funds and resources are available; 16.3% expressed their willingness to invest if "cheap and long credit" is available at a reasonable cost; 11.6% indicated their willingness if legal and economic conditions are created that allow for additional profits.

When asked what are the most impeding problems for the development of RES use and EE growth in the tourism sector, 69.4% of respondents indicate weak investment attractiveness and low business activity in introducing technologies and setting up RES and EE production facilities. At the same time, 52,8% of respondents mention insufficient level of human resources capacity and lack of specialists in RES and EE sphere, and 50% outline weak state support of the branch, as well as limited access to information on RES.

It should be noted that in some countries of the world the state protects and supports domestic manufacturers of RES equipment. In Turkey, for example, it is obliged to use solar collectors and install two-circuit systems. In Armenia, builders are obliged to use domestic equipment. In Uzbekistan, the import of equipment that is produced in the country is banned.

Domestic producers of renewable energy equipment need state support. There is a need to develop measures to stimulate demand for the products of national producers-suppliers of equipment, systems of new energy efficient technologies and services using RES, including in the tourism sector. It should be taken into account that the cost of transportation of imported raw materials exceeds the cost of raw materials themselves, which affects the cost of the final product and creates difficulties in selling the products.

## RECOMMENDATIONS

- Ensure state support for domestic producers-suppliers of equipment, systems of new energy efficient technologies and services using RES through amendments and additions to relevant legal acts.
- Create opportunities to support local producers by setting high standards and requirements for imported equipment.
- Launch industrial production of solar panels and equipment at production facilities using domestic raw materials (silicon raw materials) and thereby reduce the cost of electricity production from this source.
- In the context of the sales market, explore opportunities not only in the domestic market, but also in the external market, particularly in Afghanistan, which provides ample opportunities to sell competitively quality RES products from Tajikistan.
- Encourage funding and resource allocation for R&D at public and private research institutes in Tajikistan.
- Develop specialized training services for operators and service workers (repair and maintenance), provide engineering services at the stage of business planning, feasibility studies, supervision of installation and commissioning, development of services of designers, builders, installers.
- Create conditions to support the development of technical and technological support infrastructure for CBT entities (services to MSMEs).
- Create conditions to attract investment in the RES sector for the production of competitive RES and EE equipment on the market.
- Encourage local producers to produce, install and maintain RES facilities.
- Develop and enforce building standards and requirements for EE in existing buildings during their conversion, reconstruction, renovation in order to use them for tourism services.
- Encourage implementation of EE improvement measures in residential buildings, e.g. increase the attractiveness of energy efficiency measures by guaranteeing a reasonable payback period and creating conditions for better maintenance of heating systems.
- Encourage the use of low-carbon technologies and clean fuels (heat pumps, RES - solar panels, micro HPPs, wind turbines) in individual households providing services to tourists.
- Take advantage of opportunities to introduce electric vehicles in the CBT sector at the same time as renewable electricity generation to help achieve the objective of reducing overall vehicle emissions.
- Fully support and expand the use of bicycling for eco and mountain tourism.

- Ensure that technologies are accessible, offer a choice of technical solutions that bring benefits and public utility, provide cost-effectiveness and cost-recovery and allow for additional profits from the introduction of technologies.
- Develop the following specialised services:
  - repair and maintenance companies, maintenance services;
  - engineering services during the planning, feasibility, supervision and commissioning phases;
  - design, construction and installation work for the construction of facilities.
- Take necessary measures to create repair workshops, service centres for maintenance of microgeneration facilities in remote mountainous areas.
- Consider the possibility of training specialists on special quotas for installation and maintenance of microgeneration facilities based on use of RES.
- In order to coordinate, institutionally and financially support and develop RE, accelerate the establishment of a Renewable Energy and Energy Efficiency Development Fund.

### **3.6. Providing quality education and awareness to CBT communities and entities**

The introduction of RE technology in the CBT sector creates a need for qualified specialists related to the development and operation of energy infrastructures. The survey and FGD showed that the lack of specialists in the provision of RE technology services and maintenance is becoming a barrier to development in this area. At the same time it was noted that there is a need to train not only engineers with higher education, but also mid-level technical specialists for this sector.

It should be noted that a sufficiently developed system of training for the energy sector has been created in the country, and a national system of training for the tourism sector is being formed at all levels of vocational education. In recent years, the retraining of workers on short-term courses in specially created adult retraining centres and modular centres in the regions of the country has become a practice. New standards are being developed for professions that are in demand on the labour market, including renewable energy and tourism services.

According to 61.1% of the FGD participants the use and implementation of modern RE and EE technologies in the tourism sector will require development of specialized services for training of operators and maintenance staff, provision of engineering services, 44.4% of respondents think it will require development of services of designers, constructors and installers.

Also, 30.2% of respondents answered that they attract domestic specialists for design, business planning, construction and operation of RES based power plants and implementation of EE technologies, while 18.6% attract specialists from abroad. At the same time, 27.9% of the respondents indicated that there are no specialists in this field, and only 23.3% have their own specialists. There is a shortage of design engineers, specialists in maintenance and installation of RE equipment, builders of small energy and RE facilities, managers and marketers.

The practice of small hydropower projects shows that the problems are not only in the quality of the current legislation, but also in the ignorance and low awareness of the existing regulations in the field of the use of RES and EE, both for investors and owners of SHPPs.

*The knowledge of and strict compliance with applicable laws must be the basis of business activity.*

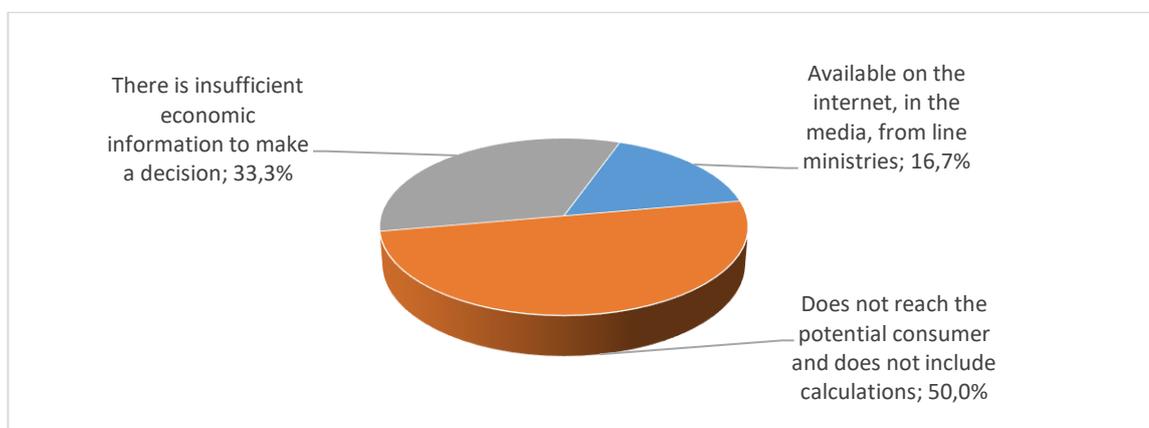
The FGD participants also noted that the inhibition of the use of RES is largely due to the lack of awareness of both producers/suppliers and consumers of RES-based energy.

95% of respondents answered positively to the question "Is it necessary to conduct propaganda campaigns and place special training materials, online calculators of benefits, costs, expenses, safe operation of energy units on their own? Low level of legal awareness, technical and financial literacy, lack of adequate and complete information about existing technologies and generating equipment, devices providing EE, limited access to necessary data for feasibility study

preparation, price policy development and preferences are noted in questionnaires of survey participants.

Regarding the availability of information about the application of technologies, materials, generating equipment, devices providing EE, 50% of respondents answered that the information does not reach the potential consumer and does not contain calculations, 33% indicated insufficient economic information for decision making. Only 16.7% mentioned in their answers that the information is available in the internet, mass media, resources of line ministries.

**Figure 15. Availability of information on the use of technology**



61.1% of respondents answered that lack of complete and reliable information will lead to unjustified costs without achieving EE or RE production, 22.2% noted that production of tools, materials, goods will not find their consumers and will not increase sales, and 16.7% believe that conditional lack of information allows more benefits for suppliers, producers of RE and EE.

Respondents also noted the need for open databases (information portals) of experts, inventories and catalogues of applied technologies and equipment, services, best available technologies (demonstration zones) for RES and tourism market participants; provision of access to energy efficient and energy saving technologies.

Despite the fact that back in 2011 by-laws were adopted requiring the formation and maintenance of open databases, in particular the Catalogue of Technologies and Equipment and the RES Inventory, these documents have not yet been developed.

In view of the above, it is necessary to accelerate the creation of relevant databases on special equipment, pilot projects, types of stations for the tourism sector.

## RECOMMENDATIONS

- Analyse the need of the tourism system for qualified specialists related to the development and operation of energy infrastructures for CBT.
- Ensure coordination of tourism authorities with professional educational institutions for training and provision of human resources in demand in the tourism labour market of the country, including in the use of RES and EE.
- Seek resources and attract donors to develop programmes, organize retraining in the use and maintenance of RES and EE technologies, for employees of tourism companies (owners of hotels, hostels, guest houses, motels, etc.) in the existing Adult Retraining Centres, modular centres and sectoral courses for upgrading and retraining of personnel in the country.
- To practice involvement of foreign experts and volunteers to transfer experience to employees of tourism companies (owners of hotels, hostels, guest houses, motels, etc.).
- Promote the creation of an educational platform for the free exchange of experience and knowledge on the use of RES and EE in the tourism sector.

- Ensure the opening of relevant departments, the establishment of scientific laboratories in relevant higher education institutions, the improvement of educational standards and programmes of higher and secondary vocational education institutions in the relevant specialties in RES and EE.
- Organise internships to study foreign experience, professional development, training and postgraduate studies in advanced foreign countries.
- Expand public access to educational and awareness-raising information and materials via the Internet.
- Develop professional networks and associations of specialists in the use and maintenance of RES and EE technologies, including in the CBT sector.
- To accelerate the implementation of the previously adopted NLAs on creation of the Renewable Energy Cadastre and Catalogue of Renewable Energy Equipment and to open the relevant websites,
- Identify funding sources for the organisation of the RES information portal, maintenance of the RES Cadastre and the Catalogue of RES equipment.
- Encourage the creation of open databases (information portals) of experts, applied technologies and equipment, RE microgeneration services, best available technologies (demonstration zones) for interested RES and tourism market participants.
- Provide access to national standardisation system documents and technical regulations on the use of clean energy production equipment and renewable energy services.

### **3.7. Description of existing constraints**

Tajikistan is rich in renewable resources. However, at the current stage, a significant expansion of renewable electricity generation has a number of technological, operational and physical constraints for the introduction of both large and small renewable energy capacity into the existing energy system of the country.

**Technological constraints** are due to the lack of development of scientific and technical institutions and high-tech production structures focused on the design and production of equipment for power plants using RES (solar collectors, wind plants, micro generators, etc.). Insufficient state support for innovative proposals and projects is also a technological constraint.

The country continues to be highly dependent on imported equipment, foreign technologies, as well as the complexity and problems of their operation and maintenance.

Technological constraints are due to:

- low level of technology development in the field of RES and EE;
- underdevelopment of applied research in public and private R&D institutions;
- low level of borrowing and import of technologies from other countries
- high technological dependence in the use of equipment, production methods, energy generation from RES, use of materials, EE systems;
- underdevelopment of technological consulting, high cost of development of individual projects (feasibility studies), business plans and technical projects
- practical absence of involvement of specialists in new technologies management;
- lack of state support measures for R&D in RES areas
- lagging behind of the technical regulation system and barriers in the form of unreasonable standards, approved types of measuring devices, provision of conformity assessment and safety evaluation of the engineering systems being put into operation, units of the generating equipment
- stereotypes about the difficulty of maintaining such technologies and their high cost;

- the complexity of selection, independent design, technical and economic calculations of the feasibility of the choice of machinery, equipment and technologies for energy supply of tourism facilities and production of individual services based on RES.

**Financial constraints** are related to the underdevelopment of institutions and infrastructure to support introduction of innovations, lack of budgetary resources for practical implementation of state support measures

The country is dominated by a conservative viewpoint on opportunities to use RES resources other than hydropower. This is mostly due to the insufficient number of pilot implementations, as well as the lack of a widespread practice of correct assessment of the economic effects obtained. As a consequence, regulators as well as infrastructure (and utility) companies often take a conservative stance in terms of channelling investment funds into RES and EE technologies, and consequently the growth in adoption rates remains insufficient. Therefore, it is important to implement pilot projects to test and demonstrate RES and EE solutions in the CBT sector.

**Legislative, normative-technical and methodological constraints** are due to the fact that the existing technical regulations and standards in the energy sector of Tajikistan were mostly developed back in the Soviet period, and for RES - more than 10 years ago and do not take into account the current level of technology development. At the same time, a number of necessary regulations and standards are missing. New regulations and standards need to be developed, including in land legislation, environmental protection and environmental requirements, as well as in the tourism sector.

Removing these barriers will require the development of legislative regulation, theoretical, methodological and regulatory work on the use of RES in the CBT sector, and the development of new standards.

## RECOMMENDATIONS

- Conduct a study on the development of renewable energy technologies, to examine their current status, trends, economic analysis, as well as institutional and legislative barriers to renewable energy technologies, especially to microgeneration in the tourism sector;

- Ensure the development of state support schemes for renewable energy in CBT.

Based on the recommendations of Section 3, a table was developed analysing the proposed updates to the regulations and estimating the benefits from their implementation (Annex 2).

#### 4. Assessment of the risks of RM implementation and the instruments to minimise them

During the implementation of the RM for implementing RES technology in the CBT sector, various kinds of risks may arise: behavioural, financial, technical and managerial, and regulatory.

##### *Behavioural risk*

*Lack of social acceptance of renewable energy technologies in the CBT sector causes behavioural risk.*

Many of the products and solutions proposed for implementation in RM differ from traditional practices. As a consequence, the introduction of new technologies will face the psychological inertia of the technical staff, the end users.

Factors influencing the emergence of this risk are as follows:

- behavioural risk of the society, which is related to the negative impact of the societal attitude of "only not us" on RES projects;
- lack of awareness of the positive effects of using RES,
- when the community is against building a RES generation facility close to home.
- may arise due to increased costs of RES paid by end-users.

In general, social acceptability risks are defined as the risks of rejection of RES project construction by civil society or part of it.

In order to overcome this barrier effectively, active awareness raising activities are required, as well as the implementation of activities in terms of "shaping" new values.

### *Financial risk*

Risks that arise from a shortage of available capital are financial risks.

Creating electricity production facilities from RES is a capital-intensive process. RES projects require the availability of capital, both own and public financing, in particular subsidies and soft loans to secure investment. If these are not available, it may lead to a capital shortage. The main reasons for capital shortages are: an underdeveloped or unhealthy local financial sector or an overall critical financial situation. In addition, limited experience with renewable energy projects, combined with higher bank lending interest rates, may result in the inability of owners to secure financing for their projects.

A way of mitigating this risk is to work with the executive authorities to leverage existing funding sources, to include RE activities in the investment programmes of state-owned companies, to promote and stimulate demand for EE technologies, and to create new funding mechanisms and other forms of state support for business, including with the involvement of development institutions.

### *Technical and management risks*

Technical and managerial risks are related to the lack of local knowledge and expertise and the degree of maturity of the technology used. Uncertainties arise from a lack of adequate assessment of the energy potential of renewable energy resources or the use of new technologies. The possibility of losses due to insufficient local expertise, inadequate maintenance of equipment, and infrastructure limitations are factors that form technical and managerial risks.

The following is proposed to minimise these risks:

- Increase access to information on the benefits and profits of introducing RES technology for the population living in remote mountainous areas, MSMEs in the CBT sector. It is also important and effective to conduct consultative trainings and seminars on the benefits of introducing RES technology. This approach will significantly reduce the behavioural risk.
- Increase knowledge of owners of RES technologies in search of funding sources from foreign donors; it is also necessary to increase financial literacy of population.
- Facilitate training of specialists in installation and maintenance of RES technologies.

### *Regulatory risk*

The development and adoption as a regulatory legal act that has negative financial or other consequences gives rise to regulatory risk. Reasons for difficulties in implementing or even failing to implement such a NLA may be its contradictions with other NLAs; lack of benefits in its implementation; lack of financial means for implementation; low literacy in decision-making; opposing attitudes of the authorities to the problem and the ways to solve it.

Consequently, amendments to existing regulations and standards may encounter resistance from regulators and industry actors.

For building an effective regulatory risk management process it is necessary to use internal regulations governing the process, which ensure that the regulatory risk on key draft regulations is minimised. In order to manage the regulatory risk the authorized body establishes a working group. To minimise the regulatory risk a consolidated position shall be prepared, proposals shall be minuted, amendments shall be recorded, justifications and other measures shall be implemented. The application of risk management measures means that the consolidated position is communicated to the government concerned and agreed with the public authorities. A process of

internal interaction is organised in the preparation of proposals to create a comfortable legal environment for doing business and to minimise the consequences of identified regulatory risk.

It should be noted that the functions of the IWG established under the MEWR include improvement of legislative regulation and creation of a favourable legal environment to ensure implementation of the RES development strategy in tourism. The IWG is tasked with developing a consolidated position on regulatory initiatives and draft laws with regulatory risks.

The way to mitigate this risk is to practise and demonstrate the effects of pilot projects, to work closely with regulators and to involve progressive industry players. In addition, it is expected that an effective mechanism for resolving issues will be to bring issues to the MEWR and the CTD, as well as to the meetings of the IWG on the development of RM.

## II. FINANCIAL PLAN FOR THE IMPLEMENTATION OF THE ROAD MAP 2022-2030

The main source of financing for the introduction of RES in the CBT sector is the MSME's own funds. In the course of developing the tourism sector and improving the quality of tourism services, owners become investors in RES, as CBT entities are interested in switching from traditional energy sources (coal, wood and other fuels) to RES, in order to maintain tourist flows and attract ecotourists.

Different groups of investors are active in RES, which can be classified according to their attitude to risk, expected profits and the degree of their involvement:

➤ Public funds. The state itself is expected to play a significant role in the gradual improvement of the legal and regulatory framework in order to remove barriers to the use of advanced technological solutions and to create a system of incentives for their implementation. The state's investment is to develop and implement a programme of state support for the development of public-private partnerships to stimulate the development of the tourism industry, including CBT.

➤ Private funds - own funds of CBT entities and owners. It is assumed that a significant share of the costs of purchase and installation of RES technology will be borne by the participants themselves.

➤ Funds of companies with state participation. It is assumed that a significant share of the financing of pilot projects will be provided by companies with state participation interested in the implementation of these projects.

➤ Funds from MSMEs of various forms of ownership interested in implementing RES through pilot projects. These are primarily MSMEs interested in the practical use of renewable energy technologies. These MSMEs are expected to finance themselves (primarily as investment projects) with possible co-financing from climate funds.

➤ Funds from international financial institutions (World Bank etc.), projects and programmes. The intention is to mobilise funds from international organisations, and to systematically seek opportunities to implement certain initiatives through participation in various international projects and programmes.

➤ Funds from institutions supporting the development of a "green economy" and innovative development. The intention is to mobilise funds from institutions supporting the development of the Green Economy and innovative development, in particular through proposals for pilot projects.

➤ Funds from various funds. It is envisaged to attract funds from different funds for the implementation of RES technologies in the tourism sector, in particular climate support funds are allocating significant funds for the development of RES.

➤ Loans. Credit institutions, including IFIs, are assumed to be the main source for the purchase and installation of RES technology.

*International partners promote sustainable energy development, including renewable energy, in Tajikistan:*

- *Asian Development Bank (ADB)*
- *European Bank for Reconstruction and Development (EBRD)*
- *United States Agency for International Development (USAID)*
- *World Bank*
- *United Nations Development Programme (UNDP)*
- *German Development Bank KfW*
- *International Monetary Fund*
- *International Development Association (IDA)*
- *KOICA Agency, South Korea*

### III. MANAGING THE IMPLEMENTATION OF THE ROADMAP

The following organisational mechanisms are and will be in place for the successful implementation of the RM:

1. Interagency Working Group (IWG) includes representatives of the public sector, non-governmental organizations, importers and exporters of RES equipment, equipment manufacturers, organizations producing renewable energy and EE, CBT entities (owners of guesthouses, hostels, hostels, private community hotels and representatives of tourism companies).

*The main objective of the IWG is to develop and monitor the implementation of the RM, to decide on the expediency of introducing amendments and additions to the existing legal acts developed within the framework of the CD activities, to interact with the Government of Tajikistan, the MIOGV to coordinate the implementation of selected initiatives undertaken by the IWG.*

2. Associations that bring together the main actors in the implementation of RM: suppliers and producers (finished goods, equipment, devices, appliances, components for RES and EE technologies); tourism companies; owners of RES facilities (renewable energy production and sales), associations and non-governmental organisations. The key functions of the associations are:

- identification of major and priority proposals for inclusion in the activities of selected initiatives in RM;
- expertise on new technologies and equipment, participation in discussions aimed at realising the main objectives;
- shaping the tasks of drafting and supporting the harmonisation of regulations;
- forming requirements and discussing in training sessions the results and initiatives of the IWG;
- ensuring interaction with the innovation ecosystem and infrastructure;
- creation of a knowledge base (catalogue of solutions).

3. Research consortia that bring together research and scientific laboratories: academia, higher education institutions, research institutes, development partners. The key functions of research consortia are:

- developing joint research programmes and projects in the RM priority areas proposed by the IWG;
- facilitating access to research funding from various sources;
- monitoring the implementation of research by individual research teams, external research groups;
- organization of communications (seminars, training sessions) among research project participants and IWG stakeholders.

4. Project consortia that bring together business companies, small technology companies (design offices), scientific groups to develop and bring to the market new commercial products and services, design institutes under MEWR "Nurofar", "Elektrosetproekt" "Spetsavtomatika". The key functions of the project consortium are:

- developing a joint programme to develop and market IWG solutions;
- assistance in obtaining funding from various sources to carry out the work;
- monitoring of work implementation;
- establishment of communications (seminars, trainings) among the members of the project consortium as well as with other interested participants of IWG.

5. Existing national public-private dialogue platforms to stimulate the production and implementation of RES and EE in the tourism sector. Their key functions are:

- assist in organising and conducting advocacy campaigns to improve the regulatory framework for increased renewable energy production and consumption, EE growth at CBT level to adopt changes, amendments, improvements to the regulatory framework of the Republic of Tajikistan;
- assistance to stimulate the production and introduction of RES/EE in the tourism sector;
- assist in strengthening the capacity of the Government to develop green tourism.

It is envisaged that coordination, monitoring and interaction of the RM implementation participants with structural subdivisions of the Ministry of Energy and Water Resources of the RT and the Committee for Tourism Development under the Government of the RT will be implemented on the basis of the established coordination centre.

It is planned that the RM will be updated regularly, at least once a year.

## ACTION PLAN

for achieving the objectives of introducing amendments, improving policies to increase the production and consumption of renewable energy and the widespread introduction of EE in the tourism sector

No	Main objectives and directions of action plan	Implementation mechanisms	Implementation time frames	Executors	Source of funding	Expected outcome
<i>Development and improvement of legal and regulatory frameworks</i>						
1	Amendments and additions to legislation to define the legal status of RES entities, the concept of RES-based micro-generation, mechanisms for implementing state support measures for micro-generation development, in particular in the CBT sector	<p><u>Legal status of RES entities</u> Introduce amendments and additions to the following NLAs:</p> <ul style="list-style-type: none"> <li>➤ Introduce to the Civil Code of Tajikistan the term "energy supplying organisation".</li> <li>➤ Introduce the term "energy supplying organisation" in the Law of RT "On the Use of RES". Define in the Law the legal status of RES entities as an "energy supplying organisation" and equate power plants, including microgeneration, to energy supplying organisations producing, distributing and selling electricity and heat using RES.</li> </ul> <p><u>RES based microgeneration</u></p> <ul style="list-style-type: none"> <li>➤ To introduce the following amendments and additions into the Law "On the Use of Renewable Energy Sources": <ul style="list-style-type: none"> <li>- to define the term "microgeneration";</li> <li>- to define that micro-generation includes power plants with a capacity not exceeding 15 kW;</li> <li>- to define the conditions that support the functioning of microgeneration.</li> <li>- to define that the technological connection of microgeneration facilities may be carried out to electricity facilities with a capacity of no more than 1 kW.</li> </ul> </li> </ul>	During 2023	MEWR MJ OSHC Barki Tojik OJSC Distribution Networks	Budget funding  Funding from international institutions	<p>The legal status of renewable energy entities as energy supplying organisations has been legally defined.</p> <p>The concept of micro-generation and its legal status have been defined by law, and the Rules of Qualification of a generating facility operating on the basis of RES have been developed.</p>

		<ul style="list-style-type: none"> <li>- to develop Rules for qualification of a generating facility operating on the basis of RES.</li> <li>- to study the issue of adopting a Programme on microgeneration development (development of engineering infrastructure of CBT tourism facilities) based on a decentralised model and submit it for consideration to the authorised body.</li> </ul>				The procedure for obtaining a licence for micro-generation facilities has been revised.
2	Improvement of the legal framework for the development of a decentralised model of the energy sector (local production and consumption of electricity produced from RES)	<ul style="list-style-type: none"> <li>➤ To introduce appropriate amendments and additions to the Law of RT "On the Use of RES", which would define a mechanism for purchasing electricity produced from RES directly by the consumer in the absence of an electricity distribution network in the areas of decentralised energy supply.</li> <li>➤ Allow the producer of energy (thermal) from RES to conclude contracts directly with consumers, with approved tariffs.</li> <li>➤ Introduce an addition to the "Regulations on the procedure of connection (connection) of renewable energy installations to the general power grid" which excludes the owner of microgeneration from the list of recipients of specifications (TU) from grid organisations when using the energy for their own needs.</li> </ul>	During 2023	MEWR CTD OSHC Barki Tojik JSC Distribution Networks NC TC ASMSTI	Budget funding  Private funding  Funding from international institutions	A mechanism for the sale of electricity by micro-generation facilities directly to consumers on the basis of a sale and purchase agreement has been legally determined.  Amendments were made to the "Regulations on the procedure of connection of renewable energy facilities to the general power grid" to exclude the owner of RES facilities, microgeneration, from the list of recipients of specifications from grid organisations when using the generated energy

						only for their own needs. A new form of purchase and sale agreement for RES entities has been developed
3	Development and implementation of standards for microgeneration using RES, EE and relevant regulation, rules.	<ul style="list-style-type: none"> <li>- To study the issue of inclusion of RES performance indicators into the technical regulations, standards and other technical normative acts of Tajikistan.</li> <li>- Supplement the issues of micro-generation in the enactment of technical regulations, standards and other technical normative acts of Tajikistan, which establish methodological, organizational and technical basis for the efficient use of RES.</li> <li>- To study the issue of including energy quality parameters for micro-generation in the technical regulations and standards of Tajikistan, harmonized with the international standards recognised by Tajikistan.</li> <li>- Analyze the necessity of implementing mandatory certification of energy and products produced from RES, including micro-generation.</li> <li>- Develop standards for the use of low-power units and define quality conditions for renewable energy.</li> </ul>	2022-2023	MEWR MJ CTD OSHC Barki Tojik JSC Distribution Networks ASMSTI	Budget funding  Private funding  Funding from international institutions	Technical regulations, standards and technical normative acts have been developed for renewable energy, including for micro-generation facilities.
<b><i>Development of a legal and regulatory framework for the siting of micro-generation facilities based on RES</i></b>						
4	Lack of legal regulations on siting of small-scale renewable energy facilities (micro-generation) on land plots that are part of	<ul style="list-style-type: none"> <li>- Develop a legal and regulatory framework for the siting of RES-based micro-generation facilities on land plots included in residential development.</li> <li>- Introduce an addition to the Land Code of the RT on allocation of a land plot for micro-generation construction</li> </ul>		MEWR MJ MIOGV GKZ CAS	Budget funding  Private funding	Developed:  - A mechanism for an accelerated and facilitated option for obtaining

	<p>residential buildings and their certification.</p>	<p>on the territory of residential districts with relevant preferences for RES-based micro plant installations up to 15 kW:</p> <ol style="list-style-type: none"> <li>1) eliminate the obligation of the State Environmental Expertise (SEE and Environmental Impact Assessment (EIA) procedure for installing solar equipment with a capacity of up to 15</li> <li>2) resolve the issue of the need for a certificate for a generating station for its own use with a capacity of up to 15 kW;</li> <li>3) allow the use of land for micro-generation facilities without changing their legal status and category;</li> <li>4) determine the normative area of land plots reserved (used) for siting, erection, construction of small-scale energy facilities.</li> </ol> <ul style="list-style-type: none"> <li>- Amend and supplement relevant legal acts to create legal conditions for CBT entities, producers of clean energy to locate them within local areas and consumers;</li> <li>- Amend the SNIIP - spatial planning norms to take into account the location of micro-generation facilities;</li> <li>- Establish a " Single Window " mechanism for interaction between the local state executives (MIOGV) and state organisations involved in the preparation of permitting documents for the installation of RES facilities;</li> <li>- Define the procedure for functional and purposeful designation of a land plot, regulation of placement of micro-generation facilities in cities and settlements and beyond: a) using solar energy b) using water energy c) biogas d) wind energy.</li> <li>- To develop norms regulating volumetric-planning conditions, technical requirements, regulations based on the parameters of the required (augmented) capacity of installations based on RES (micro-generation);</li> <li>- Develop and adopt regional programmes for the development of engineering infrastructure, master plans of</li> </ul>	<p>2023</p>		<p>Funding from international institutions</p>	<p>permits for construction of micro-generation facilities</p> <ul style="list-style-type: none"> <li>- Mechanism to support and promote land and water use for micro-generation facilities (RES)</li> <li>- Mechanism to use land without changing its legal status and category for micro-generation facilities</li> </ul> <p>Amendments and additions to the general plans of cities for development of engineering infrastructure, taking into account the need for micro-generation facilities (RES).</p>
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		Detailed Development Plans (DDPs), taking into account the need for micro-generation facilities.				
<b><i>Improvement of tariff regulation and tax and customs incentives for the introduction and development of micro-generation from RES</i></b>						
5	Analysis of tariff setting for electricity produced by micro-generation from RES, taking into account current legislation, foreign experience, including fixed tariffs	<ul style="list-style-type: none"> <li>- To support the development of clean energy production from RES, consider the applicability of tariff regulation (tariff policy), based on best practices of the countries and economic opportunities of the parties.</li> <li>- Develop and adopt a resolution of the Government of the Republic of Tajikistan "Rules for determining fixed tariffs and ceiling auction prices".</li> <li>- Provide for annual indexation of fixed tariffs to account for inflation and approve by a resolution of the Government of the Republic of Tajikistan.</li> <li>- Prior to the transition to a fixed tariff system, in accordance with the current legislation, apply the European methodology for calculating the electricity tariff based on the benefit of the investor (owner of RES) and legally allow the antimonopoly authority of Tajikistan to set these tariffs for micro-generation facilities.</li> </ul>	2022-2023	MEWR OSHC Barki Tojik JSC "Distributive Networks" AMS	Budget funding Private funding Funding from international institutions	A new system of fixed tariffs for small-scale energy facilities has been adopted, taking into account the experience of foreign countries.
6	Development of financing measures, including development institutions, state-owned companies in the tourism sector, Green Finance	<ul style="list-style-type: none"> <li>- MFIs and the banking sector to strengthen the development of new banking products. Given the digitalisation of the economy, expand remote customer service (given the COVID-19 pandemic), improve customer service and increase the practical knowledge of staff.</li> <li>- Promote financial literacy of MSMEs from CBT, RE and EE sectors in developing business plans to obtain credit resources from MFIs, and establish closer cooperation with financial institutions.</li> <li>- International financial institutions, international and non-profit organisations to financially support the National Strategy for financial inclusion, the implementation of which will improve access to credit for MSMEs and raise the level of financial literacy across all sectors of the economy.</li> </ul>	2023-2024	MEWR CTD MF IWG MFI NB Development partners	Budget funding Private funding Funding from international institutions	Adoption of the National Strategy for Financial Inclusion of Tajikistan  A green credit "leasing" mechanism has been developed for the purchase of generating equipment based on RES. Measures have been implemented to improve

		- Consider lowering the average interest rate on loans to MSMEs in the CBT, RES and EE sectors, while increasing the amount and timing of repayments.				financial literacy in the development of business plans for obtaining credit resources from MFIs
7	Development of measures to stimulate demand for the products of national manufacturers of equipment, systems of new energy efficient technologies and services using renewable energy sources, including in the tourism sector	<ul style="list-style-type: none"> <li>- Ensure state support for national producers-suppliers of equipment, systems of new energy efficient technologies and services using RES, by amending and supplementing the relevant legal acts.</li> <li>- Create opportunities to support local producers by setting high standards and requirements for imported equipment.</li> <li>- Launch industrial production of solar panels and equipment at production facilities using domestic raw materials (silicon raw materials) and thereby reduce the cost of electricity production from this source.</li> <li>- In the context of the sales market, explore opportunities not only in the domestic market but also in the external market. In particular, Afghanistan, which provides ample opportunities to sell our competitively priced RES products.</li> <li>- Encourage funding and resource allocation for R&amp;D and stimulate domestic development in public and private research institutes.</li> <li>- Develop specialised training services for operators and service workers (repair and maintenance), provide engineering services at the business planning stage, feasibility studies, supervision of installation and commissioning, and develop design, construction and installation services.</li> </ul>	To 2023	MEWR CTD MF MINT SCI NAS Research institutes Universities Associations	Budget funding  Private funding  Funding from international institutions	Provided specialised training services for operators and service workers (repair and maintenance), provided engineering services for the business planning phase, feasibility studies, supervised installation and commissioning, developed services for planners, builders and installers.
8	Development of a framework for environmental impact on business development in the tourism sector using RES. (subsidy from Environmental Funds), use of funds	<ul style="list-style-type: none"> <li>- Explore the possibility of incentivising MSMEs in CBT sector to introduce the use of RES by allocating subsidies from the sale of GHG emission quotas to other countries.</li> <li>- Explore the possibility of incentives based on total remuneration of MSMEs in CBT sector operating in remote mountainous areas and for the provision of services using</li> </ul>	2024	MEWR CEP CTD IWG	Budget funding  Private funding	Amendments and additions have been made to the Law of RT "On Environmental Protection" to introduce a form of

	(fundraising) and financing of special credit lines).	RES technologies from environmental funds (from quota sales). - Introduce forms of incentives based on green environmental certification.			Funding from international institutions	incentives by implementing green environmental certification.
<b>Implementation of Green Certification in the tourism sector</b>						
9	Creation of legal conditions to enhance the implementation of Green Certification in the tourism sector as a market-based tool aimed at sustainable management of natural resources, definition of the concept of Green Environmental Certification.	- To introduce the following amendments and additions to the Laws of Tajikistan "On Environmental Protection", "On the Use of Renewable Energy Sources" and "On Tourism": - the notion of "green environmental certification", in the context of controlling and tracing renewable energy production, supply and consumption, - to define the authorised body to issue the Green Certificate, - define the requirements and legal conditions for the development and implementation of the Green Certificate, - Authorised body in cooperation with ASMSTI to develop Green Standards for the CBT sector, taking into account relevant international standards. - Prepare draft NLAs of Tajikistan on amendments to relevant legislation and by-laws regulating the procedure of environmental impact assessment, "environmental certification". - To develop a policy document on "green economy" taking into account all ecosystem processes of the country. - Define in the relevant laws the priority of introduction and use of RES, as the most eco-friendly resource.	2023-2024	MEWR CEP CTD Development partners MJ Associations Entrepreneurs	Budget funding  Private funding  Funding from international institutions	The concept of "green environmental certification" has been legally defined, and an authorised body for issuing green certificates has been determined, A by-law regulating the procedure of ecological expertise, ecological certification has been prepared".
10	The procedure for obtaining a Green Certificate by CBT entities, its conditions and relevance.	- Introduce amendments and additions to the Law "On Environmental Expertise", defining the procedure and conditions for obtaining a Green Certificate by MSMEs in the CBT sector. - Develop and adopt appropriate by-laws clarifying the content, data, requirements and conditions for obtaining a Green Certificate for MSMEs in the CBT sector.	2024-2025	MEWR CEP CTD Development partners MJ Associations	Budget funding  Private funding  Funding from international institutions	The procedure and conditions for obtaining a Green Certificate by MSMEs are defined by law.

				Entrepreneurs		
<b><i>Developing and adapting green standards</i></b>						
11	Define the necessary list and content of green standards and attributes as a basis for Green Certification, compliance with which creates the conditions for environmentally sound economic and other activities.	<ul style="list-style-type: none"> <li>- Introduce amendments and additions to the Law of Tajikistan "On Environmental Expertise", which should define for the Green Certificate the following: <ul style="list-style-type: none"> <li>- general status;</li> <li>- define that the Green Certificate is proof of its carbon-free origin,</li> <li>- define a list of data to be included in the Green Certificate;</li> <li>- define the standard and procedure for applying preferential payments (a specified amount) as rewards for contributions to the green economy and environmental protection when all requirements of the Green Certificate are fulfilled;</li> <li>- define the source of the preferential payments for the Green Certificate.</li> </ul> </li> <li>- Define in the law that green tourism certification is not a mandatory procedure; in order to obtain a Green Certificate, entities must undergo an energy audit by an independent energy audit company.</li> </ul>	To 2025	MEWR MINT CEP CRT Development partners MJ Associations	Budget funding  Private funding  Funding from international institutions	The list and content of green standards and attributes as a basis for Green Certification is defined
12	Determine the legal basis for the establishment of independent energy auditing companies, their mandate and the services provided	<ul style="list-style-type: none"> <li>- Introduce amendments and additions to the Law on Energy Saving and Energy Efficiency to allow energy audits by independent companies, defining their registration procedure, mandate, responsibility, duties and services.</li> <li>- Introduce relevant amendments and additions to legal acts related to the registration of legal entities, licensing, the tourism sector and energy audits.</li> </ul>	To 2025	MEWR MJ Gosenergonadzor CRT ASMSTI Associations Travel companies	Budget funding Private funding Funding from international institutions	The legal basis for the establishment of independent energy audit companies, their mandate and the services they provide are defined in law.
13	Establishment of a market mechanism for independent energy audits to confirm the	<ul style="list-style-type: none"> <li>- Develop and incorporate incentives for energy audits into relevant NLAs;</li> <li>- In cooperation with ASMSTI, promote the implementation of green tourism standards, including the application of</li> </ul>		MEWR MJ	Budget funding	The mechanism and incentives for voluntary energy

	subject's compliance with green standards and service quality.	internationally recognised green tourism standards and raise awareness of CBT entities about energy audits. - Provide training to certified professionals and accredited organisations for external evaluation.	2025-2026	Gosenergonadzor CRT ASMSTI	Private funding Funding from international institutions	audits have been developed
<b><i>Development of technical and technological support infrastructure for CBT entities (services to MSMEs)</i></b>						
14	Improving the technical equipment of the energy infrastructure of CBT facilities	- Create conditions to foster the development of technical and technological support infrastructure for CBT entities (services to MSMEs). - Create conditions to attract investment in the RES sector for the manufacture of market-competitive RE and EE equipment. - Encourage local producers in the production, installation and maintenance of RES facilities.	To 2023	MEWR CRT MF MINT NAS Universities Research institutes GIC	Budget funding Private funding Funding from international institutions	Developed an economic incentive mechanism to foster the development of technical and technological support infrastructure for CBT entities (services to MSMEs)
15	Accessibility of technologies, the possibility to choose technical solutions that bring benefits and public utility, ensure profitability, cost recovery and allow for additional profits from the technology deployment; development of service engineering, technical, consulting services for CBT entities, especially in areas of decentralised energy supply	- Ensure accessibility of technologies, the possibility to choose technical solutions that bring benefits and public utility, ensure profitability, cost recovery and allow for additional profits from technology deployment. - To include in the relevant legal acts a provision on state support of service, engineering, technical, consulting organisations which provide services to CBT entities in the areas of decentralised energy supply. - Develop the following specialised services: - repair and maintenance companies, service providers; - engineering services at planning, feasibility study, supervision and commissioning stages; - design, construction and installation work for the construction of facilities. - Take necessary measures for creation of repair workshops, service centres for maintenance of micro-generation facilities in remote mountainous areas		MEWR, CRT MF MINT ASMSTI NAS Universities Research institutes GIC Private sector	Budget funding Private funding Funding from international institutions	Legislative provision of state support to service, engineering, technical, consulting organizations for the provision of services to CBT entities in areas of decentralized energy supply has been introduced.  Quotas for training specialists in installation and maintenance of

		<ul style="list-style-type: none"> <li>- To consider the opportunity of training specialists on installation and maintenance of renewable energy micro-generation facilities by special quotas.</li> <li>- For coordination, institutional and financial support and development of RE, expedite the establishment of Renewable Energy and Energy Efficiency Development Fund.</li> </ul>				micro-generation facilities are defined.
16	Creation of open databases (information portals) of experts, inventories and catalogues of applied technologies and equipment, services, best available technologies (demonstration zones) for RE and tourism market participants; provision of access to energy efficient, energy saving technologies.	<ul style="list-style-type: none"> <li>- Accelerate the implementation of the previously adopted NLA's on the establishment of the RES Cadastre and Catalogue of Renewable Energy Equipment and launch the respective websites.</li> <li>- Identify funding sources to organise the RES information portal, maintain the RES Cadastre and the Catalogue of Renewable Energy Equipment.</li> <li>- Encourage creation of open databases (information portals) of experts, applied technologies and equipment, RE micro-generation services, best available technologies (demonstration zones) for interested RES and tourism market participants.</li> <li>- Provide access to the documents of the national standardisation system and normative technical acts on the use of equipment for clean energy production, as well as renewable energy services.</li> </ul>	To 2026	MEWR CRT MINT ASMSTI CEP	Budget funding  Private funding  Funding from international institutions	<p>Catalogue of Renewable Energy Equipment and RES Cadastre are created and functioning</p> <p>Funding sources for information portals with opening of RES Website are identified</p> <p>Open databases of experts, applied technologies, etc. are created.</p>
17	Provide access to existing energy efficient, energy saving technologies; provide access to national standardisation system documents and regulations on the use of clean energy production equipment and renewable energy services	<ul style="list-style-type: none"> <li>- Develop and enforce building codes and requirements for EE in existing buildings when they are retrofitted, renovated, refurbished for use in tourism services.</li> <li>- Encourage the implementation of EE improvement measures in residential buildings, e.g. increase the attractiveness of energy efficiency measures by guaranteeing a reasonable payback period and creating conditions for better maintenance of heating systems.</li> <li>- Promote the use of low-carbon technologies and clean fuels (heat pumps, RE - solar panels, micro hydro, wind</li> </ul>	To 2026	MEWR CRT MF MINT ASMSTI CEP	Budget funding  Private funding  Funding from international institutions	A mechanism for the implementation of state support for imported goods and equipment in the renewable energy sector has been established, an incentive scheme

		<p>generators) in individual households providing services to tourists.</p> <ul style="list-style-type: none"> <li>- Exploit opportunities to deployment of electric vehicles in the CBT sector simultaneously with electricity production from renewable sources, thus contributing to the objective of reducing overall vehicle emissions</li> <li>- Fully support and expand the use of cycling for eco-mountain tourism.</li> </ul>				<p>for national producers of equipment for RES facilities and renewable energy technologies has been created.</p>
<b>Providing quality education, training and awareness to CBT entities and communities,</b>						
18	<p>Providing quality education, training and awareness to CBT entities and communities,</p>	<ul style="list-style-type: none"> <li>- Analyse the need of the tourism system for qualified specialists related to the development and operation of energy infrastructures for CBT.</li> <li>- Ensure coordination of tourism authorities with professional educational institutions for training and provision of human resources in demand in the tourism labour market of the country, including in the use of RES and EE.</li> <li>- Seek resources and attract donors to develop programmes, organize retraining in the use and maintenance of RE and EE technologies, for employees of tourism companies (owners of hotels, hostels, guest houses, motels, etc.) in the existing Adult Retraining Centres, modular centres and sectoral courses for upgrading and retraining of personnel in the country.</li> <li>- To practice involvement of foreign experts and volunteers to transfer experience to employees of tourism companies (owners of hotels, hostels, guest houses, motels, etc.).</li> <li>- Promote the creation of an educational platform for a free exchange of experience and knowledge on the use of RES and EE in the tourism sector.</li> <li>- Ensure opening of specialised departments, creation of scientific laboratories in specialised HEIs, improvement of educational standards and programmes of HEIs and secondary vocational education institutions in relevant specialities in RES and EE.</li> </ul>	2023-2027	<p>MEWR CRT MES HEIs NAS Associations MLME</p>	<p>Budget funding  Private funding  Funding from international institutions</p>	<p>Forecast of tourism sector staffing needs related to RES development has been prepared</p> <p>A system of coordination of tourism authorities with vocational education institutions has been established to train and provide the human resources required in the tourism labour market of the country, including in the use of RES and EE;</p> <p>A number of thematic trainings and seminars on capacity building</p>

		<ul style="list-style-type: none"> <li>- Organise internships to study foreign experience, professional development, training and postgraduate studies in advanced foreign countries.</li> <li>- Expand public access to educational and awareness-raising information and materials via the Internet.</li> <li>- Develop professional networks and associations of specialists in the use and maintenance of RE and EE technologies, including in the CBT sector.</li> </ul>				<p>in RES and other knowledge management activities have been organised.</p> <p>Established professional networks and associations, platform</p>
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### Proposed changes to the regulations and the benefits of their implementation

	Problem Roadmap	Change Roadmap	Benefits of Changes
		<b>Objective 1: Land and land use</b>	
	Lack of legal regulations on siting of small energy facilities (micro-generation) based on RES on land plots included in the residential development and their passportization.	Introduction of amendments and additions to the Land Code of the RT, as well as to the relevant by-laws on the deployment of small energy facilities (micro-generation) based on RES on land plots included in the residential development and their certification.	The possibility of increasing the number of micro-generation facilities placed on land and land plots increases the level of tourist attraction by increasing the number of tourist service points.
	Placement of micro-generation objects using RES within local territories and consumers.	Introduction of additions to SNiP - spatial planning norms with regard to the micro-generation facilities siting.	The legal possibility to install RES micro-generation facilities (solar, wind plants) within local areas and in the vicinity of consumers has been created.
	High administrative barriers (process and procedures for obtaining permits, approvals similar to the construction of urban planning facilities, in particular for micro-generation).	Create a "Single Window" and develop a mechanism for accelerated and simplified procedures for obtaining permits for micro-generation.	Establishment of turnkey service companies (end-user services), from the purchase of RES equipment to obtaining all permits and installing the equipment, provide an accelerated and facilitated option for obtaining permits for micro-generation.
	Lack of mechanisms to support and stimulate land and water use for micro-generation facilities (RES).	Preparation of proposals on mechanisms to support and stimulate land and water use for micro-generation facilities (RES).	Removing environmental barriers will increase the attractiveness of RES use in remote mountainous regions for CBT.
	Inaccessibility of land resources (land plots) to site generation, transmission, storage facilities.	Legislative definition of norms for the area of land plots reserved (used) for siting, installation, construction of small-scale energy facilities. Development of norms regulating (volumetric-planning conditions, technical requirements, standards based on the parameters of the required (augmented) capacity of installations based on RES (microgeneration).	Legal regulation of this problem will lead to increased electricity production from RES sources, increased income of MSMEs in CBT through sales of surplus electricity.
	Dominance of one category of land over industrial and energy land and difficulties in transformation of micro land plots.	Land use without changing its legal status and category (formation of a land plot for micro-generation facilities without changing their status and category). "Multifunctionality".	The barriers for entrepreneurs to obtain land for micro-generation facilities will be reduced, on the one hand, and on the other hand, the income of the state from rental fees will increase.
	The process and procedures for determining the (functional and target) purpose of a land plot, regulating the siting of micro-generation facilities in and outside cities and settlements: a) using solar energy b) using water energy c) biogas d) wind energy.	Elaboration and adoption of regional engineering infrastructure development programmes, RAP master plans taking into account the need for micro-generation facilities.	The effect of the use of micro-generation facilities is manifested in other spheres of production and economic, natural-resource activities in a social form, improving the quality of life of the population, respectively, productivity and competitiveness.

	Lack of information on the status and category of land on which micro-generation facilities are allowed to be sited. Formation of a land plot at the expense of applicants and provision on a competitive basis.	Developing changes and promoting proposals for land reform.	The number of micro-generation facilities in remote mountainous regions will increase, which ultimately contributes to obtaining additional income, development of remote mountainous regions.
<b>Objective 2. Microgeneration</b>			
	Legislation lacks the concept of "micro-generation" based on RES and consequently there are no mechanisms for state support of micro-generation development, in particular in CBT.	Introduction of the concept of micro-generation based on RES into the Law of Tajikistan "On the Use of Renewable Energy Sources", development of a mechanism and implementation of state support measures for micro-generation development, in particular in the CBT sector.	"Microgeneration" has been given a legal status and state support measures have been defined, thus encouraging MSMEs, including in the CBT sector, to use microgeneration on a large scale.
	Lack of "energy supplying organization" status for RES entities in the energy sector legislation.	Amendments and additions to the Law of RT "On the Use of Renewable Energy Sources" and the Civil Code of RT to define the legal status of RES entities as "energy supplying organisations".	The legal status of RES entities as "energy supplying organisations" has been defined and they are subject to the relevant legal provisions of the Civil Code, in particular they have the right to conclude a purchase and sale agreement for the electricity generated.
	Undeveloped and unregulated mechanism for connection of RES facilities to centralized power grids in their absence and (supply) sale of such power to the power system. Legislative permission to sell electricity from RES (micro-generation) directly to consumers in decentralised electricity supply areas.	To introduce relevant amendments and additions to the Law of RT "On the Use of Renewable Energy Sources" and to the "Regulation on the Procedure of Connection of Renewable Energy Sources Facilities to the Common Energy Networks" on the possibility of selling electricity (micro-generation) directly to consumers in areas of decentralised energy supply.	Profit from the sale of surplus electricity directly to micro-generation consumers will make it possible to recoup the costs of building the plant, maintain its staff, and increase the plant's capacity and electricity production.
	Introduction of standards for the use of micro-generation of RES, EE and the development of regulations and rules.	Develop standards for microgeneration using RES.	Facilitates micro-generation development for MSMEs in the CBT sector, the use of quality technology and incentives for local producers.
	Difficulties in obtaining licenses for generation, distribution and sale of electricity for microgeneration in remote mountainous areas.	Legislatively revise the licensing procedure for micro-generation facilities, in the context of facilitating or eliminating this procedure for micro-generation facilities up to 15 kW.	Facilitates the development of micro-generation by MSMEs in the CBT sector.
	Difficulties in commissioning and acceptance of micro-generation facilities due to non-compliance of equipment with state standards.	Amend the State Standards for micro-generation facilities using RES by non-standard equipment.	Promotes the development and widespread use of microgeneration by MSMEs in the CBT sector.
<b>Objective 3. Green certification</b>			
	Lack of legal conditions for the development and implementation of Green Certification in the tourism sector, definition of the concept of green environmental certification, process for obtaining a	Develop a legal and regulatory framework for the development and implementation of Green Certification in the tourism sector, a definition of green environmental certification, a process for obtaining a green certificate for	The use of green certification in the CBT sector will - increase the interest and trust of the consumers of the services;

	green certificate and description of the benefits of their use for tourism entities.	tourism entities, as well as a definition of green standards compliance assessment, green certification.	- increase the number of customers who choose hotels based on a green certificate posted on the website; - attract investors to invest in the development of the company.
	A low level of understanding of the way to benefit from investing in green technologies (environmental projects) and the tools to create a competitive advantage.	Organisation of demonstration areas to demonstrate the benefits of investing in green technologies (environmental projects) and tools to create a competitive advantage.	Demonstrating the benefits of investing in green technologies (environmental projects) and tools will create a competitive edge.
	Lack of funds for certification of properties and applicability of rules and regulations for individual houses, micro-hotels.	Support and encourage, including by the state, the use of green technologies and real estate certification with the adoption of norms and regulations for individual houses, micro-hotels.	With the certificate, property owners will be able to raise their status and increase the inflow of ecotourists.
	Lack of quick benefits for entities from the use of high environmental standards.	Promote increased financing for green projects with green certificates	A one-time increase in capital costs - if traditional heat sources are available, the energy supply of the properties will be increased.
<b>Objective 4. Independent energy audits</b>			
	Lack of possibility for an energy audit by an independent company to verify the CBT entity's compliance with green standards and quality of services	Adopt legal regulations to establish and organise independent companies specialising in energy auditing to confirm the entity's compliance with green standards and quality of services.	By using energy audits, energy costs can be reduced by almost 30%, making it possible to realise in practice that saving fuel and energy resources (FER) can have a huge economic effect
	Lack of certified specialists and accredited energy audit organizations to conduct external assessment.	Provide training to certified specialists and accredited energy audit organisations to organise and conduct external evaluation.	Accredited competent energy audit companies and certified specialists will make a substantial contribution towards implementing energy saving and energy efficiency goals.
	Lack of legal framework for energy audit, terms and services to be provided.	Amend and supplement the Law "On Energy Saving and Energy Efficiency" to permit energy audits by independent companies, define their registration procedure, powers, responsibilities, duties and service delivery.	Possibility of independent and individual energy audit will attract investors to invest in development of the company.
	Inspections by Gosenergonadzor are of a controlling nature.	Make appropriate amendments and additions to legislative acts related to legal entity registration, licensing, the tourism sector and energy auditing.	Independent energy audits are conducted to identify the clean energy produced from renewable energy sources and assess the energy efficiency of a building.
	High risks for parties in lending without sound business plans and feasibility studies and lack of identification of entities as clean energy producers.	Assess the quality of clean energy produced from RES and assist in the development of business plans and feasibility studies for producers of clean energy.	Improving public literacy to apply for renewable energy grants further promotes the development of renewable energy based on the grants received from financial sources.

### List of Terms and Definitions

**CBT entities** are individuals, legal entities and 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 of cultures and traditions.

**Consumers** - private businessmen of sector of tourism based on communities, having intentions to use technologies, equipment, resources for receiving clean energy on the basis of RES and to apply technologies and materials for energy-efficient consumption of resources.

**Decentralisation of the energy sector** - a type of sectoral policy aimed at the development of small-scale energy.

**Distributed energy** - a model of functioning of a unified energy system, which allows small-scale energy entities to supply produced energy to distribution companies.

**Energy audit** - a type of specialised activity to provide expert and consulting services, external evaluation of energy efficiency.

**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.

**Engineering services** - specialised services for technical support of individual activities from the design phase, through the construction of the facility, to the operation of the facility.

**Green Building** (*Green Building, Sustainable building*) is a type of construction and operation of buildings with minimal impact on the environment.

**Green Certificate** - Renewable Energy Certificates are a financial and regulatory tool used worldwide to implement the renewable energy (RE) quota mechanism and support its development.

**Green certification** is a system of evaluating conformity with environmental safety and efficiency requirements, which is applied to buildings.

**Household** is a form of economic activity, for the use of property complex, uniting people by labour relations, the smallest and mass unit of national economy, quite an independent market actor.

**Local energy systems based on RES** - autonomous complexes of generation, transmission, storage and consumption of energy.

**Microgeneration** 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).

**Small-scale energy** is a segment of the energy (market) sector, which includes small-scale generation plants and small-scale generation complexes, including those not connected to centralised power grids, functioning on the basis of traditional fuels and renewable energy sources (RES).

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

**Suppliers:** firms, companies, organizations, individual entrepreneurs producers of goods, works and services.

**Tourism facilities** - buildings, structures, engineering infrastructure.

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

**Tourism services** - an entrepreneur's activity aimed at generating income and profit by meeting the needs of the tourist (citizen).

## ANNEX 4

### List of acronyms

RIA	Regulatory impact assessment
ASMSTI	Agency for Standardisation, Metrology, Certification and Trade Inspection under the Government of Tajikistan
AMS	Antimonopoly Service under the Government of the Republic of Tajikistan
RES	renewable energy sources
GDP	gross domestic product
HEI	Higher Education Institution
GKZ	State Committee on Land Management, Geodesy and Cartography of the Republic of Tajikistan
SCI	State Committee on Investment and State Property Management of the Republic of Tajikistan
GW	gigawatt - unit of power measurement
CC RT	Civil Code of the Republic of Tajikistan
SUE	State Unitary Enterprise
PPP	public-private partnership
HPP	hydroelectric power station
RM	Roadmap
LC RT	Land Code of the Republic of Tajikistan
kV	kilovolt - voltage unit
kWh	kilowatt-hour - unit of electric energy
CTD	Tourism Development Committee under the Government of Republic of Tajikistan
CAS	Committee on Architecture and Construction under the Government of Republic of Tajikistan
CEP	Committee on Environmental Protection under the Government of Republic of Tajikistan
MW	megawatt - power measurement unit
MJ	megajoule - energy unit
SHPP	small hydropower plant
MIOGV	local government executive authority
MSME	micro, small, medium enterprise
MFI	microfinance institutions
MEWR	Ministry of Energy and Water Resources Republic of Tajikistan

MINT	Ministry of Industry and New Technologies of the Republic of Tajikistan
MLME	Ministry of Labour, Migration and Employment of Population of the Republic of Tajikistan
MES	Ministry of Education and Science of the Republic of Tajikistan
MF	Ministry of Finance of Republic of Tajikistan
MJ	Ministry of Justice of the Republic of Tajikistan
IWG	Interagency Working Group
NAS	National Academy of Sciences of Tajikistan
VAT	value added tax
R&D	research and development
TC	Tax Committee under the Government of Republic of Tajikistan
TC RT	Tax Code of the Republic of Tajikistan
NLA	normative legal acts
NDS-2030	National Development Strategy of the Republic of Tajikistan till 2030
OSHC BT	Open Joint Stock Holding Company Barki Tojik
CSOs	Civil Society Organizations
UN	United Nations Organization
GHG	greenhouse gases
UNDP	United Nations Development Programme
DRS	Districts of Republican Subordination,
RT	Republic of Tajikistan
CIS	Commonwealth of Independent States
STD-2030	Strategy for Tourism Development in the Republic of Tajikistan until 2030
SES	solar power plant
CC	Customs Committee under the Government of Republic of Tajikistan
CBT	community-based tourism
FEC	fuel-energy complex
TPP	thermal power plant
TU	technical specifications
FGD	focus group discussion
FT	fixed tariffs
EE	energy efficiency