



Environmental and Social Management Framework

Grid Connections and Off-Grid Solutions in Gorno-Badakhshan Autonomous Region, Tajikistan

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Abbreviations and Acronyms

ACM	Asbestos-containing materials
BP	Bank Procedures (World Bank)
BT	Barqi Tojik
CEP	Committee for Environmental Protection
CDD	Community-Driven Development
DEP	Department on Environmental Protection
EE	Ecological Expertise
EHS	Environmental, Health and Safety issues
ESIA	Environmental & Social Impact Assessment
EA	Environmental Assessment
ESMP	Environmental and Social Management Plan
ESMF	Environmental and Social Management Framework
FCV	Fragility, conflict, and violence
FI	Financial Institution
GP	Good Practice (World Bank)
GOT	Government of Tajikistan
GRM	Grievance Redress Mechanism
IDA	International Development Association / World Bank
IP	Indigenous Peoples
JPC	Jamoat Project Commission
M&E	Monitoring and Evaluation
NGO	Non-Governmental Organization
NSIFT	National Social Investment Fund of Tajikistan
O&M	Operations & Maintenance
PAP	Project Affected Person
PMU	Project Management Unit
RPF	Resettlement Policy Framework
RAP	Resettlement Action Plan
SEE	State Ecological Expertise
TA	Technical Assistance
WB	World Bank

1. Executive Summary

1.1 Foreword

This is the Executive Summary of the Environmental and Social Management Framework (ESMF) for grid-connections and off-grid renewable energy based electrification solutions to the remote mountainous villages in GBAO region of Tajikistan. The document describes in a non-technical manner the proposed project and presents major findings of the Environmental and Social (E&S) risk analysis of the proposed off-grid renewable energy electricity supply solutions. The document provides a summary of environmental and socioeconomic conditions and of the how the proposed projects could affect the environment and people. In addition, Executive Summary describes what actions have to be taken to reduce the effects on the environment or people.

1.2 Background

The World Bank is considering providing support to the Tajikistan Rural Electrification Project (TREP), whose purpose is to provide electricity access to selected settlements in Khatlon and Gorno-Badakhshan Autonomous Oblast (GBAO) regions of Tajikistan. The total cost of the World Bank project is US\$ 31.7 million. TREP is part of the Risk Mitigation Regime (RMR) that is included in the upcoming World Bank Country Partner Framework for the Republic of Tajikistan for fiscal years 2019-2023.

TREP is comprised of two components:

Component 1: Provision of electricity access to target settlements in GBAO region. This component will have the following sub-components.

Sub-component 1.1: Construction of micro-grids, and connection of consumers to micro-grids and centralized distribution network of Pamir Energy Company (PEC). This sub-component will finance provision of electricity supply to 61 settlements in GBAO region with total population of about 11,666. The investments will cover: (a) construction of electricity generation infrastructure, which will include micro-grids comprised of Solar PV, small hydro, wind, and battery energy storage systems (BESS); (b) distribution infrastructure, including expansion of 10 and 0.4 kV distribution lines and distribution transformers; and (c) connections and internal wiring for households and public facilities (e.g. hospitals, schools, kindergartens) to alleviate consumer affordability barriers.

Sub-component 1.2: Project implementation support to Pamir Energy, technical assistance for additional geological site investigation works for Sebzor Hydropower Project (HPP), and promotion of energy efficiency (US\$1.4 million IDA grant).

Component 2: Provision of electricity access to target settlements in Khatlon region. This component will have the following sub-components.

Sub-component 2.1: Connection of target settlements to the centralized distribution network of Barqi Tojik (BT). This sub-component will finance connection to the electricity distribution network of 74 settlements, bordering Afghanistan, in the Khatlon region. The total population of the target settlements is about 31,460 people. The investments will cover the cost of distribution infrastructure, including construction of 35/10/0.4 kiloVolt (kV) distribution lines, installation of additional distribution transformers in existing substations; as well as connections and internal wiring costs for households and public facilities (e.g. hospitals, schools, kindergartens) to alleviate consumer affordability barriers. For all target settlements, access to energy services will be ensured by

connecting the settlements to BT's centralized network because this is the least economic cost solution considering the proximity of the target settlements to the power distribution network. Most of the settlements are located within 0.5-2 kilometers of the distribution system.

Sub-component 2.2: Project implementation support to BT. This sub-component will finance the cost of: (a) PMC to help BT with preparation of bidding documents for works to connect target settlements to its distribution grid; carrying of tenders for procurement of contractors to connect the settlements to the distribution grid of BT; technical supervision of grid-connection activities; and compliance with environmental and social requirement; and (b) monitoring and evaluation costs related to measuring availability of electricity service, efficiency of citizen engagement and addressing gender gaps under the Project.

The TREP is being prepared under the World Bank's new Environment and Social Framework (ESF), which came into effect on October 1, 2018, replacing the Bank's Environmental and Social Safeguard Policies. Under the ESF, all World Bank clients have agreed to comply with ten Environmental and Social Standards (ESS)¹ in investment project lending financed by the Bank.

1.3 Main Objectives of ESMF

The Environmental and Social Management Framework (ESMF) document has been prepared for the provision of new off-grid renewable energy based solutions to the remote mountainous villages in GBAO region of Tajikistan. This includes electricity supply and generation solutions for 61 settlements in GBAO (est. total of 12,286 people) by implementing the following types of projects in Darvaz, Vanj, Rushan, Shugnan, Roshtkala, Ishkashim and Murghob districts:

- ❖ Small hydro power plants (SHPP);
- ❖ Solar panels, small wind farms (a series of wind towers) and
- ❖ Establishing 'last-mile grid connections', which involve construction of high/low-voltage power transmission lines connecting kishlaks with existing national electricity distribution grids.

The main objective of the ESMF is to provide a procedure/guideline for environmental and social appraisal of either individual off-grid renewable energy projects (e.g. small hydro, solar and solar/wind) or a series of such projects in conducting E&S appraisals and accounting for cumulative E&S effects as a result of their implementation.

This ESMF will ensure that the implementation of these individual and/or a series of individual renewable energy generation projects will be carried out in an environmentally and socially sustainable manner. It is anticipated that this ESMF will serve as an umbrella for further Pamir Energy E&S appraisal activities in advancing individual projects to a more detailed level. It is also intended that for each individual project or a set of individual projects, a more detailed E&S risk assessment will be undertaken by Pamir Energy followed a development of a detailed ESMP and a round of project-

¹ The ten ESSs are: ESS 1) Assessment and Management of Environmental and Social Risks and Impacts; ESS 2) Labor & Working Conditions; ESS 3) Resource Efficiency and Pollution Prevention and Management; ESS 4) Community Health and Safety; ESS 5) Land Acquisition, Restrictions on Land Use and Involuntary Resettlement; ESS 6) Biodiversity Conservation and Sustainable Management of Living Natural Resources; ESS 7) Indigenous Peoples / Sub-Saharan African Historically Underserved Traditional Local Communities; ESS 8) Cultural Heritage; ESS 9) Financial Intermediaries; and ESS 10) Stakeholder Engagement and Information Disclosure. Detailed information on the ESF and ten ESSs can be found at <https://www.worldbank.org/en/projects-operations/environmental-and-social-framework>.

specific stakeholder engagement and public consultations guided by the conceptual SEP that was developed for Pamir Energy.

Overall, the end-purpose of ESMF is to guide Pamir Energy in determining the requirements that need to be placed in contracts for final design and construction of off-grid renewable power generation project and last mile connections so that environmental and social impacts are managed in accordance with World Bank requirements and Tajikistan laws.

1.4 Project Summary

The projects under TREP will include electrification solutions for GBAO comprising the following schemes:

- *Construction of small hydropower plants (SHPPs)* for 11 villages. This would involve building a small weir, diversion of water to a powerhouse, and generation of electricity by small turbines. It would also involve construction of distribution lines from the powerhouses to houses to be electrified.
- *Construction of photovoltaic solar systems* for 18 villages. This would involve installing solar panels at a location near the settlement and connecting the cells to houses to be electrified.
- *Construction of combined wind and photovoltaic solar systems* for 6 villages.
- Implementing last-mile connections (power connections of villages to national high voltage electricity grid) for 26 villages.

1.5 ESMF Assessment Framework and Methodology

Several methods and activities were applied in the preparation of this ESMF to meet the World Bank ESSs and Tajik legal requirements, namely:

- Stakeholder consultations and participation;
- Collation of baseline data on the E&S conditions (regional scale);
- Identification and analysis of key major E&S risks associated with the proposed projects;
- Identification of potential E&S mitigation measures which will reduce and control potential major adverse E&S impacts of the proposed projects;
- Preparation of screening procedures to be used while screening the proposed projects;
- Formulation of a standardized environmental and social management and monitoring plan (ESMP).

1.6 Summary of project activities that could affect E&S conditions

The projects will involve a variety of activities, many of which could potentially affect environmental resources and people if they are not carefully designed and implemented. The activities that could cause the most important effects include:

For small hydropower plants (SHPPs) (assuming run-of-river schemes):

- Construction of small hydropower plants, including intake, weir, reservoir, sand trap, fish passages, power house, substations and headrace structures. The construction works would require clearing an area for vehicles and equipment, expanding existing or constructing new

access roads. Resettlement/compensation could also be triggered during pre-construction activities, which need to be resolved prior to beginning of construction works.

- During SHPPs operation, potential effects on water quantity are expected, since the water will be diverted from its original flow path.
- Limited and temporary effects on water quality conditions are expected during construction period, such as spills of chemicals reaching the stream channels during construction activities close to the rivers, as well as increased sediment wash out from construction areas reaching the stream and impairing water quality conditions downstream.

For transmission lines and substations ('last-mile' connections):

- Construction of transmission lines corridors and towers. In forested or partially vegetated areas, trees would be cut, so they could not touch the line or fall on the line. The construction works would require clearing an area for vehicles and equipment to use for installing foundations. The tower construction will comprise the following activities: land-clearing, foundation excavation, foundation installation, tower assembly and erection. Land use and potential resettlement aspects could also be triggered and require examination at pre-construction phase.
- Conductoring (placing wires between towers) the entire line. This would involve unrolling conductor wire, raising it to towers and stringing the wires between the towers on either side of the two rail lines.
- Routine maintenance of the vegetation control zone. Every 6-8 years, trees and other plants will be pruned back as needed to maintain clearance from the lines.
- Construction and maintenance of new substations. It may require partial land-clearing and construction of buildings and installation of equipment.

For solar and wind plants:

- The construction works would require vegetation clearing works for access roads.
- Resettlement/compensation could also be triggered during pre-construction activities, which need to be resolved prior to beginning of construction works.

1.7 Summary of Key E&S Risks and Measures to Avoid, Reduce or Control Unavoidable Impacts

This subsection and Table 1 and Table 2 provide a summary of ESMF analysis on key environmental and social impacts, relevant WB ESSs and measures to avoid, reduce or control unavoidable impacts (so-called *mitigation measures*).

More details on project-specific environmental and social risks associated with construction of SHPPs, solar and wind and connecting high-voltage/low-voltage power transmission lines are provided in Section 7 of the ESMF.

1.8 Management planning and ways forward

The ESMF provides a standardized Environmental and Social Management Plan (ESMP) (Section 8) for the proposed projects. The Plan has been developed to clearly identify measures that must be implemented to avoid, reduce, or otherwise mitigate potential moderate and major adverse impacts identified in the E&S analysis. It also identifies best management practices (BMPs) and other mitigation measures that will minimize, reduce, or eliminate many of the impacts of minor or even

negligible significance which could escalate to become more important if they are not handled properly.

It is anticipated, that Pamir Energy will conduct initial screening of the proposed individual project or a series of projects as recommended in Section 9 of this document, followed by an E&S appraisal based on the project categorization.

Pamir Energy will revise the ESMP for each individual project accordingly, and will ensure that all requirements specified in the ESMP are fully met by the company and its construction subcontractors.

Stakeholder Engagement Plan (SEP) was developed for the off-grid GBAO electrification project in accordance with the World Bank ESS10 and Tajik EIA legislation requirements. The SEP will define a program for stakeholder engagement for the proposed projects, including public information disclosure and consultation, throughout the construction and operation of the proposed projects. The SEP will also outline the ways in which Pamir Energy and contractors will communicate with stakeholders and includes a mechanism by which people can raise concerns, provide feedback, or make complaints about Pamir Energy, the contractors, and the projects.

In addition, the present document outlines the Grievance Resolution Mechanism (GRM) for Pamir Energy, which will be implemented to address issues and complaints from external stakeholders in an efficient, timely, and cost-effective manner (Section 11). Pamir Energy will be responsible for managing the stakeholder GRM, but many or most grievances are likely to result from actions of the construction contractors and so will need to be resolved by the contractors themselves, with Pamir Energy oversight.

1.9 Supervision and monitoring of environmental and social performance

Environmental supervision and monitoring during projects implementation will provide information about the project environmental impacts and the effectiveness of applied mitigation measures. Such information enables the subproject beneficiaries and the Bank to evaluate the success of mitigation as part of project supervision, and, allows corrective action to be taken when needed. The ESMF requires that monitoring section of the ESMPs should provide: (a) details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements; and, (b) monitoring and reporting procedures to (i) ensure early detection of conditions that necessitate mitigation measures, and (ii) furnish information on the progress and results of mitigation; and (c) institutional responsibilities.

1.9.1 Potential environmental impacts and mitigation measures

Table 1. Summary of key potential environmental impacts and mitigation measures

nn	Receptor	Off-grid solution	Risk/Impact	Relevant World Bank Standards	Mitigation and/or good management practices
1.	Air Quality	SHPP, solar, wind and t-line	Increased dust and PM ₁₀ during construction	WB ESS 1,3&4	Require contractor to develop Air quality management plan Minimization of fugitive dust using enclosures, dust collectors, covering of loads, wetting/sprinkling roads and other appropriate measures.
			Increased gaseous emissions during construction	WB ESS 1,3&4	Require contractor to develop Air quality management plan Use of modern, well maintained vehicles; ensuring vehicle emissions are in compliance with Tajik and international emission standards; switching off of machinery when not in use; controls on vehicle movements through populated areas through use of approved access routes.
2.	Surface water resources	SHPP	Reduction in water quantity and quality of the streams where SHPPs are proposed to be constructed	WB ESS 1,3&6	Thorough evaluation of potential adverse impacts on stream's water quantity and quality during detailed design/feasibility study
		SHPP			In the SHPP design consider integrating into design proper fish passage and sand trap structures
		SHPP, solar, wind and t-line	Spills of chemicals and hazardous materials during construction activities that could reach the streams with surface runoff		Require contractor to develop a Chemicals storage, refuelling and spill response plan To prevent contamination from spills of fuel, oil and chemicals, the liquids have to be stored in designated secure areas. Refueling must be conducted over impervious surfaces. Spill cleanup kits should be available at all areas and in all vehicles. Inspection of construction vehicles to identify and repair leaks or damaged fuel/lubricant lines should be performed on a regular basis.
3.	Groundwater	SHPP, solar, wind and t-line	Spills of chemicals and hazardous materials	WB ESS 1,3&6	Require contractor to develop a Chemicals storage, refuelling and spill response plan

nn	Receptor	Off-grid solution	Risk/Impact	Relevant World Bank Standards	Mitigation and/or good management practices
			during construction and operations		Especially for the construction works on streams' floodplains: ensure fuel, oil and chemicals, the liquids are stored in designated secure areas. Refueling must be conducted over impervious surfaces. Spill cleanup kits should be available at all areas and in all vehicles.
4.	Soils	SHPP, solar, wind and t-line	Accelerated rates of soil erosion and local contamination of soil due to fuel, oil and chemicals spills.	WB ESS 1,3&6	<p>Require contractor to develop a Soil management and erosion control plan</p> <p>Storage of the removed soil in stockpiles and taking the soil away or return it back in. Planting vegetation on the disturbed ground with native plants, compacting and/or stabilizing disturbed surfaces as soon as practicable.</p> <p>Require contractor to develop a Chemicals storage, refuelling and spill response plan</p> <p>To prevent contamination from spills of fuel, oil and chemicals, the liquids have to be stored in designated secure areas. Refueling must be conducted over impervious surfaces. Spill cleanup kits should be available at all areas and in all vehicles. Inspection of construction vehicles to identify and repair leaks or damaged fuel/lubricant lines should be performed on a regular basis.</p>
5.	Ecosystems, flora and fauna	SHPP, solar, wind and t-line	Site clearance and construction in areas of the proposed locations that have not yet experienced development.	WB ESS 6	Avoid development in areas which currently contain vegetation, in favor of previously developed land; Remove vegetation only as a last resort and protect it where possible during construction; Provide compensatory planting of vegetation for any affected areas.
		SHPP	In-stream water abstraction/diversion and release downstream	WB ESS 6	At feasibility study must ensure the design and proposed run-of-river HPP scheme will sustain environmental flow in the river channel.

nn	Receptor	Off-grid solution	Risk/Impact	Relevant World Bank Standards	Mitigation and/or good management practices
		SHPP, solar, wind and t-line	Destruction or modification of habitat or loss of critical habitat	WB ESS 6	<p>In consultation with the appropriate authorities Pamir Energy will design and conduct a survey of flora and fauna within the project area of influence to identify protected or sensitive habitat and species. If critical habitat is present, Pamir Energy will ensure that Biodiversity Action Plan (BAP) is developed prior to start of construction stage. BAP will specify measures to prevent or reduce impacts during construction and also during future operation and maintenance.</p> <p>During construction ensure minimum biodiversity damage due to land clearing; No damage outside boundaries; Limited damage to ground surface and root zone.</p>
6.	Land use	SHPP, solar, wind and t-line	Loss of agricultural land (arable land), pastured or orchards if not properly mitigated	WB ESS 1&5,10	Develop and implement Resettlement and Compensation Plan (RACP) based on Resettlement Policy Framework (RPF)
7.	Geohazards: earthquakes, GLOFs, landslides, debris flows, rockfalls	SHPP, solar, wind and t-line	Potential risks of damaging SHPP facilities and structures, solar panels, wind towers and transmission line towers	WB ESS 1	<p>Prior to commencement of construction activities, complete a detailed Geomorphologic hazard assessment study in order to reduce the risk of selecting project location in high risk zones.</p> <p>Ensure the design of proposed projects can withstand strong earthquakes.</p>
8.	Noise and vibration	SHPP, solar, wind and t-line	Temporary disturbance from construction and/or operational activities, impacting upon sensitive receptors (nuisance to nearby villagers) and local fauna	WB ESS 1&6	<p>Require contractor to develop a Noise Management Plan</p> <p>Ensure construction noise will be limited to restricted times (daylight); During operations the engine covers of generators, air compressors and other powered mechanical equipment shall be closed, and equipment placed as far away from residential areas as possible.</p>

1.9.2 Potential social and economic impacts and mitigation measures

Table 2. Summary of key social and economic impacts and mitigation measures

Receptor	Impact/Risk	Relevant World Bank Standard	Mitigation and/or good management practices
Impacted communities and businesses and project stakeholders	Inadequate stakeholder engagement	WB ESS 1	Take all required steps in order to ensure that all Project stakeholders are informed, consulted and protected through grievance mechanisms in accordance with WB requirements
Community near project areas	Community health and safety (accidents during construction or by trespassers) at risk by increased traffic during construction	WB ESS 4	Require contractor to develop a Traffic Management Plan Reduce unnecessary traffic during peak hours and for heavy vehicles select routes with strong infrastructure or pay for upgrading to minimize damages.
	Community functions: Risk of disrupting community function as a result of generating noise, dust, presence of outsiders during construction stage	WB ESS 4 WB ESS 3	Site away from the nearby residential areas as much as possible, and take all dust reduction measures, including watering unpaved roads, and only operating during agreed daylight hours
	Workers influx: Risk for Community disruption, increased crime, etc.	WB ESS 2	<ul style="list-style-type: none"> - Worker Code of Conduct that will prescribe certain behaviors and require others; - Require contractor to enforce the Code, with penalties leading up to dismissal. - -Appoint a Supervision Consultant - Contractor to consult with local authorities and community leaders, which will ensure they (that is, project managers) are aware of incidents and can take appropriate action if the issue arises.
	Community health and safety at risk: diseases, violent behavior (including GBV), accidents, emergencies	WB ESS 2 WB ESS 4	
	Physical and economic displacement: Risk of permanent loss of land; risk of loss of wood resource; risk of being not compensated for physical	WB ESS 5	Compensation for loss of use of land to be negotiated with owner/farmer, with compensation at a value at least fair market value (for permanent crop loss, not necessarily land, as appropriate). Development and implementation of a Resettlement and Compensation Plan (RACP) based on Resettlement Policy Framework (RPF)

Receptor	Impact/Risk	Relevant World Bank Standard	Mitigation and/or good management practices
Economy	Employment opportunities for local residents during construction stage	WB ESS 2	Ensure local workforce receives priority in hiring for construction
	Providing electricity and generating income	-	Sustain constant electricity generation and supply
	Partial loss of land or economic use of land (pastures, arable lands, orchards)	WB ESS 5	Compensation for loss of use of land to be negotiated with owner/farmer, with compensation at a value at least fair market value (for permanent crop loss, not necessarily land, as appropriate). Development and implementation of a Resettlement and Compensation Plan (RACP) based on Resettlement Policy Framework (RPF)
Social infrastructure	Potential risk of damaging existing public/rural/gravel/earth roads	WB ESS 4	Require contractor to develop a Traffic Management Plan
Cultural heritage and heritage	Risk of damaging cultural monuments, archaeological artefacts, cemeteries	WB ESS 8	Require contractor to develop and follow a chance find procedure
Workers for construction and operation	Occupational hazards	WB ESS 1 WB ESS 2	Adhere to all international labor OHS (Occupations Health and Safety) standards, including OHS training, during all phases of the Project
Infrastructure to support construction and operations	Increased demand for water, electricity and transportation	WB ESS 1&4 and ESS10	Take all required steps in order to ensure that all impacted stakeholders are informed, consulted and protected through grievance mechanisms in accordance with WB standards. Consider developing a community development program. In the development include improved services to surrounding communities as appropriate to improve overall service to residents and impacted communities.

1.10 Reporting

Supervision of the ESMF and ESMPs implementation will be the responsibility of Pamir Energy, which periodically (on quarterly basis) will prepare short reports on ESMPs implementation to be submitted to the Pamir Energy, which will compile these reports and semi-annually will present short information about the ESMP implementation as part of the Progress Reports to the World Bank.

1.11 Integration of the ESMPs into project documents

The ESMPs provisions will form part of the design documents for the project, and, will be included in construction contracts for selected subprojects, both into specifications and bills of quantities. Respectively the Contractors will be required to include the cost of ESMP requirements in their financial bids and required to comply with them while implementing the project activities. The bidding documents for selecting the contractors will include specifications that would ensure effective implementation of environmental, health and safety performance criteria by the winning bidder and in particular: (i) preventing/limiting disturbance of soils and vegetation removal to the minimum; (ii) prevent soil compaction as well as other potential impacts; (iii) ensuring that all ground disturbing activities are conducted consistent with the construction requirements; (iv) developing a traffic management plan that include measures to ensure work zone safety for construction workers and the travelling public; (v) conducting all activities on installing new electrical equipment, implementing civil works, etc., will be done with due care, ensuring labor safety; etc. The contract with winning bidder will include an obligation to inform the communities representatives and Pamir Energy of any incidents involving community members and Pamir Energy of significant accidents and events involving contract and subcontract workers.

1.12 Conclusion

The E&S risk assessment process within the ESMF identified a number of potential environmental and social impacts, which were considered to require some form of mitigation or management in order to reduce their significance to an acceptable level. In addition, several areas have been identified as requiring further investigation and analysis in order to better understand the nature of the impacts.

The process did not identify any impacts which are considered to be fatal flaws in the proposed off-grid renewable energy generation project(s) provided mitigation and management measures are fully implemented.

2. Project Context

The World Bank is considering providing support to the Tajikistan Rural Electrification Project (TREP), whose purpose is to provide electricity access to selected settlements in Khatlon and Gorno-Badakhshan Autonomous Oblast (GBAO) regions of Tajikistan. The total cost of the World Bank project is US\$ 31.7 million. TREP is part of the Risk Mitigation Regime (RMR) that is included in the upcoming World Bank Country Partner Framework for the Republic of Tajikistan for fiscal years 2019-2023.

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Sub-component 1.2: Project implementation support to Pamir Energy, technical assistance for additional geological site investigation works for Sebzor Hydropower Project (HPP), and promotion of energy efficiency (US\$1.4 million IDA grant).

Component 2: Provision of electricity access to target settlements in Khatlon region. This component will have the following sub-components.

Sub-component 2.1: Connection of target settlements to the centralized distribution network of Barqi Tojik (BT). This sub-component will finance connection to the electricity distribution network of 74 settlements, bordering Afghanistan, in the Khatlon region. The total population of the target settlements is about 31,460 people. The investments will cover the cost of distribution infrastructure, including construction of 35/10/0.4 kiloVolt (kV) distribution lines, installation of additional distribution transformers in existing substations; as well as connections and internal wiring costs for households and public facilities (e.g. hospitals, schools, kindergartens) to alleviate consumer affordability barriers. For all target settlements, access to energy services will be ensured by connecting the settlements to BT's centralized network because this is the least economic cost solution considering the proximity of the target settlements to the power distribution network. Most of the settlements are located within 0.5-2 kilometers of the distribution system.

Sub-component 2.2: Project implementation support to BT. This sub-component will finance the cost of: (a) PMC to help BT with preparation of bidding documents for works to connect target settlements to its distribution grid; carrying of tenders for procurement of contractors to connect the settlements to the distribution grid of BT; technical supervision of grid-connection activities; and compliance with environmental and social requirement; and (b) monitoring and evaluation costs related to measuring

availability of electricity service, efficiency of citizen engagement and addressing gender gaps under the Project.

The TREP is being prepared under the World Bank’s new Environment and Social Framework (ESF), which came into effect on October 1, 2018, replacing the Bank’s Environmental and Social Safeguard Policies. Under the ESF, all World Bank clients have agreed to comply with ten Environmental and Social Standards (ESS) in investment project lending financed by the Bank.

This report presents the Environmental and Social Management Framework (ESMF) for provision of new off-grid renewable energy based solutions (small hydro, solar and wind) to the remote mountainous villages in GBAO region of Tajikistan. More specifically, this includes electricity supply and generation solutions for 61 settlements in GBAO (est. total of 12,286 people) by installing small hydro power plants, solar panels, small wind farms (towers) and/or establishing last-mile grid connection in Darvaz, Vanj, Rushan, Shugnan, Roshtkala, Ishkashim and Murghob districts (Figure 1). The individual projects are anticipated to be financed by the World Bank and implemented by Pamir Energy Company (PEC). The off-grid renewable energy based solutions for GBAO is a constituent of a more comprehensive Tajikistan Rural Electrification Project (TREP), which is supported by the World Bank and comprise the following key elements:

- Construction of a run-of-river 11 MW Sebzor small hydropower plant (Sebzor HPP) with associated 18 km 110kV transmission line linking Sebzor HPP and substation in Khorog;
- Construction of a 63km 110kV power transmission line from substation in Khorog to the substation in Qozideh.
- Off-grid solutions for electrification of more than 50 settlements in Khatlon region with total population of about 10,000 people, which are bordering with Afghanistan, and do not have electricity service.
- ‘Last mile grid connection’ individual projects, which mainly involve construction of distribution lines from unelectrified settlements to the national grid.

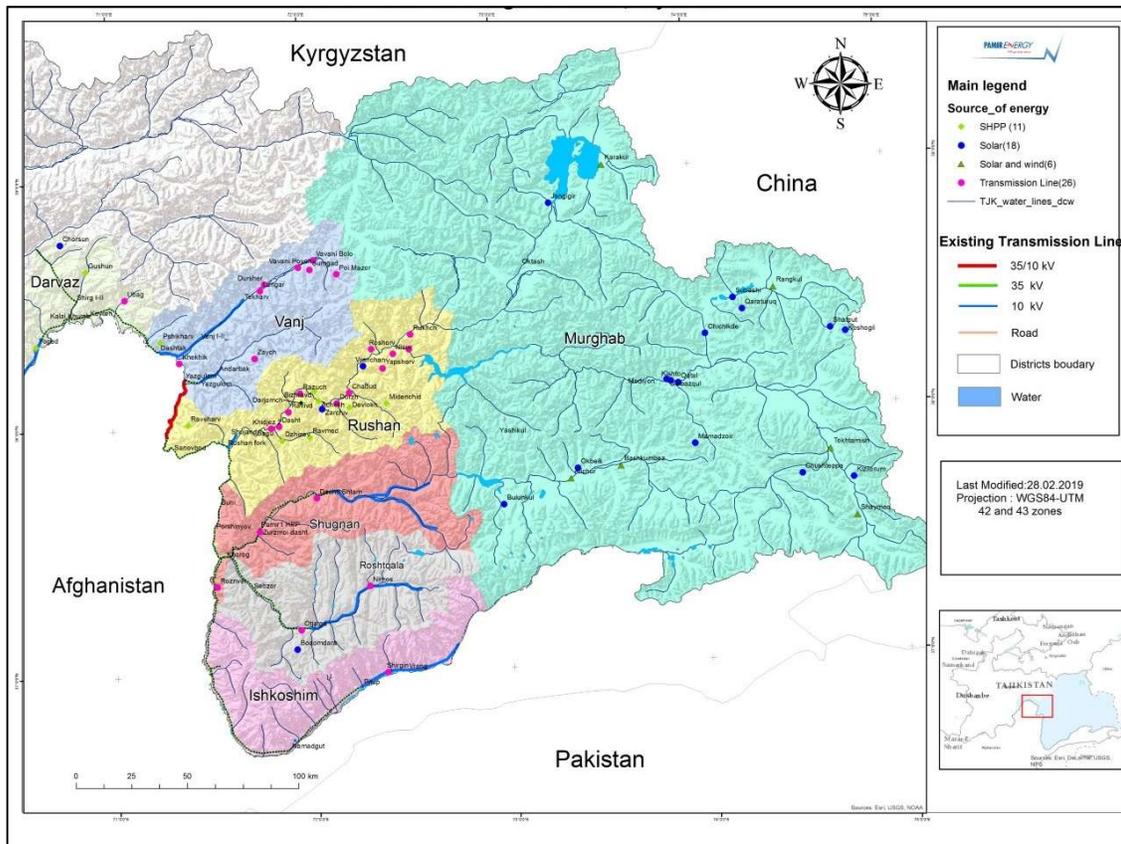


Figure 1. Nonelectrified villages in GBAO

3. Project Summary

In 2018, Pamir Energy conducted a pre-feasibility study for potential off-grid renewable energy solutions and so-called ‘last-mile’ connections (transmission lines) alternatives for GBAO. The study involved desk-top analysis of information, as well as actual multiple visits and observation tours through the potential locations suitable for development of renewable energy projects and connections to the grid. For various locations across GBAO, the study recommended considering the following three types of renewable energy projects: (i) construction of ‘run-of-river’ small hydropower plants (SHPP); (ii) solar power plants or installations; (iii) wind farms (small sizes).

Pamir Energy specialists have visited more than 50 settlements of different sizes, interviewed a number of local residents and heads of Jamoats. As the main conclusion of the preliminary analysis and study, a list of non-electrified settlements in GBAO with potential renewable energy and/or transmission line connection scenarios for each location was produced with indication of potential for each type of off-grid solutions considered (Figure 1 and Table 3).

Table 3. Villages to be electrified in GBAO

No	Name of settlement	Households	Population
Darvaz region			
1	Gushin	9	76
2	Chursun	4	25
3	Ubag	5	30
4	Yodged	121	796
<i>Region totals</i>		<i>139</i>	<i>927</i>
Vanj region			
5	Pshikharv	25	180
6	Zaych	13	70
7	Dursher	5	25
8	Poi Mazor	47	270
9	Vanvani Bolo	41	240
10	Vanvani Poyon	17	120
11	Vavani Bolo	6	40
12	Vavani Poyon	1	6
13	Sumgat	5	50
<i>Region totals</i>		<i>160</i>	<i>1001</i>
Rushan region			
14	Devlokh	8	40
15	Dorzh	36	108
16	Barchidev	39	200

No	Name of settlement	Households	Population
17	Nisur	47	232
18	Roshorv	191	1131
19	Yapshor	55	150
20	Rukhch	50	272
21	Jizev	13	76
22	Vranchen	8	38
23	Ravmed	65	300
24	Bijravd	4	18
25	Khidjez-2	18	92
26	Dasht-2	8	36
27	Midenchid	8	38
28	Chidud	32	149
29	Achirikh	21	68
30	Zarchiv	4	26
31	Darzhomch	56	220
32	Ravivd	58	227
33	Razuch	56	213
34	Ravsharv	5	40
<i>Region totals</i>		782	3674
Shugnan Region			
35	Ronzver	7	35
36	Zurzmoi Dasht	17	102
37	Dashti Shtam	38	228
<i>Region totals</i>		62	365
Roshtqala region			
38	Nimos	2	10
39	Bodomdara	1	6
40	Otazhatga	3	16
<i>Region totals</i>		6	32
Ishkashim region			
41	Shirgin	7	36
<i>Region totals</i>		7	36
Murghab region			
42	Alichur	296	888
43	Bashkumbez	160	648

No	Name of settlement	Households	Population
44	Bulunkul	54	250
45	Tokhtamish	168	795
46	Shaimoq	203	719
47	Subashi	14	58
48	Oqbeik	16	60
49	Qizilorum	10	51
50	Chueshteppa	7	28
51	Koshagil	11	44
52	Mamadzoir	13	52
53	Qaraqul	154	777
54	Rangkul	300	1196
55	Chichikde	33	315
56	Oqtal	8	40
57	Kishto	5	20
58	Gulbazqul	3	12
59	Shatput	28	103
60	Qaraturuq	24	123
61	Jangigir	11	72
<i>Region totals</i>		<i>1518</i>	<i>6251</i>

As demonstrated in Figure 1, the majority of potential small hydro power projects (SHPPs) are clustered to the Bartang river basin in Rushan district of GBAO. The highest potential for solar power generation projects were identified in the Murghab district in mountainous settlements of the central and north-eastern parts of the district. Vanj and Rushan districts have also been identified as having high potential for last-mile connections to the national grid.

More specifically, the electrification scheme will include:

- *Mini-hydropower plants* for 11 villages. This would involve building a small weir, diversion of water to a powerhouse, and generation of electricity by small turbines. It would also involve construction of distribution lines from the powerhouses to houses to be electrified.
- Photovoltaic solar systems for 18 villages. This would involve installing solar panels at a location near the settlement and connecting the cells to houses to be electrified.
- Combined wind and photovoltaic solar systems for 6 villages.
- Last-mile connections for 26 villages.

Connecting the small power plants to houses (and possibly other buildings, as noted) will require construction of 32 kilometers of 35kV transmission lines, about 117 kilometers of 10kV line, and 87.5 kilometers of 4kV line. Construction of these lines would be the same as for the last-mile connections described above.

Land will be needed for the small power plants. Pamir Energy anticipates it will be possible to avoid having the power plants use what are now household plots, and will also avoid trees and orchards wherever possible. Otherwise, no land will be needed for permanent use except of the poles themselves, which will occupy an area somewhat less than one square meter and will not restrict any activities or future land use. In addition, the contractor will require some small amounts of land for temporary use for storage and preparation. Construction of the power plants will require multiple teams of 50 or more workers, with most from local communities but at least a few engineering and supervisory personnel coming from outside. Construction activities at any single plant would be completed within a single construction season (typically April to November). Work crews for the distribution lines would come predominantly from local communities, with only a few supervisory and technical personnel coming from outside. Construction of the lines would not take more than a few days or weeks in or near any settlement.

At present, the off-grid renewable energy solutions for GBAO project is currently under advanced planning phase awaiting further financial support.

4. Objectives of ESMF

The purpose of this Environmental and Social Management Framework (ESMF) is to provide a procedure/guideline for environmental and social appraisal of either individual renewable energy projects (e.g. small hydro, solar and solar/wind) or a series of such projects in conducting E&S appraisals and accounting for cumulative E&S effects as a result of their implementation. The ESMF will guide Pamir Energy in determining what additional surveys or studies are needed and in determining the requirements that need to be placed in contracts for final design and construction of either a small hydropower plant or a small solar or wind farm and/or transmission lines so that environmental and social impacts are managed in accordance with World Bank requirements and Tajikistan law.

The main objective of this ESMF is to ensure that the implementation of individual and/or a series of individual renewable energy generation projects will be carried out in an environmentally and socially sustainable manner.

It is anticipated that this ESMF will serve as an umbrella for further Pamir Energy E&S appraisal activities in advancing individual projects to a more detailed level. It is also intended that for each individual project or a set of individual projects, a more detailed E&S risk assessment will be undertaken by Pamir Energy followed a development of a detailed ESMP and a round of project-specific stakeholder engagement and public consultations guided by the conceptual SEP that was developed for Pamir Energy.

5. Applicable Legal Requirements

This chapter describes the national and international legal framework that will apply to the prospective project(s).

5.1 National Legal and Regulatory Framework

The “framework environment law” or **Law on Environment Protection** was adopted in 2011 (21 July 2011, № 208). The previous Law on Nature protection was adopted in 1993, amended in 1996, 2002, 2004 and 2007, and replaced by this new law 2011. The new Law stipulates that Tajikistan's environmental policy should give priority to environmental actions based on scientifically proven principles to combine economic and other activities that have an impact on the environment with nature preservation and the sustainable use of resources. The Law defines the applicable legal principles, the protected objects, the competencies and roles of the Government, the State Committee for Environment Protection, local authorities, public organizations and individuals. The Law stipulates also measures to secure public and individual rights to a safe and healthy environment and requires a combined system of ecological expertise and environmental impact assessment of any decision on an activity that could have a negative impact on the environment. The Law also defines environmental emergencies and ecological disasters and prescribes the order of actions in such situations, defines the obligations of officials and enterprises to prevent and eliminate the consequences, as well as the liabilities of the persons or organizations that caused damage to the environment or otherwise violated the Law. The Law establishes several types of controls over compliance with environmental legislation: State control, ministerial control, enterprise control and public control. State control is affected by the Committee for Environment Protection, the Sanitary Inspectorate of the Ministry of Health, the Inspectorate for Industrial Safety and the Mining Inspectorate. Public control is carried out by public organizations or trade unions and can be exercised with respect to any governmental body, enterprise, entity or individual.

5.1.1 Environmental and social impact assessment in Tajikistan

Two laws establish requirements for impact assessment: the **Law on Environment Protection** and the **Law on Ecological Expertise**. Chapter V, Articles 35-39 of the Law on Environment Protection (2012), introduces the concept of state ecological review (literally, “state ecological expertise” – SEE), the purpose of which is to examine the compliance of proposed activities and projects with the requirements of environmental legislation and standards and with the ecological security of society. These laws emphasize the cross-sectoral nature of SEE, which must be scientifically justified, comprehensive, and objective and which should lead to conclusions in accordance with the law. Financing of programs and projects is allowed only after a positive SEE finding. Among activities and projects subject to state ecological review are construction and reconstruction of various types of facilities irrespective of their ownership. The SEE must conclude that economic and other activities can be implemented in accordance with existing environmental standards and norms and have sufficient environmental protection and mitigation measures to prevent and avoid pollution and enhance environmental quality.

An Environmental Impact Assessment (EIA) study is a component of the State Ecological Expertise, as set out in the 2011 amendments to the Environmental Protection Law and in the Law on the State Ecological Expertise (2012). The EIA is the responsibility of the project proponent and must analyze the short- and long-term environmental, genetic, economic, and demographic impacts and consequences. The State Ecological Expertise for all investment projects is the responsibility of the Committee for Environmental Protection (CEP) and its regional offices, under the Government of Tajikistan. Also, the 2012 Law on the

State Ecological Expertise requires all civil works to be assessed for their environmental impacts and the proposed mitigation measures reviewed and monitored by the CEP.

The legal and regulatory system for EIAs also include:

- Procedure of Environmental Impact Assessment, adopted by the Resolution of the Government of the Republic of Tajikistan No. 509 as of 01.08.2014 (see below)
- Procedure to implement State Ecological Expertise, approved by the Resolution of the Government of the Republic of Tajikistan No. 697 as of December 3, 2012
- Guidelines on the composition and order of development of content and structure of documentation to be submitted for review as part of SEE
- List of objects and types of activity for which preparation of documentation on Environment Impact Assessment is mandatory, adopted by the Resolution of the Government of the Republic of Tajikistan No. 253 as of June 3, 2013. This extensive list contains 180 types of activities that are grouped according to four environmental impact categories (from (I) "high risk" to (IV) "local impact"). If the facility is not included in the list, then it is not required to pass an EIA or a SEE.

EIA responsibilities. Conducting the EIA study is the responsibility of the project proponent. The Procedure for carrying out the EIA (Government Resolution No. 509 of 2014) establishes general requirements for contents of the EIA documentation. The State Ecological Expertise for all investment projects is the responsibility of the Committee for Environmental Protection under Government of Tajikistan (CEP) and its regional offices. Furthermore, according to the 2012 Law on the State Ecological Expertise, all civil works, including rehabilitation, should be assessed for their environmental impacts and the proposed mitigation measures reviewed and monitored by the CEP.

Screening categories. The laws on Environment Protection and Ecological Expertise stipulate that the Government is to approve a list of activities for which a complete EIA is mandatory. The current guidelines for EIAs do not provide for any preliminary assessment of the project to decide on the need for an EIA (screening) or define the scope of the EIA's contents. This is because the list of objects and activities for which EIAs are required is already very detailed.

The Law on Environmental Expertise provides for the rights of citizens to conduct Public Environmental Expertise (art. 7). Tajikistan is also party to the 1998 Aarhus Convention (July 17, 2001) that contains provisions for public EE. The 2014 Procedure (Order) for Conducting an EIA also describes procedures for public participation. Public participation procedures are envisaged for all categories of projects, although in practice they are mainly applied to Category I projects. The Procedure (Order) for conducting the EIA of 2014 changed the focus and timing of public discussions. Compared to the 2006 version of the Procedure for preparing EIAs which provided the opportunity for public inputs during the scoping stage while drafting the technical task, the 2014 version of the Procedure provides space for public discussions only after the preparation of the EIA report.

5.1.2 Other relevant legislation on environmental and social issues

A number of legal acts establish liability for violation of environmental laws, which can be enforced by several State bodies. In particular, the 2010 **Code of Administrative Violations** establishes administrative liability for organizations, their officers and individuals for a range of violations, including careless treatment of land, violation of rules for water use or water protection or failure to comply with a SEE. Administrative sanctions for environment related violations can be imposed by the administrative commissions of Khoukumats, courts, CEP inspectors, the Veterinary Inspectors of the Ministry of Agriculture, and the State Committee for Land Management and Geodezy. The most common administrative sanction is a fine of up to 10 minimal monthly salaries for individuals and up to 15 minimal salaries to officers of organizations. The 1998 Criminal Code also covers crimes against ecological safety and the environment, such as violations of ecological safety at work, poaching and spoiling land, as well as violation of rules for the protection and use of underground resources. The maximum fine is up to 2,000 minimal monthly salaries and the maximum sentence is up to eight years in prison.

The **Law on Environmental Information** (2011) is underpinned by Article 25 of the Constitution, which states that governmental agencies, social associations, and officials are required to provide each person with the possibility of receiving and becoming acquainted with documents that affect her or his rights and interests, except in cases anticipated by law. The Law defines the legal, organizational, economic, and social bases for providing environmental information and establishes the right of individuals and legal entities to receive complete, reliable, and timely environmental information. Article 4 provides the right of access to environmental information and Article 8 defines the conditions for restricting access to environmental information (none of which should be relevant here).

The **Water Code** (2000, last amended 2012) establishes policies on water management, permitting, dispute resolution, usage planning and cadaster. It promotes rational use and protection of water resources exercised by all beneficiaries and defines the types of water use rights, authority and roles of regional and local governments for water allocations among various users, collection of fees, water use planning, water use rights and dispute resolution. The Code provides Water User Associations with the mandate to operate and maintain on-farm irrigation and drainage infrastructure.

The Constitution of the Republic of Tajikistan establishes exclusive state ownership of land. The **Land Code** (1996, last amended 2016) establishes the rules that control the assignment and termination of the rights to use (or lease) land. Rights to use land can be primary or secondary. Primary use rights include perpetual use, limited or fixed-term use up to 20 years, life-long inheritable tenure. The only secondary use/right is the right to lease, again up to 20 years. The Land Code establishes seven categories of land uses, including agricultural, urban/populated, industrial and other infrastructure, conservation and other protected land, national forest/wood reserves, water reserves, and state land reserves. Of most concern here are the first three, plus water reserves. In GBAO, most issues of land relations are under the jurisdiction of the region itself. Districts (jamoats) and cities have authority to provide land allotments for agricultural land and to withdraw land for nonagricultural uses (Land Code, Article 7). They are also responsible for protecting users' rights, terminating rights to use land, registering the rights to use land plots, and generally controlling land use and protection. They specifically approve land tenure documents dealing with works of regional importance.

Article 48 of the Land Code outlines the rules for state “confiscation” of land plots for state and public needs. Requirements include assignment of an equivalent land plot (“if desired”), construction of equivalent house and structures, and “full compensation for all other losses, including loss of profits...” These provisions apply only to those who have the legal right to use the land by virtue of possession of a “certificate on the legal right to use the land.” The Regulation concerning compensation of land users’ losses and losses of agricultural production was approved by Resolution of the Government of the Republic of Tajikistan # 641 (30 December 2011). It establishes the detailed order of reimbursement of land users’ losses. The amount of compensation is determined by an interdepartmental commission established at the district level where the acquisition is to take place (that is, at the GBAO level). If the land user does not agree with the amount or type of compensation for losses and damages, the land user can apply to the court with a request for additional compensation, or may appeal the decision to terminate the rights.

This law is directly relevant since it will control the termination of rights of current users and issuance of certificates of rights to Pamir Energy to use the land for the hydropower project.

The Law on Land Administration (2008, last amended 2016) obliges the authorities to map and monitor the quality of land, including soil contamination, erosion and water logging.

The Law on Sanitary and Epidemiological Safety of the Population (2003, last amended 2011) introduced the concept of sanitary and epidemiological expertise that establishes the compliance of project documentation and economic activities with the state sanitary and epidemiological norms and rules, as well as strengthened provisions on sanitary-hygienic, anti-epidemic and information measures. These include limits for noise that will apply to the project.

The **Law on Subsoil** (1994) establishes the legal basis for the study, protection, and use of subsoil. Common minerals such as sand, clay, gravel, and others, may be used in their natural form with little processing and cleaning, to meet local economic needs without other permission. Article 15 provides the owners of land rights to extract common minerals to a depth of five meters, without blasting. Thus, the contractors will not require permits or other permissions to extract sand and gravel (for construction purposes) from land where Pamir Energy has the rights. If the contractor requires additional materials, it will have to be purchased from other sources or the contractor (or Pamir Energy) will need to acquire the rights to other land.

The **Law on Pastures** (2013) defines the basic principles of pasture use, including protection of pastures and the environment, and attraction of investments for more effective use and protection of pastures. The Law specifies the powers of local administrations to control environmental safety and pasture use in accordance with state regulations and standards. The law prohibits the implementation of a few activities in pastures, such as cutting down trees or bushes, building roads, misuse of grazing land, pollution of the environment with waste, and grazing of livestock beyond the established rate. The law requires users to ensure effective use of pastures, including protection of pastures against degradation and pollution.

The **Law on Dekhkan Farms** (2016) provides the legislative basis for the establishment and operation of privately owned commercial farms known as dekhkan farms. According to the Law of 2009, dekhkan farms carried out activities without the formation of a legal entity, but the new Law allows dekhkan farms to

obtain the status of legal entities. It also clarifies and fixes the rights of members of dekhkan farms as land users. The law improves the management of dekhkan farms and defines the rights and duties of their members. It allows farmers to legally erect field camps on land as temporary buildings, which makes it possible to significantly improve productivity at the agricultural season. The law requires dekhkan farms to take measures to improve soil fertility and improve the ecological status of lands, make timely payments for water and electricity, and provide statistical information to government agencies.

Protection of cultural heritage is grounded in paragraph 44 of the Constitution, which requires all citizens to respect and protect historical and cultural monuments. The **Law about Culture** (1997) establishes rights concerning cultural activities, including non-material cultural heritage, and requires protection, management, and monitoring of historical and cultural monuments. Material heritage is found in archaeological sites, sites of ancient settlement, tumuli, remnants of ancient settlements, castles, industries, channels, roads, ancient burial places, stone sculptures, graven images, antiquity items, and places of ancient settlements. The Ministry of Culture and its local representative offices are primarily responsible for protecting cultural heritage. The **Law of Tajikistan on Regulating Traditions, Celebrations, and Rituals** (2007, last amended 2018) limits expenditures and activities related to religious and family observances and festivities.

The **Forest Code** (2011) regulates forest relations and is aimed at creating conditions for the rational use of forests, including their conservation and protection. The Forest Code requires coordination with the Forestry Agency for construction sites that will affect forests, which are defined as forested areas that cover least 0.5 hectares and are at least 10 meters wide which have environmental, social and economic interest for state. Projects must take measures to protect forests from sewage, waste, emission, etc. The project will not affect an area large enough to be considered a “forest” within the meaning of the law.

The **Labor Code** prohibits forced labor and adult labor. The Labor Code prohibits discrimination in employment and sets the minimum age at which a child can be employed as well as the conditions under which children can work. The minimum employment age is 15, however, in certain cases of vocational training, mild work may be allowed for 14-year-olds. In addition, there are some labor restrictions on what type of work can be done, and what hours of work are permissible by workers under the age of 18. The Code also establishes rules for minimum wages, leave, overtime, and has provisions for pregnant women and caretakers for children. It also sets the rules for settling disputes between workers and employers.

The **Labor Code** also sets requirements for occupational health and safety. It establishes the right of workers to work in places that are protected from exposure to dangerous and harmful factors. Employers are required to tell workers of risks and hazards of their jobs, and requires employers to provide personal protective equipment. Employers are required to provide compulsory social insurance against accidents, disease, or injuries associated with their jobs. The law gives workers the right to refuse to undertake work that violates labor protection requirements. In addition, workers engaged in hazardous working conditions are entitled to free medical and preventative care, additional paid leave and other benefits and compensation. In case of disability or death, employers must provide compensation in multiples of average annual earnings. Employers must train workers in performing their work safety and must provide for collective and personal protection of workers. Accidents must be investigated. Finally, there must be a “labor protection service” if there are more than 50 employees.

Under the **Law on Public Associations** (2007, last amended 2019), a public association may be formed in one of the following organizational and legal forms: public organization, public movement, or a body of public initiative. Article 4 of this law establishes the right of citizens to found associations for the protection of common interests and the achievement of common goals. It outlines the voluntary nature of associations and defines citizens’ rights to restrain from joining and withdrawing from an organization. This legislation requires NGOs to notify the Ministry of Justice about all funds received from international sources prior to using the funds and to post financial information on their websites.

The 2014 **Law on Public Meetings, Demonstrations and Rallies** (Article 10) bans persons with a record of administrative offenses (i.e. non-criminal infractions) under Articles 106, 460, 479 and 480 of the Code for Administrative Offences from organizing gatherings. Article 12 of the law establishes that organizers must obtain permission fifteen days prior to organizing a mass gathering.

The **Law on Self-Government Bodies in Towns and Villages** (1994) and the **Law on Local Public Administration** provide the legal basis for local government. The former law assigns to Jamoats a broad range of competencies and the mandate to support community efforts to address local socioeconomic needs. The 2009 amendment aims to strengthen local self-governance and accountability by delegating budget authority to Jamoat councils, and introducing a system of direct election for Jamoat councilors. The 2017 amendment allows Jamoat councils to retain non-tax revenues earned through the provision of administrative services and a percentage of local property taxes. The 2017 amendment suggests a seriousness on the part of national government to enact policies that empower Jamoat councils with authorities and resources needed to support local development and problem-solving.

The **2010 Law on the Safety of Hydrotechnical Infrastructure** applies to infrastructure for hydropower and flow regulation, and flood protection. The Law places the responsibility for safety of hydrotechnical infrastructure on the owners and users of such facilities, who shall ensure compliance with safety rules during construction and exploitation, perform regular inspection and safety assessment, take measures to ensure safe operation, ensure development and updating of safety criteria, and keep local warning systems operational. The Law introduces such instruments such as a declaration of safety that has to be completed by the owners or users at various stages of the installation’s life. In 2015, the Government enacted subsidiary legislation, Procedures for development and operation of state expertise for declaring the safety of hydrotechnical infrastructure, Procedures for establishment and maintenance of the State Register of Hydrotechnical Facilities, and Procedures for defining the financial limits of civil liability for damage caused as a result of an accident at a hydrotechnical facility (2015 Resolution of the Government No. 436).

Other Tajikistan legislation that could apply to project-related activities are listed in Table 4

Table 4. Other potentially relevant legislation

Law on Protection of Atmospheric Air (will require permit for emissions)
Law on Hydrometeorological Activity (no specific requirements)
Law on Land Administration
Law on Land Valuation

Law on Environmental Audit (may be required by Environmental Protection Committee)
Law on Securing Sanitary and Epidemiological Safety of the Population
Law on Radiation Safety
Law on Production and Consumption of Waste (permit will be required)
The Law on Environmental Education
The Law on Environmental Monitoring
The Law on Specially Protected Natural Areas (none could be affected)
Law on Protection of Fauna (will require permission if take fauna)
Law on Protection of Flora (will require permission if cut flora)
Water Codex (permission for water usage required)

5.1.3 National Administrative Framework

A number of central government organizations have roles and environmental and social responsibilities, including:

- Ministry of Health: responsible for development and implementation of policy, regulations, and norms related to public health
- Ministry of Labor, Migration, and Employment: responsible for developing and implementing policies relating to employment, labor issues, and migration practices
- Committee of Women and Family Affairs: responsible for gender issues and realization of family-oriented policy
- Architecture and Construction Committee: responsible for technical advice in relation to water supply and sewage systems, including construction and design standards, contract standards and rules, and regulation of project and construction activities
- Agency of Standardization, Metrology, Certification and Trade Inspection: responsible for drinking water quality and other standards
- State Statistical Committee: responsible for collecting, filing and delivering environmental information and drinking water supply and sanitation data
- Committee for Environment Protection (CEP): executive body responsible for environmental protection, sustainable use of resources, forestry and hydrometeorology responsible for decision-making related to environmental issues such as unsustainable land use, deterioration of soil fertility, excessive use of water for irrigation, flooding problems, and obsolete/banned pesticides. Also responsible for, *inter alia*:
 - Defining the main strategies for protection, study, conservation, and sustainable use of natural resources, and mitigation of the effects of climate change
 - Drafting laws and other regulatory documents, including environmental standards, instructions and methodologies for the use of resources

- Issuing individual permits for the use of specific resources and withdrawing these if the user violates their terms
- Setting quotas for the hunting and collection of certain species of animals and the importation of ozone-depleting substances
- Carrying out ecological assessments of planned activities
- Defining the system of specially protected territories and maintaining State cadasters of such territories and of forests, factories, water bodies, and hazardous waste
- Regulating the use and protection of waters and the issuance of permits (licenses) for special water usage.

Two levels of local governments also have environmental responsibilities:

- **Khokumat:** municipality or local state administration. A chairperson appointed as a local representative of the President in the implementation national policy and administration of State services and regulations heads each khokumat. This includes what are also called Districts in this document (specifically, Roshtqala, Ishkashim, and Rushan).
- **Jamoat:** local self-government. A jamoat covers a smaller administrative area than a khokumat and may include one or more settlements/villages. The Jamoat is responsible for organizing community-based delivery of some basic public services. Jamoats have no budgeting authority and have a very limited independent role. They do have important roles under the Land Code, being responsible for allocating land and also for terminating rights to land and assigning new land.

5.2 *International obligations*

In addition to national legislation and regulations on environmental issues, Tajikistan is also party to several international treaties focused on environmental issues:

- Vienna Convention for the Protection of the Ozone Layer, 1996, as updated
- UN Convention to Combat Desertification, 1997
- UN Convention on Biological Diversity (CBD), 1997, as updated by Cartagena and Nagoya protocols
- Ramsar Convention (joined 2000)
- Bonn Convention on the Conservation of Migratory Species of Wild Animals (joined 2001), as updated by Bukhara Deer Memorandum, 2002
- UN Framework Convention on Climate Change, 1998, with related update Kyoto Protocol, accessed on December 29, 2008, and entered into force on March 29, 2009
- Stockholm Convention on Persistent Organic Pollutants (ratified 2007), as updated
- Aarhus Convention (UNECE Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters) (joined 2001), as updated by Kiev

Protocol on Pollutant Release and Transfer Registers to the Convention on Access to Information, on May 21, 2003

- Convention on International Trade in Endangered Species of Wild Fauna and Flora, 2016
- UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage (joined 1992)
- Rotterdam Convention on Prior Informed Consent (PIC) procedure on September 28, 1998, ratification pending
- The United Nations Convention to Combat Desertification (1997)
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (2016)

In addition, Tajikistan has ratified a number of core labor standards of the International Labour Organization, including the following:

- Forced Labor (C029) and Abolition of Forced Labor (C105)
- Minimum Age (C138) and Worst Forms of Child Labour (C182)
- Discrimination (C111)
- Freedom of Association and the Right to Organize (C087)
- Right to Organize and Collective Bargaining (C098)
- Equal Remuneration (C100)

5.3 World Bank Environmental and Social Standards

5.3.1 Environmental and Social Framework

Pamir Energy is seeking financing for the project from the World Bank, which requires that the project meet the Bank's environmental and social standards, as well as relevant Tajikistan legislation if it is more stringent. The World Bank's Environmental and Social Framework (ESF) includes the Environmental and Social Policy for Investment Project Financing, which describes the requirements the Bank must follow for projects it supports through Investment Project Financing, and 10 Environmental and Social Standards (ESSs), which establish requirements for Borrowers and grantees such as Pamir Energy to identify, assess, and control environmental and social risks and impacts of Bank-supported projects. Applicable ESSs include:

- *ESS1: Assessment and Management of Environmental and Social Risks and Impacts:* identification, control, and monitoring of risks and impacts, including identification of applicable requirements and monitoring outcomes.
- *ESS2: Labor and Working Conditions:* labor relations, rules of employment, occupational health and safety, workforce protection, worker grievance mechanism, with specific requirements for contractor and subcontractor employees.

- ESS3: *Resource Efficiency and Pollution Prevention and Management*: conservation of resources and control/prevention of wastes and pollution.
- ESS4: *Community Health and Safety*: avoidance and control of risks and impacts on communities from project activities and workers, emergencies, security, and other factors.
- ESS5: *Land Acquisition, Restrictions on Land Use and Involuntary Resettlement*: identification, planning, avoidance/response to the need for physical and/or economic displacement due to project activities, including information disclosure and consultation.
- ESS6: *Biodiversity Conservation and Sustainable Management of Living Natural Resources*: protection and conservation of biodiversity and habitats, support livelihood of local communities
- ESS8: *Cultural Heritage*: protection of tangible and intangible cultural heritage.
- ESS10: *Stakeholder Engagement and Information Disclosure*: identification and engagement of local and other stakeholders throughout the project life cycle, disclosure of project information, grievance redress mechanism for external stakeholders.

ESS7 (*Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities*) does not apply since no such communities or people could be affected by the project. Similarly, ESS9 (*Financial Intermediaries*) does not apply since Bank funding is not being provided to financial institutions for further on-lending.

The Bank classifies proposed projects into one of four risk categories, and has classified this project as being of substantial risk. This classification is due, in part, to the sensitive environments that may be affected, and the need for land acquisition and involuntary resettlement. If the Bank determines that risks are actually higher or lower than substantial, it may change the classification as appropriate.

Table 5 provides a high-level summary of key gaps between the Bank’s requirements and Tajikistan’s requirements. As noted, the more stringent of the requirements will apply.

5.3.2 World Bank Group environmental, health, and safety guidelines

The World Bank Group has promulgated a number of Environmental, Health, and Safety Guidelines (EHS Guidelines), with the following being applicable to the project:

- *General EHS Guidelines* (April 30, 2007) includes guidelines for environmental controls during facility operation (air and water emissions, hazardous materials management, noise, contaminated land, etc.) and occupational and community health and safety during operation. This guideline also covers the same topics for construction.
- *EHS Guidelines for Electric Power Transmission and Distribution* (April 20, 2007) cover many of the same topics (environmental controls, occupational and community health and safety) during construction and operation, with a focus on activities involved in constructing and operating electricity transmission and distribution lines.

Table 5. Summary of World Bank requirements and key gaps with Tajikistan legal requirements

<i>ESS & Topic</i>	<i>Major requirements</i>	<i>Key requirements/gaps in Tajikistan legal framework</i>
ESS 1: Assessment and Management of Environmental and Social Risks and Impacts		
Scope of application	ESSs apply to Associated Facilities to extent of Borrower's control/influence	Associated facilities not covered by Tajikistan law as such, except to the extent that all activities in Tajikistan are subject to laws
Borrower's E&S Framework	May use Borrower's framework if can meet objectives of ESSs. That is not the case here. World Bank ESSs will apply, together with Tajikistan requirements if they are not conflicting or weaker.	No provision for alternative requirements except that international standards take precedence if agreements are in place
A. E&S Assessment	<ul style="list-style-type: none"> - Conduct E&S assessment, including stakeholder engagement - Retain international expert(s) for high-risk projects - Apply national framework, ESSs, EHSGs/GIIP - Apply mitigation hierarchy - Offset significant residual impacts - Differential measures for vulnerable or disadvantaged people - Consider primary suppliers 	<ul style="list-style-type: none"> - ESIA law has much less emphasis on social conditions and impacts, but other laws partly fill gaps, but with less specificity concerning community impacts - No distinction between international and Tajikistan experts - No reference to EHSGs or GIIP - No equivalent provision for offsets - No equivalent provisions for vulnerable and disadvantaged people - No coverage of primary suppliers
B. ESCP	ESCP for compliance in a specified time	No provision in permits/approvals for delayed compliance
C. project monitoring & reporting	<ul style="list-style-type: none"> - Monitor proportionate to nature of project, risks and impacts, and compliance requirements - Reports to World Bank 	Monitoring required but less emphasis
D. Stakeholder engagement and information disclosure	Engage stakeholders through life cycle	Generally consistent but no requirement for project-specific stakeholder engagement plan
ESS2: Labor and Working Conditions		
A. Scope of application	ESS2 applies to workers employed by Pamir Energy who work on the project and to contracted workers, primary supply workers, and community workers	<ul style="list-style-type: none"> - Labor Code applies to all workers in Tajikistan, including foreign workers - Requirements apply to employer but do not extend to prime contractor
B. Working conditions and management of labor relations	<ul style="list-style-type: none"> - Written labor management procedures - Terms and conditions of employment 	Generally consistent

<i>ESS & Topic</i>	<i>Major requirements</i>	<i>Key requirements/gaps in Tajikistan legal framework</i>
	<ul style="list-style-type: none"> - Nondiscrimination and equal opportunity - Worker’s organizations 	
C. Protecting the work force	<ul style="list-style-type: none"> - Prohibits child labor except in very specific and regulated community-based circumstances (no one under age 18 will be employed on this project) - Forbids Forced labor 	<ul style="list-style-type: none"> - Minimum employment age is 14, with other limits consistent with ILO, but no work that could “cause health or moral damage” if under 18 - Forced labor prohibited
D. Grievance redress mechanism (GRM)	A separate GRM has to be provided for all direct and contracted workers	No specific requirement for grievance mechanism for workers
E. Occupational Health and Safety (OHS)	<p>Measures relating to occupational health and safety will be applied to the project:</p> <ul style="list-style-type: none"> - Apply World Bank Group General and sector-specific EHS Guidelines - Requirements to protect workers, train workers, document incidents, emergency preparation, addressing issues - Provide safe working environment - Workers allowed to report safety issues and refuse to work under certain circumstances - Provide appropriate facilities (canteens, toilets, etc.) and ensure accommodations meet needs of workers - All employers to collaborate on applying OSH requirements - Monitor OSH performance 	<ul style="list-style-type: none"> - Generally consistent but less detailed - No requirements for accommodations
F. Contracted workers	<ul style="list-style-type: none"> - Reasonable efforts to verify contractors have labor management procedures to meet requirements of ESS2 (except those that apply to community and primary supply workers) - Procedures for managing and monitoring performance - Access to workers’ GRM 	Safety requirements apply to all employers, including contractors, but no obligation for developers to verify compliance
G. Community workers	Requirements for working conditions and OHS applied to community labor	Labor Code applies to employers and employees, not volunteers
H. Primary supply workers	Depending on the level of Pamir Energy/contractor control/influence, requirements to assess risk of child	<ul style="list-style-type: none"> - Tajikistan law applies if work is done in Tajikistan - No obligation on employers in other countries

<i>ESS & Topic</i>	<i>Major requirements</i>	<i>Key requirements/gaps in Tajikistan legal framework</i>
	labor, forced labor, and safety issues and require suppliers to address significant risks	- No requirements for prime contractor
ESS3: Resource Efficiency and Pollution Prevention and Management		
<i>Resource Efficiency</i>		
Scope of application	Borrowers must apply feasible resource efficiency and pollution prevention measures in accordance with mitigation hierarchy	Some requirements
I. Energy use	Adopt measures in EHSs if project is significant energy use	No specific limits. No significant energy usage.
J. Water use	Assess water use and impacts and communities and adopt mitigation measures as needed	Permits required for water usage
K. Raw material use	Use GIIP to reduce significant resource usage	Resource usage requires permits
<i>Pollution prevention and management</i>		
General requirements	<ul style="list-style-type: none"> - Avoid, minimize, and control release of pollutants, apply the more stringent of EHSs and national law - Historic pollution and non-degradation requirements 	Specific numeric requirements. Project will generate only very minor pollution
L. Management of air pollution	Requires assessment of potential air emissions and implementation of technically and financially feasible and cost-effective options to minimize emissions	Emissions limits. Project will have only minor emissions.
M. Management of hazardous and nonhazardous wastes	<ul style="list-style-type: none"> - Apply mitigation hierarchy to waste management - National and international conventions for hazardous waste management and movement - Verify hazardous waste management contractors are licensed and disposal sites operate to meet standards 	<ul style="list-style-type: none"> - Detailed requirements for hazardous and other wastes - Signatory to international conventions - No requirements to verify haulers/contractors
N. Management of chemicals and hazardous materials	<ul style="list-style-type: none"> - Minimize use of hazardous materials - Avoid use of internationally controlled materials 	<ul style="list-style-type: none"> - Regulations on hazardous materials - Signatory to international conventions
O. Management of pesticides	Requirements for pesticide use	Not applicable to this project: no pesticides will be used
ESS4: Community Health and Safety		
<i>Community health and safety</i>		

<i>ESS & Topic</i>	<i>Major requirements</i>	<i>Key requirements/gaps in Tajikistan legal framework</i>
P. Community health and safety	<ul style="list-style-type: none"> - Evaluate risks to community health and safety and apply mitigation hierarchy and GIIP to reduce risks - Consider third-party safety risks in designing infrastructure and equipment, with regard to high-risk locations - Ensure safety of services provided to communities - Identify traffic/road risks, assess risks if needed, consider safety in fleet decisions, take measures to protect public - Assess and avoid impacts on provisioning and regulating ecosystem services as appropriate - Avoid or minimize potential for disease transmission and communication, considering vulnerable groups - Address risks to community of hazardous materials management - Prepare of and respond to emergencies, consider in EIAs, prepare response plans 	General requirements to minimize risk, no specific requirements for services, ecosystem services, emergencies, etc.
Q. Security personnel	<ul style="list-style-type: none"> - Assess and address risks of security arrangements - Apply principles of proportionality, GIIP, and law - Verify contracted workers are not implicated in past abuses and are trained - Investigate incidents, report unlawful acts to authorities 	No specific requirements
Annex 1. Safety of Dams	<ul style="list-style-type: none"> - Design and construction of new dams to be supervised by experienced professionals - Dam safety measures to be adopted and implemented during design, tendering, construction, operation, and maintenance - Dam does not fall into categories of paragraph 2, thus most of this annex does not apply - Safety measures designed by qualified engineers to be adopted in accordance with GIIP (paragraph 5) - Confirmation of no or negligible risks to communities due to failure of dam (footnote 123) 	No equivalent requirements

<i>ESS & Topic</i>	<i>Major requirements</i>	<i>Key requirements/gaps in Tajikistan legal framework</i>
ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement		
Applicability	<ul style="list-style-type: none"> - Assess need during ESIA process - Applies to permanent and temporary displacement, listing types of infringements - Limitations on applicability - Applies to land users and owners 	<ul style="list-style-type: none"> - All land in state ownership - Rights to use land granted with legal certificates - May be used only as authorized - Legal users may lease land for authorized uses
R. General	<ul style="list-style-type: none"> - Affected people: land owners, users with legal claims, and users with no legal claims - Design project to avoid/minimize displacement - Provide replacement cost and assistance, disclose standards, offer land-for-land where possible, pay compensation before displacing people where possible - Engaged with affected communities, including women - Grievance mechanism - Census, cut-off dates, notices; detailed plan and monitoring required; require audit if significant displacement 	<ul style="list-style-type: none"> - Only those with legal rights eligible for replacement land or compensation - Replacement land preferred option - No requirement for assistance - Detailed requirements for committee memberships and actions - Compensation based on established rates for trees or other items lost
S. Displacement	<ul style="list-style-type: none"> - Detailed requirements for physical displacement - Detailed requirements for economic displacement, including livelihood restoration 	<ul style="list-style-type: none"> - Replacement with equivalent land and houses preferred over compensation - Compensation for lost profits required, but not livelihood restoration
T. Collaboration with other responsible agencies or subnational jurisdiction	Collaborate with other involved agencies, provide support as needed; include arrangements in Plan	Committee membership and responsibilities defined in Land Code
U. Technical and Financial Assistance	World Bank may provide support to resettlement planning	
Annex 1: Involuntary resettlement instruments	Detailed requirements for resettlement plans, resettlement frameworks, and process frameworks	No detailed requirements

ESS & Topic	Major requirements	Key requirements/gaps in Tajikistan legal framework
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources		
V. General	<ul style="list-style-type: none"> - Consider direct, indirect, & cumulative impacts in ESS1 EIA - Characterize baseline conditions - Manage risks with mitigation hierarchy and GIIP, including adaptive management - Differentiated habitats, ESS applies to all, provides for offsets - ESS applies to modified habitat with significant biodiversity value - Avoid natural habitats unless no feasible alternative; if affected achieve no net loss of biodiversity Critical habitat - Requirements if a project will affect legally protected and international recognized areas of high biodiversity value - Strict conditions on affecting critical habitats, requires BMP - No introduction of spreading of invasive species - Requirements for projects involving primary production and harvesting 	Requires protection of biodiversity but less detailed requirements
W. Primary suppliers	Requirements when Borrower purchases natural resource commodities	No equivalent requirements
ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities		
	Not applicable for the project	
ESS8: Cultural Heritage		
Application	Covers tangible and intangible (limited) cultural heritage, whether legally protected or not and whether previously identified or not	<ul style="list-style-type: none"> - Law covers non-material (language, customs, ceremonies and celebrations, knowledge and skills, traditional crafts, dancing, music, art, etc.) and material cultural heritage - Some legal limits on weddings, funerals, and other activities

<i>ESS & Topic</i>	<i>Major requirements</i>	<i>Key requirements/gaps in Tajikistan legal framework</i>
X. General	<ul style="list-style-type: none"> - Assess and avoid impacts on cultural heritage - Follow chance find procedure if a find is encountered - Involve experts and national authorities if needed 	General requirements to protect cultural heritage and not to disturb sites of interest No specific requirement for chance find procedure
Y. Stakeholder consultation and identification of cultural heritage	<ul style="list-style-type: none"> - Identify and consult with affected and interested stakeholders - Maintain confidentiality if needed - Allow continued access to affected sites 	No requirement for consultations except with Ministry of Culture representatives Must provide access
Z. Legally protected cultural heritage areas	Comply with regulations and plans, consult with sponsors	Generally consistent
AA. Provisions for specific types of cultural heritage	<ul style="list-style-type: none"> - Desk-based and expert consultation to identify archaeological sites and specify protections - Mitigate impacts on built heritage, preserve physical and visual context of structures - Identify and protect treasured natural features - Identify and protect movable cultural heritage 	Less detailed requirements but generally consistent
BB. Commercial use of cultural heritage	Not relevant for this project	n/a
ESS9: Financial Intermediaries		
Not applicable for the project		
ESS10: Stakeholder Engagement and Information Disclosure		
Requirements	<ul style="list-style-type: none"> - Engage stakeholders throughout project life cycle, determine how they wish to be engaged - Provide stakeholders with information, - Maintain documented record of engagements 	Generally consistent but less detailed
CC. Engagement during project preparation	<ul style="list-style-type: none"> - Identify and analyze stakeholders, including disadvantaged or vulnerable - Stakeholder Engagement Plan (SEP) required, with detailed requirements for disclosure, timing of consultations, measures for disadvantaged or vulnerable, etc. - Disclosure of information early to allow consultation on design 	<ul style="list-style-type: none"> - No requirement to analyze stakeholders - No formal plan required - Early disclosure required

<i>ESS & Topic</i>	<i>Major requirements</i>	<i>Key requirements/gaps in Tajikistan legal framework</i>
	- Consultation to allow ongoing two-way communication throughout project life cycle	
DD. Engagement during project implementation and external reporting	Engagement and disclosure of information to continue throughout implementation, following Plan	No specific requirement for continuing engagement
EE. Grievance mechanism	- Establish and implement prompt, effective, culturally appropriate, and discreet grievance mechanism - No limit on legal remedies	
FF. Organizational capacity and commitment	Define roles & responsibilities, assign personnel to implement stakeholder engagement activities	No specific requirement for assigning roles and responsibilities
Annex 1: Grievance mechanism	Options for managing mechanism: ways of submission, log, advertised procedures, appeals process, mediation	

6. Environmental and Social Setting

6.1 Environmental Setting

Overview

Tajikistan is a landlocked country in the mountainous part of Central Asia; in the north and west, Tajikistan borders with Uzbekistan and Kyrgyzstan, in the south it borders with Afghanistan and in the east with China (**Ошибка! Источник ссылки не найден.**). The perimeter borders of the country extend to 3000 km. The total area of Tajikistan is 143100 km².



Figure 2. Regions of Tajikistan

The Tajik Gorno Badakhshan Autonomous Oblast (GBAO) is a mountainous region in the eastern part of Tajikistan, having virtually no level or arable land. It covers the main part of the Pamir Mountains, which reach into Kyrgyzstan from the northern part of GBAO, into China from the eastern part and into Afghanistan from the southern part. GBAO covers almost 45% (223,600 km²) of the country's area and is sparsely populated due to the harsh natural conditions.

The largest mountains in the Pamir and Tien Shan ranges are located in this region, up to 7,500m (26,000ft). The only developed route into and out of most of the territory is the so-called "Pamir Highway", running from Osh in Kyrgyzstan to Dushanbe; even this route is mostly unpaved and difficult to travel. Many passes of 3,000-5,000 m, located along this and other connecting routes, need to be crossed to enter or leave GBAO. Although the province makes up 45% of the land area of Tajikistan, it represents only 3% of the population (approximately 225,000). The population density is also staggeringly low at one person per 2.5 km². Economic activity is mostly related to livestock herding and mining, and many Pamiris and Kyrgyz here live a subsistence lifestyle. It is almost completely autonomous from the central Tajikistan government, having its own police, military and tax systems. Its capital is the city of Khorog.

The physical environment of GBAO is among the most extremely alpine in the world. Most areas are very high altitude, with few areas below 3,000 m (10,000 ft). The largest peaks include Ismoil Somoni (formerly Communism; 7,495m), Ibn Sina (formerly Lenin; 7,135m), Korzhenev (7,105m), Independence (formerly Revolution; 6,974m), and Karl Marx (6,726m).

The Pamir Mountains have the most extreme climate in Tajikistan. Just because the elevation in Pamir Mountains ranges between 1,000 and 7,495 meters (3,281 to 24,590 feet), the weather in the region differs a lot depending on the elevation and location.

On average, as indicated on Figure 3, the climate of the Pamirs is high mountainous and extremely continental, and polar in more severe places. Winters are long, lasting from October to April. Summers are only in July and August. The average temperature in January is minus 18C (minus 0.4 °F) and in July, the average is plus 20 °C (68 °F). The precipitation rate also differs: in Khorog it is 276 mm a year (10.87 in), 416mm (16.38 in) in Ishkashim, and only 72mm (2.83 in) in Murghab.

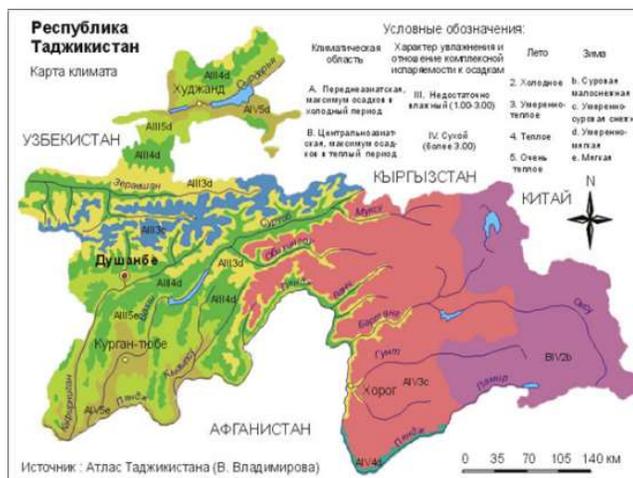


Figure 3. Climatic zones of Tajikistan

The largest river within GBAO is presented by the Pyanj river, which runs through a deep canyon from the Chinese border all the way to the Aral Sea, and forms the entire Tajik border with Afghanistan. Lakes in the region are often salty, such as gigantic Karakol (black lake); or stunningly beautiful, like Sarezkol (purple lake). Many mineral hot springs dot the countryside, some with developed infrastructure.

Vegetation of the Western Pamirs is relatively rare, with mountain steppes, small-leaf forests, and cryophyte meadows prevailing. The floristic composition includes 1,500 species. The tree and shrub communities are fragmentary, occurring at river flood-plains and ground-water outlets. Of large mammals, there are: snow leopard (*Uncia uncia*), Siberian ibex (*Capra sibirica*), and Pamir wild ram (argali) (*Ovis ammon polii*). The vegetation of the Eastern Pamir is rare, represented mostly by high-mountain desert, cryophyte meadow and wetland species. The floristic composition does not exceed 250-300 species. The animal world consists of no more than 600-800 species, including invertebrates. The most typical animals are argali (*Ovis ammon polii*), Siberian ibex (*Capra sibirica*), marmot (*Marmota caudata*), snow leopardo (*Uncia uncia*), tolai hare (*Lepus tolai*).

Forests are noticeably absent in these areas, as most of the region is above the tree line; only grasses and small shrubs survive in the highlands. This lack of vegetation results in the exposure of Gorno-Badakhshan's geologic past, and infinite varieties of amazing, unusual, and plain bizarre shapes and patterns are visible in the multi-colored rock.

The GBAO area is characterized by the following main ecosystem types (Figure 4):

- Nival Glacier Ecosystems (nival glaciers and snowfields) – very high up in the mountains
- Highland Mountain Meadow and Steppe Ecosystems (low grass, meadows, swamps, dwarf-shrubs)
- Mid Mountain Coniferous Forest Ecosystems (floodplain small leaf forest, coniferous shrubs and others)

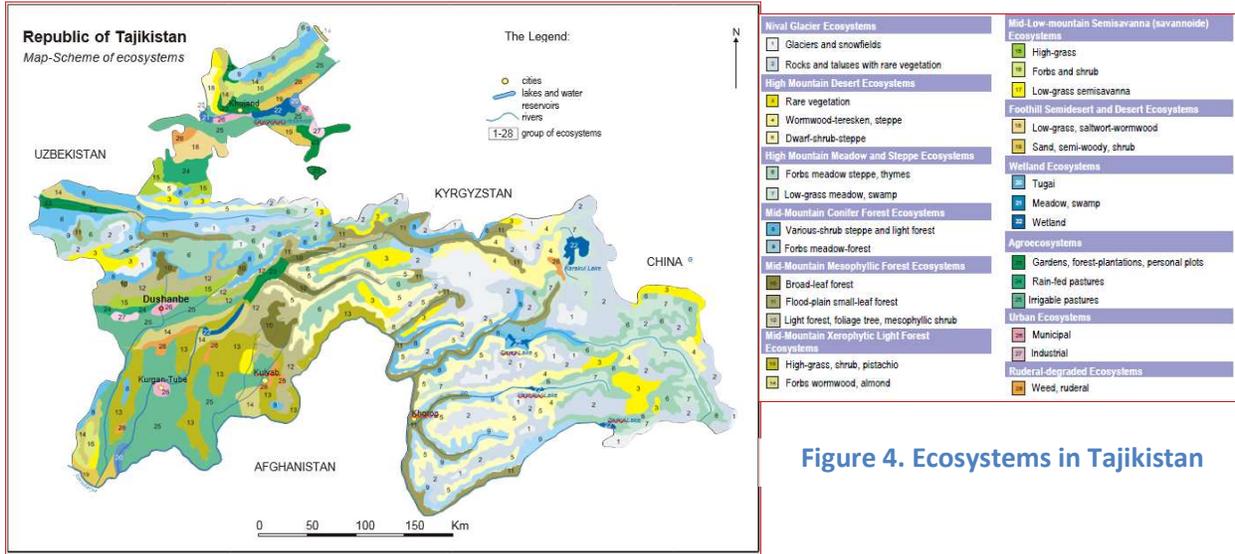


Figure 4. Ecosystems in Tajikistan

Soils across GBAO have typically poorly developed profiles with thin topsoil layers and mainly presented by mountain light brown soils (alluvial meadow soils), which are typical for river valleys, mountain desert steppe soils, high mountain desert steppe soils and underdeveloped skeletal soils (Figure 5). Where upper profile is developed to about 30-50 cm, it is susceptible to erosion, especially if high deforestation rates are present in particular area.

Natural Protected Areas

Three of the proposed districts for off-grid solutions, namely Vanj, Rushan and Murghab are partially situated within the boundaries of the Tajik National Park (#5 on the map as below) (Figure 65). In addition, the Muzkol Species Management Area is entirely located within the Murghab region (#7 on the map below).

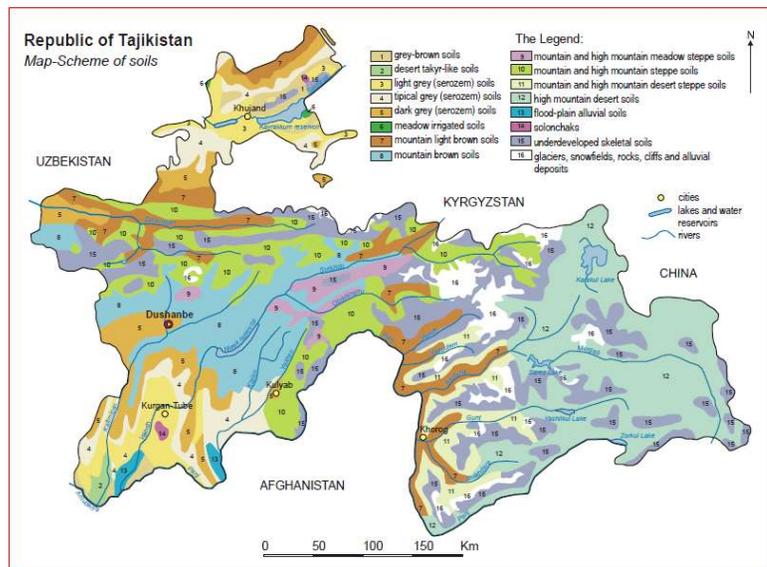


Figure 5. Soil cover in Tajikistan

There are 4 state nature reserves, 13 state reserves and 3 natural parks located in Tajikistan. The total area of all natural protected areas is 3.1 million hectares. The Tajik National Park ((also known as Pamersky, Pamirsky or Tajik National Park) is the largest in the country - its area is 26,000 km² or 2.6 mln. ha.

Approximately 10 to 12 proposed projects, including small-hydro, solar, wind and last-mile connections are situated either in very close proximity to the Tajik National Park boundaries or inside the protected area. These projects are mostly clustered to the right bank of the Bartang river and a few villages north in Murghab district.

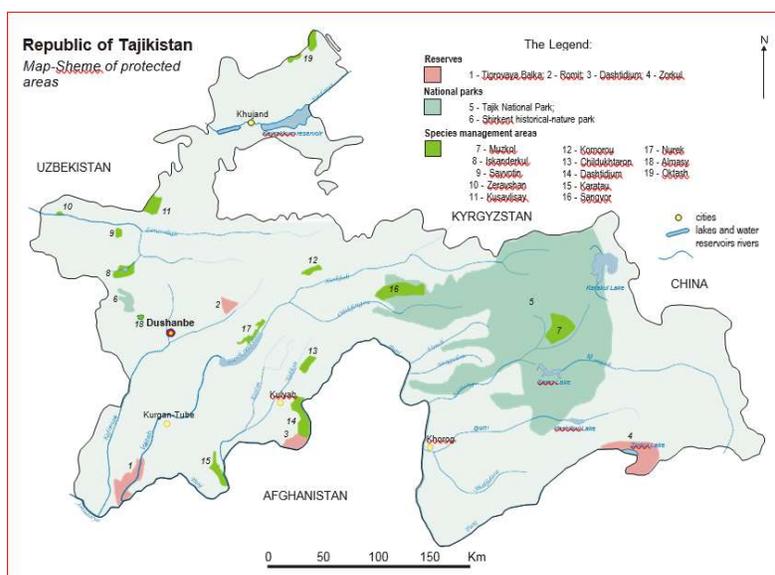


Figure 6. Natural protected areas of Tajikistan

District-Specific Environmental Settings

Vanj District: 1 mini-hydropower, 8 'last-mile connections'.

The district is situated in the north western part of GBAO to the east of the Pyanj River at the point where the Panj turns from north to west. The district's capital is the city of Vanj. The population of Vanj District is about 32,000 residents with the total district's area of about 4,430 km².

Hydrography of the district is characterized by presence of two main rivers, the Vanj River (north) and the Yazgulyam River (south), which are separated by the Vanj Range. Both rivers are right tributaries to the Pyanj river. Topography of the area is characterized by a mountain/hilly, rocky and dissected terrain in the upstream of both river catchments, while the low lands of the valleys are moderately sloping and changing gradually into relatively steep mountain flanks. The valley bottom offers the possibility to cultivate grains, orchards, vegetables and fodder, sloping moderately to rolling foothills with mainly pasture.

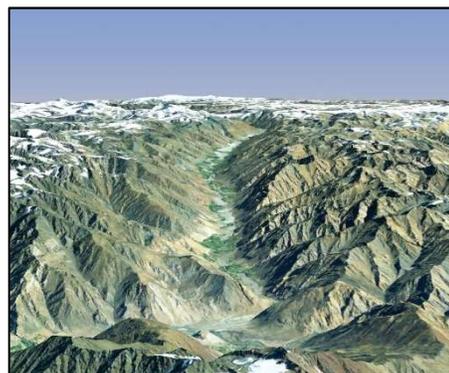
Soils are predominantly alluvial meadow and mountain steppe soils. Soil erosion is a major environmental concern throughout the district due to seismic activity, steep slopes, the fragility of the soils and human

activities such as inappropriate livestock management, the removal of protective vegetative cover and poor water management practices.

The Vanj district is located within a high risk seismicity zone, which is common for the most mountainous part of Tajikistan. Tajikistan is the country of intense tectonic movements and high seismicity. Earthquakes are dependent on many factors: geotechnical conditions, the nature of the soil, the presence of groundwater, landforms, etc. Over and above this chronic challenge is the threat of rare but potentially devastating earthquakes, with more than 60% of the country located in zones of high seismic risk.

The valleys of Vanj and Yazgulyam rivers could pose potential risks of natural hazards, such as landslides, avalanches and floods, especially if it concerns the routing of the transmission lines and planning the locations of towers and poles.

Vanj River. The total length of the Vanj river is 170 km; the catchment area – 2,070km². The mean annual discharge is 50 m³/s. Approximately 59% of annual runoff occurs during the period of July-September. The maximum flows are in July. The river starts from the Abdukagor glacier, which is located on the west slope of the Vanj Range.



Valley of the Vanj river

Yazgulem River. The total length of the river is 80km; the catchment area – 1,970 km². The mean annual discharge is 36m³/s. Similar to Vanj river, approximately 60% of annual runoff occurs during the period of July-September. The maximum flows occur in July. The river starts from the Abdukagor glacier, which is located on the west slope of the Vanj Range.

From the biodiversity standpoint, the headwaters of the Vanj and Yazgulyam rivers could provide habitats for protected and endangered species of mammals, birds and plants.

Rushan District: eight mini-hydro, 2 solar, 11 “last-mile” connections.

The district is in the western part of GBAO to the east of the Pyanj River. The district’s capital is the town of Rushan; and the total area occupied by the district is 5,870 km². The district’s population is approximately 25,000 residents (as of 2015).

The relief of the area is characterized by mountainous rough terrain with the valley of Bartang River) dissecting the district through its central part.

Bartang River. The Bartang river (called Aksu in its headwaters, Murgab in the middle part) is the right tributary to the Pyanj river. The total length of the river is 528 km; the catchment area – 24,700km². The mean annual discharge is 128 m³/s (near the mouth). About 60% of annual runoff occurs during the period of July-September. The maximum flows occur in July. The river starts from the Chakmaktyn lake in north-east of Afghanistan; then it flows about 30km through this country and crosses the state border of Tajikistan.

Soils are typical for mid-high mountains shrub/steppe, meadow type ecosystems – alluvial soils on the river floodplains and poorly developed mountain light brown soils.

Similar to Vanj district, the area is situated within a high risk seismicity zone, as well as in the areas having elevated or high risks of geomorphological hazards, such as avalanches, debris flows, rockfalls.



Bartang river (close to the mouth, near town of Rushan)

Murghab District: 14 solar, 6 solar+wind.

This is the largest in areal extent district of GBAO and in Tajikistan overall. The district’s area equals to 38,440 km²; the total population of 14,800 residents (as of 2015). The region borders Kyrgyzstan from the north, China from the east and north-east and Afghanistan from the south.

Overall, the topography of the district is characterized by high mountain relief – the Pamir mountains. The altitude across the district ranges from 1,000 masl to the highest of 7,495 masl (Summit Ismoil Somoni (formerly Communism)).

Mountain relief influences soil cover distribution across the district. Thus, lowlands (mostly floodplains, where altitudes are slightly above 1,000 m) are predominantly characterized by presence of dark serozems (*Dark Calcisols*). These soils are actively used by locals as arable lands for agriculture. From about altitude of 1,500 to 2,300m the most common soil type is brown mountain soils. Above 2,300-2,500meters the most widespread soil types are brown meadow and steppe soils. At the altitude higher than 3,000 meters most areas are covered by mountain meadow soils and at altitudes higher than 5,000 m, soils are generally covered by snow and presented by so-called underdeveloped skeletal soil and/or high mountain desert soils.

The hydrography of Murghab district can be characterized by the presence of the following main water bodies:

- The Bartang river (called Aksu in the headwaters, Murgab in the middle part) is one of the largest rivers of eastern Tajikistan. It starts in Afghanistan and crosses the whole GBAO district joining the Panj river in Rushan district next. The total length of the river is 528 km; the catchment area – 24,700km².
- The Pyanj river which starts in south-eastern part of the Murghab district
- There are many lakes located across the district, including the famous Sarezskoe Lake in mid-west of the district. A popular tourist attraction site, the lake is situated at the altitude of 3,263 masl. The total length of the lake is 55.6 km and the width – 3.3km; its total water volume is 16,075km³. The lake was created as a result of catastrophic earthquake in 1911, which lead to the massive landslide that blocked stream flows of the Bartang and Shadau-Darya rivers.

- There is another called Zorkula lake situated in the southernmost part of Murghab district near the border with Afghanistan. Two more lakes of similar to Zorkula size are also situated in the southern portion of the district.

The soils of the district are typical for mid-high mountains shrub/steppe, meadow type ecosystems – alluvial soils on the river floodplains and poorly developed mountain light brown soils.

Protected areas

A significant portion of the Murgab district (about 67%) is occupied by the Pamir National Park (PNT) (also known as Pamersky, Pamirsky or Tajik National Park). The total area of the natural park is 26,000 km². In the north the border of PNT coincides with the state border of the Republic of Tajikistan with the Republic of Kyrgyzstan until Altyn-Mazar. To the west it follows the mountain range along the left-bank of Muksu River until the peaks of Severtsov and Pulisangin in the Jirgatal district. In the west the border coincides with the borders of “Sangvor” Natural Reserve (zakaznik) which belongs to Tavilidara Forestry Enterprise. From there it runs up to 3,059 m up to Pieda, Viskharv, Kurgovad mounting passes until Pshikharv settlement of Vanj district. In the southeast borders follow the valleys of Vanj and Yazgulom rivers whose territory belongs to Vanj Forestry Enterprise and to agricultural enterprises of Vanj district. The southern border of TNP passes the Bartang gorge upwards to Barjadiv village, from here it runs to Patkhor peak in Shugnan district and from there to Yashilkul Lake.

About 10 to 12 proposed off-grid electrification projects are expected to be in very close proximity or lie inside the PNT area.

6.1.1 Social and Economic Baseline

Socioeconomic baseline data was acquired from government statistics, village records and from data collected by the Aga Khan Agency for Habitat.

Administrative division of GBAO

GBAO is divided politically into eight districts, seven in the Western Pamirs (Darvaz, Vanj, Rushan, Khorog, Shugnan, Roshtkala and Ishkashim) and one in the Eastern Pamirs (Murghab). Each district consists of six to nine jamoats, the smallest political entity. Khorog, the capital of GBAO, with 27,914 inhabitants (as of 2003), is the largest settlement and the only city in the Tajik Pamirs. Access to GBAO is not perennially guaranteed. The only connections with Western Tajikistan are provided by two roads, which are closed in winter and early spring: One runs over the Khaburabot Pass (3,252m) to Kalai-Khumb, and the other also runs over a pass and then up the Pandzh River, connecting the Northern part of GBAO with the Kulyab region. Flights from Dushanbe (the capital of Tajikistan) to Khorog depend on weather conditions and are thus infrequent (as of 2018 there are no regular flights from Dushanbe to Khorog due to bankruptcy of a local air carrier Tajik Air). The Pamir Highway (M41), running from Osh (Southern Kyrgyzstan) via Murghab to Khorog and continuing from there to Dushanbe, is the main motor road in GBAO.

Demography

Table 6 provides key demographic data for 51 of the 61 villages that will be electrified – all data were not available for the remainder of the villagers. In all 61 villages, there are a total of 2674 households with an average of over six people per household.

Table 6. Characteristics of most villages to be electrified

No.	Village Name	Households	Population	Sex		Age			Vulnerable	
				M	F	<12	12-60	>60	Disabled	Widow
1	Karakul -Kara-Art	114	797	374	423	226	521	50	23	8
2	Rankul	153	1155	596	559	285	811	59	62	24
3	Chechekty	42	286	149	137	87	187	12	6	1
4	Alichor	157	1275	672	603	78	1141	56	69	15
5	Shaimok	76	583	301	282	84	430	69	29	1
6	Modiyan	37	275	123	152	81	147	47	4	4
7	Bashgum - Bez	91	614	326	288	80	472	62	50	3
8	Zaich	12	115	55	60	49	64	2	0	2
9	Ubagn	13	68	49	19	23	39	6	2	2
10	Nimos	42	169	80	89	63	83	23	1	0
11	Sumgad	19	57	20	37	20	36	1	0	0
12	Poimazor	39	280	133	147	90	113	77	5	2
13	Pshikharv	25	269	132	137	156	95	18	0	0
14	Gishun	44	116	55	61	37	73	6	0	0
15	Gijovast	88	769	391	378	110	612	47	8	9
16	Dursher	120	998	453	545	108	820	70	14	0
17	Mamadzoir	3	10	4	6	5	4	1	0	0
18	Suubashi	10	38	17	21	25	13	0	0	0
19	Akbeit	5	36	19	17	31	3	2	0	0
20	Janijer	1	24	10	14	18	5	1	0	0
21	Kizil-Gorum	12	63	34	29	58	4	1	4	0
22	Cheshtibe	17	28	12	16	12	9	7	1	0
23	Shatput	13	60	32	28	49	10	1	0	0
24	Vanvan-i Bolo	37	279	175	104	74	178	27	2	2
25	Vanvan-i Poyon	17	120	59	61	32	76	12	2	0
26	Pish	126	692	359	333	153	480	59	9	56
27	Shirgin	77	1232	700	532	245	948	39	4	1
28	Adjirkh	27	92	48	44	6	85	1	2	0
29	Razudj	59	255	119	136	44	193	18	18	3
30	Dorjomch	72	233	120	113	46	176	11	1	0
31	Dasht	53	231	122	109	75	143	13	5	0
32	Khidjez	57	215	112	103	53	144	18	9	1
33	Ravmed	65	335	179	156	82	244	9	1	0
34	Rukhch	41	265	135	130	40	214	11	4	1
35	Raviv	50	201	84	117	34	147	20	1	1

No.	Village Name	Households	Population	Sex		Age			Vulnerable	
				M	F	<12	12-60	>60	Disabled	Widow
36	Basid	177	674	357	317	78	457	139	22	3
37	Chizef	20	85	40	45	11	50	24	0	0
38	Barchidiv	34	207	106	101	39	153	15	3	2
39	Yapshorv	39	183	105	78	29	142	12	6	1
40	Roshorv	149	1148	549	599	144	785	219	9	9
41	Vrinjavn	11	50	25	25	10	37	3	2	1
42	Nisur	42	299	145	154	25	255	19	2	3
43	Shitam	182	1258	624	634	232	958	68	0	0
44	Tang	101	502	276	226	93	334	75	3	2
45	Zanuj	51	428	186	242	128	229	71	6	0
46	Bardara	139	552	303	249	111	388	53	14	0
47	Chadud	41	172	97	75	33	128	11	1	0
48	Khekhik	1	5	2	3	1	4	0	0	0
49	Chorsun	5	22	11	11	0	22	0	2	0
50	Bulunkul	34	227	112	115	58	155	14	14	0
51	Yoged	126	796	402	394	116	608	72	2	0
TOTAL		2966	18843	9589	9254	3767	13425	1651	422	157

Just over 11.8 percent of the population villages with data, which are likely to be representative of all of the villages, would be considered vulnerable, including elderly (over 60 years), disabled, and/or widowed. Although it is widely reported that a substantial percentage of men are economic migrants to urban centers in central Asia, and in particular to the Russian Federation, there are slightly more males than females in the overall population. Data on education levels and income are not available for GBAO or smaller units.

7. Potential Environmental and Social Risks and Mitigation Measures

This chapter summarizes the risks and impacts that could occur as a result of the implementation of off-grid power generation solutions, namely small hydropower plants, solar, wind and transmission line (last-mile connections) projects. The risks and impacts have been screened at high level, and summarized based on consideration of the information presented in baseline characterization. Where required, the management measures needed to prevent, minimize, mitigate or optimize the impacts have been given.

As noted earlier, it is intended that this ESMF will serve as an umbrella for further Pamir Energy E&S appraisal activities in advancing individual projects to a more detailed level. It is also anticipated that for some of individual projects or sets of individual projects, a more detailed E&S risk assessment will be required to be completed by Pamir Energy followed a development of a detailed ESMP and a round of project-specific stakeholder engagement and public consultations guided by the conceptual SEP.

The Environmental and Social Management Framework (ESMF) will therefore serve as the appropriate appraisal instrument to identify and provide guidance on mitigating potential E&S risks.

The text below presents the details of project E&S risks analysis as a result of off-grid solution projects implementations.

7.1 Summary of Project Activities that Could Affect E&S Conditions

The project will involve a variety of activities, many of which could affect environmental resources and people if they are not carefully designed and implemented. The activities that could cause the most important effects include:

For small hydropower plants (SHPPs) (assuming run-of-river schemes):

- Construction of intake, weir, reservoir, sand trap, fish passages, power house, substations and headrace structures. The construction works would require clearing an area for vehicles and equipment, expanding existing or constructing new access roads. Resettlement/compensation could also be triggered during pre-construction activities, which need to be resolved prior to beginning of construction works.
- During hydropower plant operation, potential effects on water quantity are expected, since the water will be diverted from its original flow path.

For transmission lines and substations ('last-mile' connections):

- Construction of transmission lines corridors and towers. In forested or partially vegetated areas, trees would be cut, so they could not touch the line or fall on the line. The construction works would require clearing an area for vehicles and equipment to use for installing foundations. The tower construction will comprise the following activities: land-clearing, foundation excavation, foundation installation, tower assembly and erection. Land use and potential resettlement aspects could also be triggered and require examination at pre-construction phase.

- Conductoring (placing wires between towers) the entire line. This would involve unrolling conductor wire, raising it to towers and stringing the wires between the towers on either side of the two rail lines.
- Routine maintenance of the vegetation control zone. Every 6-8 years, trees and other plants will be pruned back as needed to maintain clearance from the line
- Construction and maintenance of new substations. It may require partial land-clearing and construction of buildings and installation of equipment.

For solar and wind plants:

- The construction works would require vegetation clearing works for access roads.
- Resettlement/compensation could also be triggered during pre-construction activities, which need to be resolved prior to beginning of construction works.

7.2 E&S Impacts and Mitigation Measures

Results of high level E&S risk and impact analysis and description of mitigation measures to reduce, control, avoid, compensate or otherwise mitigate the adverse E&S effects are provided in the Environmental and Social Management Plan (ESMP) as addressed in Section 7.

The physical, biological and socio-economic conditions that can be potentially affected by the Project are briefly discussed herein.

7.2.1 Potential environmental risks and effects

A summary of potential environmental risks associated with the proposed off-grid solutions is provided in Table 7 below.

Table 7. Potential environmental impacts

Receptor	Issue (Source / Pathway)	Potential Environmental Effects/Risks	Applicability to projects			
			SHPP	Solar	Wind	Last-mile
Air Quality	Dust and PM ₁₀ during construction stage arising from activities such as excavations, concrete mixing, transportation of construction materials.	Emissions of air pollutants during construction and operation. Increased dust, PM ₁₀ during construction leading to reduced air quality and indirect effects on surrounding population and ecosystems.	+	+	+	+
	Vehicle emissions from construction vehicles and equipment.	Increased SO _x , NO _x , CO emissions during construction leading to reduced air quality and indirect effects on surrounding population and ecosystems.	+	+	+	+

Receptor	Issue (Source / Pathway)	Potential Environmental Effects/Risks	Applicability to projects			
			SHPP	Solar	Wind	Last-mile
Surface water resources	Diversion of flow in the rivers/disturbance of natural flow regime	Potential adverse effect on water quantity, quality and aquatic organisms (spawning, disturbance to habitat)	+	-	-	-
	Spills of chemicals and hazardous materials during construction activities that reach the streams with surface runoff		+	+	+	+
	Sedimentation of streams from erosion due to compaction and soil disturbance	Potential risk of impaired surface water quality	+	+	+	+
Soils	Excavation and movement of soil	Loss or damage to soils due to compaction or increased erosion during to construction.	+	+	+	+
	Spills of chemicals and hazardous materials	Accidental fuel and other hazardous materials spills could also contribute to soil contamination and degradation.	+	+	+	+
Ecosystems, flora and fauna; Natural protected areas	Site clearance and construction in areas of the proposed locations that have not yet experienced development.	Habitat loss. Localized damage to biodiversity, through harm to, or loss of, flora and/ or fauna. Potential impact on migratory bird species.	+	+	+	+
	In-stream water abstraction/diversion and release downstream	Loss of natural spawning regime by fish species in the river	+	-	-	-
		Impaired water quality (suspended sediments regime) affecting some aquatic organisms	+	-	-	-
	Destruction or modification of habitat or loss of critical habitat	Reduction in populations of flora/fauna species of conservation concern	+	+	+	+
	Damage to individual plants or communities	Potentially major risk for protected species or endemic species with small ranges. Largest risk from construction; more limited area disturbed, and for shorter periods, during maintenance.	+	+	+	+
	Death or injury due to collision with towers or wires during spring or autumn migration	Potentially major risks on protected species of raptors, scavengers, or cranes. Entire east-west	-	-	+	+

Receptor	Issue (Source / Pathway)	Potential Environmental Effects/Risks	Applicability to projects			
			SHPP	Solar	Wind	Last-mile
		transmission line corridor is crossed by migrants and presents a hazard.				
	Death from electrocution while landing or perching on wires or towers	Potentially moderate risk on protected species of raptors, scavengers, or cranes.	-	-	+	+
Geohazards	Earthquake, GLOFs, landslides, debris flows, rockfalls	Potential risks of damaging SHPP facilities, solar panels, wind towers and transmission line towers	+	+	+	+
Noise and vibration	Elevated noise levels due to construction and/or operation activities	Temporary disturbance from construction and/or operational activities, impacting upon sensitive receptors (nuisance to nearby villagers) and local fauna	+	+	+	+
	Increased vibration to sensitive receptors as a result of ground induced vibration from possible blasting works	Intermittent disturbance from blasting, impacting upon sensitive receptors (possibly limited to OHS considerations).	+/-	-	-	+/-
	Residents, visitors and tourists	Risk of nuisance/disturbance as a result of construction noise	+	+	+	+
Landscape and Visual	Presence of steel towers with wires; solar PV panels; wind towers; intake/weir structures and headrace structures	Risk of disturbance to natural landscape views. Could affect tourists, local residents, travelers/visitors	+	+	+	+
Land use	Areas protected for biodiversity value (Tajik National Park)	For individual projects located inside or very close the Tajik National Park - potentially major risk for protected species or endemic species	+	+	+	+
	Construction and operational activities on or nearby agricultural lands/pastures	Loss of agricultural land (arable land), pastured or orchards if not properly mitigated	+	+	+	+

7.2.2 Socio-economic, community and occupational H&S aspects

Key social, economic, community and occupational H&S risks and effects, associated with construction and operation of the proposed off-grid power generation and transmission solutions are detailed in Table 8.

Table 8. Potential social and economic impacts

Receptor	Issue (Source / Pathway)	Potential Socio-economic Effects/Risks	Positive or Adverse effects
Impacted communities and businesses and Project stakeholders	Communications regarding project design, implementation and operations	Inadequate stakeholder engagement during the Project design, and possibly during implementation and operations	Adverse
Economic benefits	Employment opportunities for local residents during construction stage	Additional income opportunities for local villagers A risk of not providing priority of hiring locals during construction by construction contractor	Positive/Adverse
Key economic sectors	Providing electricity and generating income	More reliable power supply (positive effect)	Positive
	Partial loss of land our or economic use of land (pastures, arable lands, orchards)	Risk of reduced agricultural output by local businesses and risk of losing money	Adverse
Social infrastructure	Construction activities	Potential risk of damaging existing public/rural/gravel/earth roads	Adverse
Cultural heritage and heritage	Construction activities, including excavation works, topsoil stripping	Risk of damaging cultural monuments, archaeological artefacts, cemeteries	Adverse
Community near project areas	Traffic flow during construction	Community health and safety (accidents during construction or by trespassers) at risk by increased traffic during construction	Adverse
	Community functions	Risk of disrupting community function as a result of generating noise, dust, presence of outsiders during construction stage	Adverse
	Disruption to infrastructure functioning during all phases	Community health and safety at risk from infrastructure updating and expansion including potential for loss of water, electricity and access to roads throughout the construction phases	Adverse
	Workers influx	Risk for Community disruption, increased crime, etc.	Adverse
	Diseases, violent behavior (including GBV), accidents, emergencies	Community health and safety at risk	Adverse
	Physical and economic	Risk of permanent loss of land;	

Receptor	Issue (Source / Pathway)	Potential Socio-economic Effects/Risks	Positive or Adverse effects
	displacement	risk of loss of wood resource; risk of being not compensated for physical or economic displacement; risk of loss of use of land	Adverse
Workers for construction and operation	Occupational health and safety during all phases of projects	Potential for occupational hazards during all phases	Adverse

7.2.3 Summary of Key Risks and Mitigation Measures

A summary of key environmental impacts/risks, relevant WB ESSs and generic mitigation measures is provided in Table 9 as below.

Table 9. Summary of potential environmental risks and impacts and mitigation measures

nn	Receptor	Off-grid solution	Risk/Impact	Relevant World Bank Standards	Mitigation and/or good management practices
1.	Air Quality	SHPP, solar, wind and t-line	Increased dust and PM ₁₀ during construction	WB ESS 1,3&4	Require contractor to develop Air quality management plan Minimization of fugitive dust using enclosures, dust collectors, covering of loads, wetting/sprinkling roads and other appropriate measures.
			Increased gaseous emissions during construction	WB ESS 1,3&4	Require contractor to develop Air quality management plan Use of modern, well maintained vehicles; ensuring vehicle emissions are in compliance with Tajik and international emission standards; switching off of machinery when not in use; controls on vehicle movements through populated areas through use of approved access routes.
2.	Surface water resources	SHPP	Reduction in water quantity and quality of the streams where SHPPs are	WB ESS 1,3&6	Thorough evaluation of potential adverse impacts on stream's water quantity and quality during detailed design/feasibility study

nn	Receptor	Off-grid solution	Risk/Impact	Relevant World Bank Standards	Mitigation and/or good management practices
		SHPP	proposed to be constructed		In the SHPP design consider integrating into design proper fish passage and sand trap structures
		SHPP, solar, wind and t-line	Spills of chemicals and hazardous materials during construction activities that could reach the streams with surface runoff		Require contractor to develop a Chemicals storage, refuelling and spill response plan To prevent contamination from spills of fuel, oil and chemicals, the liquids have to be stored in designated secure areas. Refueling must be conducted over impervious surfaces. Spill cleanup kits should be available at all areas and in all vehicles. Inspection of construction vehicles to identify and repair leaks or damaged fuel/lubricant lines should be performed on a regular basis.
3.	Groundwater	SHPP, solar, wind and t-line	Spills of chemicals and hazardous materials during construction and operations	WB ESS 1,3&6	Require contractor to develop a Chemicals storage, refuelling and spill response plan Especially for the construction works on streams' floodplains: ensure fuel, oil and chemicals, the liquids are stored in designated secure areas. Refueling must be conducted over impervious surfaces. Spill cleanup kits should be available at all areas and in all vehicles.
4.	Soils	SHPP, solar, wind and t-line	Accelerated rates of soil erosion and local contamination of soil due to fuel, oil and chemicals spills.	WB ESS 1,3&6	Require contractor to develop a Soil management and erosion control plan Storage of the removed soil in stockpiles and taking the soil away or return it back in. Planting vegetation on the disturbed ground with native plants, compacting and/or stabilizing disturbed surfaces as soon as practicable.

nn	Receptor	Off-grid solution	Risk/Impact	Relevant World Bank Standards	Mitigation and/or good management practices
					<p>Require contractor to develop a Chemicals storage, refuelling and spill response plan</p> <p>To prevent contamination from spills of fuel, oil and chemicals, the liquids have to be stored in designated secure areas. Refueling must be conducted over impervious surfaces. Spill cleanup kits should be available at all areas and in all vehicles. Inspection of construction vehicles to identify and repair leaks or damaged fuel/lubricant lines should be performed on a regular basis.</p>
5.	Ecosystems, flora and fauna	SHPP, solar, wind and t-line	Site clearance and construction in areas of the proposed locations that have not yet experienced development.	WB ESS 6	<p>Avoid development in areas which currently contain vegetation, in favor of previously developed land; Remove vegetation only as a last resort and protect it where possible during construction; Provide compensatory planting of vegetation for any affected areas.</p>
		SHPP	In-stream water abstraction/diversion and release downstream	WB ESS 6	<p>At feasibility study must ensure the design and proposed run-of-river HPP scheme will sustain environmental flow in the river channel.</p>
		SHPP, solar, wind and t-line	Destruction or modification of habitat or loss of critical habitat	WB ESS 6	<p>In consultation with the appropriate authorities Pamir Energy will design and conduct a survey of flora and fauna within the project area of influence to identify protected or sensitive habitat and species. If critical habitat is present, Pamir Energy will ensure that Biodiversity Action Plan (BAP) is developed prior to start of construction stage. BAP will specify measures to prevent or reduce impacts during construction and also during future operation and maintenance.</p>

nn	Receptor	Off-grid solution	Risk/Impact	Relevant World Bank Standards	Mitigation and/or good management practices
					During construction ensure minimum biodiversity damage due to land clearing; No damage outside boundaries; Limited damage to ground surface and root zone.
6.	Land use	SHPP, solar, wind and t-line	Loss of agricultural land (arable land), pastured or orchards if not properly mitigated	WB ESS 1&5,10	Develop and implement Resettlement and Compensation Plan (RACP) based on Resettlement Policy Framework (RPF)
7.	Geohazards: earthquakes, GLOFs, landslides, debris flows, rockfalls	SHPP, solar, wind and t-line	Potential risks of damaging SHPP facilities and structures, solar panels, wind towers and transmission line towers	WB ESS 1	<p>Prior to commencement of construction activities, complete a detailed Geomorphologic hazard assessment study in order to reduce the risk of selecting project location in high risk zones.</p> <p>Ensure the design of proposed projects can withstand strong earthquakes.</p>
8.	Noise and vibration	SHPP, solar, wind and t-line	Temporary disturbance from construction and/or operational activities, impacting upon sensitive receptors (nuisance to nearby villagers) and local fauna	WB ESS 1&6	<p>Require contractor to develop a Noise Management Plan</p> <p>Ensure construction noise will be limited to restricted times (daylight); During operations the engine covers of generators, air compressors and other powered mechanical equipment shall be closed, and equipment placed as far away from residential areas as possible.</p>

A summary of key socio-economic, community and H&S risks and effects, relevant World Bank standards and mitigation measures is provided in Table 10 as below.

Table 10. Summary of potentially significant socioeconomic impacts and mitigation measures

Receptor	Impact/Risk	Relevant World Bank Standard	Mitigation and/or good management practices
Impacted communities and businesses and project stakeholders	Inadequate stakeholder engagement	WB ESS 1	Take all required steps in order to ensure that all Project stakeholders are informed, consulted and protected through grievance

Receptor	Impact/Risk	Relevant World Bank Standard	Mitigation and/or good management practices
			mechanisms in accordance with WB requirements
Community near project areas	Community health and safety (accidents during construction or by trespassers) at risk by increased traffic during construction	WB ESS 4	Require contractor to develop a Traffic Management Plan Reduce unnecessary traffic during peak hours and for heavy vehicles select routes with strong infrastructure or pay for upgrading to minimize damages.
	Community functions: Risk of disrupting community function as a result of generating noise, dust, presence of outsiders during construction stage	WB ESS 4 WB ESS 3	Site away from the nearby residential areas as much as possible, and take all dust reduction measures, including watering unpaved roads, and only operating during agreed daylight hours
	Workers influx: Risk for Community disruption, increased crime, etc.	WB ESS 2	<ul style="list-style-type: none"> - Worker Code of Conduct that will prescribe certain behaviors and require others; - Require contractor to enforce the Code, with penalties leading up to dismissal. - -Appoint a Supervision Consultant - Contractor to consult with local authorities and community leaders, which will ensure they (that is, project managers) are aware of incidents and can take appropriate action if the issue arises.
	Community health and safety at risk: diseases, violent behavior (including GBV), accidents, emergencies	WB ESS 2 WB ESS 4	
	Physical and economic displacement: Risk of permanent loss of land; risk of loss of wood resource; risk of being not compensated for physical	WB ESS 5	Compensation for loss of use of land to be negotiated with owner/farmer, with compensation at a value at least fair market value (for permanent crop loss, not necessarily land, as appropriate). Development and implementation of a Resettlement and Compensation Plan (RACP) based on Resettlement Policy Framework (RPF)
Economy	Employment opportunities for local	WB ESS 2	Ensure local workforce receives priority in hiring for construction

Receptor	Impact/Risk	Relevant World Bank Standard	Mitigation and/or good management practices
	residents during construction stage		
	Providing electricity and generating income	-	Sustain constant electricity generation and supply
	Partial loss of land or economic use of land (pastures, arable lands, orchards)	WB ESS 5	<p>Compensation for loss of use of land to be negotiated with owner/farmer, with compensation at a value at least fair market value (for permanent crop loss, not necessarily land, as appropriate).</p> <p>Development and implementation of a Resettlement and Compensation Plan (RACP) based on Resettlement Policy Framework (RPF)</p>
Social infrastructure	Potential risk of damaging existing public/rural/gravel/earth roads	WB ESS 4	Require contractor to develop a Traffic Management Plan
Cultural heritage and heritage	Risk of damaging cultural monuments, archaeological artefacts, cemeteries	WB ESS 8	Require contractor to develop and follow a chance find procedure
Workers for construction and operation	Occupational hazards	WB ESS 1 WB ESS 2	Adhere to all international labor OHS (Occupations Health and Safety) standards, including OHS training, during all phases of the Project
Infrastructure to support construction and operations	Increased demand for water, electricity and transportation	WB ESS 1&4 and ESS10	<p>Take all required steps in order to ensure that all impacted stakeholders are informed, consulted and protected through grievance mechanisms in accordance with WB standards.</p> <p>Consider developing a community development program. In the development include improved services to surrounding communities as appropriate to improve overall service to residents and impacted communities.</p>

8. Standardized Environmental and Social Management Plan (ESMP)

The Environmental and Social Management Plan (ESMP) for the off-grid solutions in GBAO will identify the principles, approach, procedures and methods that will be used to control and minimize the environmental and social impacts of all construction activities.

General Remarks

Environmental and Social Management Plan (ESMP) for the Category A projects should outline the mitigation, monitoring and administrative measures to be taken during project implementation to avoid or eliminate negative environmental impacts. For projects of intermediate environmental and social risk (Category B projects), ESMP may also be an effective way of summarizing the activities needed to achieve effective mitigation of negative environmental impacts.

The example for ESMP format is provided in **Annex 2**. It represents a model for development of an ESMP for individual off-grid electrification projects. The model divides the project cycle into three phases: construction, operation and decommissioning. For each phase, Pamir Energy will identify any significant environmental impacts that are anticipated based on the analysis done in the context of preparing an environmental and social assessment. For each impact, mitigation measures are to be identified and listed. The ESMP format also provides for the identification of institutional responsibilities for "installation" and operation of mitigation devices and methods.

Description of Environmental and Social Management Plan (ESMP).

The Environmental Social Management Plan (ESMP) identifies feasible and cost-effective measures that may reduce potentially significant adverse environmental impacts to acceptable levels. The plan includes compensatory measures if mitigation measures are not feasible, or sufficient. Specifically, the ESMP (a) identifies and summarizes all anticipated significant adverse environmental impacts (including those involving indigenous people or involuntary resettlement); (b) describes--with technical details--each mitigation measure, including the type of impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate; (c) estimates any potential environmental impacts of these measures; and (d) provides linkage with any other mitigation plans (e.g., for involuntary resettlement, indigenous peoples, or cultural property) required for the project.

Example of generic mitigation measures by receptor/media is provided in **Annex 3**.

Integration of ESMP with projects

The borrower's decision to proceed with a project, and the Bank's decision to support it, are predicated in part on the expectation that the ESMP will be executed effectively. Consequently, the Bank expects the plan to be specific in its description of the individual mitigation and monitoring measures and its assignment of institutional responsibilities, and it must be integrated into the project's overall planning, design, budget, and implementation. Such integration is achieved by establishing the ESMP within the project so that the plan will receive funding and supervision along with the other components.

9. E&S Screening, Supervision, Monitoring and Reporting

The objective of the ESMF is to ensure that any activities supported by the TREP will not create adverse impacts on the local environment and local communities, and that there is effective application of the World Bank’s safeguard policies and Tajikistan’s Environmental Law and Regulations for adequate mitigation of any residual and/or unavoidable impacts. This ESMF was prepared based on the following:

- analysis of the existing national legal documents, regulations and guidelines;
- World Bank safeguard policies, as well as other WB guiding materials;
- Results of consultations with the representatives of stakeholders and all interested parties.

9.1 E&S Screening

The objectives of the screening process are to:

- Determine the potential adverse environmental and social impacts of the proposed project;
- Determine the appropriate environmental category as per 2018 WB ESF.

Based on the assigned environmental category, determine the appropriate level of environmental work required (i.e. whether an ESIA is required or not). Screening will further ensure that the proposed project (and maybe associated projects) that may have potential adverse impacts are recommended for more detailed studies either through preparation of Project Reports (PR) or full Environmental and Social Impact Assessment (ESIA).

9.2 E&S Monitoring, Supervision and Reporting

To keep track of the requirements and responsibilities for monitoring the implementation of environmental and social mitigation identified in the analysis included in an environmental assessment for Category A or B projects, a monitoring plan may be useful. An example of a format and content of a Monitoring Plan is provided in **Annex 4** below.

When a monitoring plan is developed and put in place in the context of project implementation, the PIU will request reports at appropriate intervals and include the findings in its periodic reporting to the World Bank and make the findings available to Bank staff during supervision missions.

The monitoring of the off-grid individual project solutions is intended to provide information about key environmental and social impacts and the effectiveness of mitigation measures, which is required to: (i) ensure early detection of conditions that necessitate particular mitigation measures, and (ii) furnish information on the progress and results of mitigation.

Monitoring

Environmental, social and H&S monitoring during project implementation provides information about key E&S aspects of the project and the effectiveness of mitigation measures. Such information enables the borrower and the Bank to evaluate the success of mitigation as part of project supervision, and allows

corrective action to be taken when needed. Therefore, the ESMP identifies monitoring objectives and specifies the type of monitoring, with linkages to the impacts assessed in the E&S appraisal report and the mitigation measures described in the ESMP. Specifically, the monitoring section of the ESMP provides (a) a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions; and (b) monitoring and reporting procedures to (i) ensure early detection of conditions that necessitate particular mitigation measures, and (ii) furnish information on the progress and results of mitigation.

Construction contractors selected/appointed by the Pamir Energy will be responsible for implementing mitigation measures and actions items as specified in the ESMP (**Annex 2**) for their respective activities and ensuring that there is compliance with environmental and social standards (ESSs) regulations throughout the construction period. All contractors will be required to reflect environmental guidelines in their financial bids and contracts for individual subprojects and to use environmentally acceptable technical standards and procedures during construction of works. Payments to contractors will be contingent on the final inspection, with particular attention to the requirement of restoring the site to its original condition upon completion of rehabilitation activities. Additionally, contract clauses shall comply with national regulations on energy efficiency, construction, health protection, and safeguard laws and rules on environmental protection.

As part of E&S monitoring activities, the Supervision Committee (Supervision Consultant and Pamir Energy) will conduct random inspections of individual project sites to determine the effectiveness of measures taken and the impacts of project-related activities on the surrounding environment. The Supervision Committee are also responsible for processing, addressing and monitoring complaints and other feedback, including that on environmental and social issues.

The Supervision Committee will be responsible for ESMP reporting and will:

- Record and maintain the results of project supervision and monitoring throughout the life of the Project. It will present summary progress reports on ESMF implementation and ESSs on a semi-annual basis to the World Bank, and as part of this reporting, provide updates on any related grievances/feedback that was received, that has been addressed and that may be pending;
- Prepare semi-annual reports on the progress of implementation of measures proposed by the ESMP for the off-grid solution options and projects;
- Prepare semi-annual reports on the environmental impacts originated during implementation of and analyze the efficiency of mitigation measures applied to minimize negative consequences;
- Prepare outlines and requirements for Contractors' reports on environmental protection and mitigation measures, and review Contractor's monitoring plan and reports
- Present the impact of mitigation and environmental and social protection measures for general public via specific publications or/and by annual public seminars.

Capacity Development and Training

To support timely and effective implementation of environmental project components and mitigation measures, the ESMP draws on the E&S appraisal of the existence, role, and capability of environmental units on site or at the agency and ministry level. If necessary, the ESMP recommends the establishment or expansion of such units, and the training of staff, to allow implementation of E&S appraisal recommendations. Specifically, the ESMP provides a specific description of institutional arrangements—who is responsible for carrying out the mitigatory and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training). To strengthen environmental management capability in the agencies responsible for implementation, most ESMPs could address one or more of the following additional topics: (a) technical assistance programs, (b) procurement of equipment and supplies, and (c) organizational changes.

10. Stakeholder Engagement and Public Consultations

Pamir Energy has been engaging with local stakeholders in various nonelectrified villages since at least 2016.

10.1 Purpose of stakeholder engagement within ESIA

Stakeholder engagement is an integral part of project development and implementation, and should begin as early in project development as possible and continue through the project’s full life cycle. The purpose of stakeholder consultation during the international ESIA process is to ensure that the views, interests and concerns of project stakeholders are taken into account in the following decisions:

- Decisions taken during the planning, design and implementation of the project
- ESIA decisions regarding planning of the ESIA scope, assessment of the potential impacts and identification of appropriate management measures
- Decisions by the state environmental agency (CEP) to approve successive steps leading to completion and approval of the local OVOS
- Decisions by development financiers on the funding of the project and corresponding loan conditions.

10.2 Stakeholder engagement and consultation process for GBAO electrification project

An overview of the ESIA stakeholder consultation process for the electrification projects is presented in Table 11.

Table 11. Overview of stakeholder engagement process

<i>Steps</i>	<i>Objectives</i>	<i>Stakeholders involved</i>	<i>Activities</i>	<i>Main documents to be produced</i>
SCOPING Corresponds with the scoping phase of the ESIA	<ul style="list-style-type: none"> - Identify regulatory authorities and other stakeholders who should be involved in the ESIA process. - Notify stakeholders of the ESIA process and give them the necessary procedural and substantive information to facilitate their input to the process. - Engage stakeholders – 	All	Stakeholder identification and analysis (desktop social scan)	List of potential stakeholders
			Planning stakeholder consultation and disclosure	SEP
			Notification of stakeholders of ESIA process and the proposed project	Background information document for stakeholders
			Engagement of stakeholders	- Records of meetings.

<i>Steps</i>	<i>Objectives</i>	<i>Stakeholders involved</i>	<i>Activities</i>	<i>Main documents to be produced</i>
	listen to them and record issues raised (concerns, comments and questions).			- Updated stakeholder database and issues record.
DISCLOSURE AND CONSULTATIONS ESIA and RPF stakeholders	Disclose ESIA and RPF	Local communities, and regulatory authorities, NGOs and other stakeholders as required	Meetings with stakeholders, as per the procedure described in SEP	- Records of meetings. - Specific information-sharing documents.
FEEDBACK RESPONSE on the results of the ESIA	<ul style="list-style-type: none"> - Provide relevant stakeholders with an update on progress with project planning, expected impacts and proposed mitigation. - Acknowledge issues raised by stakeholders and tell them how the project proponent (Pamir Energy) proposes to address these. - Engage stakeholders – listen to them and record additional issues raised. 	All stakeholders that have shown an interest in the project	Notification of stakeholders	- Issue specific feedback documentation as necessary - Non-technical summary of the ESIA.
			Engagement of stakeholders	- Records of meetings. - Updated issues record.
			<ul style="list-style-type: none"> - Pamir Energy advertises public hearing “Asia Plus” and “Badakhshan” newspapers - Delivering public meeting information through Pamir Energy electrical inspectors 	- Advertisements - Notices for distribution by electricity inspectors
			Public hearing within 30 days of public notice	A record of the hearing(s) and meetings

10.3 Previous Stakeholder Engagement and Consultations

Pamir Energy has informally engaged with local leaders and stakeholders in the nonelectrified villages as it has visited the locations to identify potential electrification solutions. In general, discussions were relatively unstructured and dealt with details of the project. No objections were expressed, and support was universal.

In addition, Pamir Energy organized and carried out a series of scoping meetings and consultations with institutional stakeholders in early 2019.² The scoping consultation process involved identification of key project stakeholders in Dushanbe and GBAO, meetings with state and local authorities in Dushanbe and Khorog, meetings with regional NGOs and academic research institutes and universities in Dushanbe and Khorog cities (e.g. University of Central Asia and Pamir Biological Institute in Khorog). The main objectives of the consultations included:

- To identify and verify interests of project stakeholders and to establish working dialogues between Pamir Energy and the stakeholders
- To disclose information about the proposed project
- To understand stakeholders' expectations about the project and their respective levels of interest in continued communication and participation in future Pamir Energy activities associated with the proposed project.
- To receive feedback, comments, and concerns from stakeholders about the project and on prospective regional electricity supply schemes in general
- To obtain feedback on major environmental, social and economic problems in Roshtqala, district and overall across GBAO.

10.4 Stakeholder Engagement Plan

Pamir Energy prepared and has disclosed for public review a Stakeholder Engagement Plan (SEP) that outlines how stakeholders will be engaged throughout the course of the project and which methods will be used as part of the process. It outlines the responsibilities of Pamir Energy and contractors in the implementation of stakeholder engagement activities. Details on ESMF stakeholder consultation are also presented in the SEP. The SEP is considered to be a live document that will be updated throughout the ESIA process and will continue to evolve as the project proceeds through the construction, operation and decommissioning phases.

Stakeholder engagement activities will be targeted at project affected persons (people affected by land acquisition, people residing in project areas, Jamoats), as well as at other interested parties (Ministries and government agencies, NGOs, business and workers' organizations, press and media, general public, tourists, jobseekers, academic institutions, among others). The SEP outlines special considerations that will be given to ensure outreach to and engagement of disadvantaged and vulnerable groups. SEP activities include establishment and management of a project-wide grievance redress mechanism, public meetings, trainings and workshops, media and social media communication, disclosure of written materials, municipal information desks, involvement of project community liaison officers at the municipal level, as well as a survey among affected persons to gauge satisfaction with the quality of citizen engagement and share additional concerns.

² Consultations and discussions dealt with the full World Bank's Tajikistan Rural Electrification Project, which includes the electrification of villages in GBAO (this project) and in Khatlon as well as the Sebzor hydropower plant, 18km connecting transmission line all in GBAO.

10.5 Public Disclosure of and Consultations for the ESMF and associated documents

This ESMF was prepared to meet requirements of the World Bank and also the requirements of Tajikistan laws on Environmental Protection and Law on Environmental Expertise. Documentation includes this ESMF, a Stakeholder Engagement Plan (SEP), and a Resettlement Policy Framework (RPF). When this draft ESIA and other documents was disclosed to authorities and the public on 24 April 2019, it was announced in the regional/state newspaper (“Asia Plus”) and local newspaper “Badakhshon”. It was also announced on Pamir Energy web page (<http://www.pamirenergy.com/en/presscenter/public.php>).

Besides the draft disclosure documents (and the final documents in future), project brochures and updates were posted. An easy-to-understand guide to the terminology used in the environmental and social reports or documents will also be posted on the website. In addition, the site will provide details about the Grievance Redress Mechanism (Subsection 9.5) and contact details of the Community Liaison Officer. Pamir Energy will update and maintain the website regularly during project implementation, at least quarterly.

Paper copies of all ESIA documentation will be placed in Jamoats and advertisements of meetings placed on notice boards. Electronic copies are available at the website above. Addresses where the ESIA documents can be reviewed include the following:

- Pamir Energy, 75 Gulmahmadova Street, 736000 Khorog, GBAO, Tajikistan
- Administration (Khoukumat) of GBAO in Khorog, address: city Khorog, Lenin street 47, Tajikistan
- Administration (Khoukumat) of Roshtqala district in Roshtqala; address: Khorog, Committee for Environmental Protection (CEP), Lenin street, 46, Tajikistan.

In the week of 22 April, Pamir Energy advertised and gave notice of meetings in selected villages. At the meetings, Pamir Energy distributed brochures and presented information on the overall project and the project that would be implemented to electrify their villages. They noted that more detail information on the project as well as documentation on environmental and social aspects of the projects are available on the Pamir Energy website, the brochures and newspapers developed by Pamir Energy that are distributed, in the regional newspaper “Badakhshon”, and messages sent to consumers via phones.

Darzhomch

One of the meetings was held in Darzhomch village (population 220) in the Bartang community of Rushan district on 25 May. Representatives of Razuch village (population 213) also attended. A total of about 50 men and women from Darzhomch and nearby communities attended, as shown in the photographs below. Pamir Energy asked people to sign in and receive brochures that describe the project. Pamir Energy’s presentation noted the poles will be located so that no households will need to be relocated, but that compensation would be paid when poles were on agricultural or other land or when people suffered any sort of losses. Given the lack of access to electricity and its implications for living conditions, attendees at the meeting very much supported the project.



Consultation meeting in Darzhomch



Pamir Energy noted that by increasing the capacity of the current mini-hydropower plant, Razuch and Ravivd (population 136) villages would be electrified. Most questions and concerns were related to employment – who would be employed, how would they be selected, etc. Pamir Energy reported that construction contractors will announce openings and qualifications required and will then short-list and hire applicants based on availability and qualifications. In addition, Pamir Energy noted that new employees during operation would be selected based on relevant qualifications such as education and technical knowledge.

No attendees expressed concerns or objections to the project, and all were supportive. Minutes of the meeting, the list of attendees, and the brochure that was made available to attendees (and also made available to other villages) are presented as Annex 5.

Zaych

Another meeting was held in Zaych village (population 136) of Vanj District on 26 May. A total of 37 community members attended, including many women, as shown in the photographs below. Pamir Energy asked people to sign in and handed out brochures that describe the project. Pamir Energy’s presentation noted the poles will be located so that no households will need to be relocated, but that compensation would be paid when poles were on agricultural or other land or when people suffered any sort of losses. Given the lack of access to electricity and its implications for living conditions, attendees at the meeting very much welcomed the project’s implementation.



Attendees expressed no objection or concerns about the project and its impacts. They are generally very hopeful it will contribute to positive developments for their village. The primary points of interest were potential employment opportunities and compensation (in-kind) for potential loss of land. The village leader expressed the hope that instead of having to migrate to Dushanbe or Russia to support their households, their employment on the project could contribute to the local economy. A local teacher noted that students have to study in daylight and teachers cannot use videos or other teaching methods that require electricity. Both they and all others expressed support for the project. Minutes of the meeting, the list of attendees, and the brochure that was made available to attendees (and also made available to other villages) are presented as Annex 6.

10.6 Stakeholder Engagement during Project Implementation

As described in the SEP, engagement will continue through the life of the project. The SEP provides details of the program that will be used to present information to stakeholders and to receive information and opinions from stakeholders. In summary, there will be:

- Public / community meetings
- Mass/social media communication
- Distribution of information materials
- Grievance redress mechanism

- Project tours for media, civil society, and local representatives
- Information desks at each municipality
- Citizen perceptions surveys
- Electricity inspectors, who visit households regularly to read meters that measure electricity usage
- Trainings and workshops to raise awareness on key topics of interest such as EMF, impacts on land and compensations, code of conduct for project staff, grievance redress mechanism, or other topics of interest to citizens.

10.7 Pamir Energy Point of Contact

The point of contact for stakeholder engagement is identified here:

<i>Description</i>	<i>Contact details</i>
Name	Asligul Mamadatoeva
Address:	75 Gulmamadova Street 736000 Khorog, GBAO, Tajikistan
E-mail:	mavluda.mamadatoeva@pamirenergy.com
Telephone:	+992 35 222 23 10

Information on the Project and future stakeholder engagement programs will available on the Project’s website and will be posted on information boards in the villages crossed by the line. Information can also be obtained from Pamir Energy in Khorog.

Six-monthly E&S reports that document the implementation of the ESMP and the Stakeholder Engagement Plan (SEP) will be disclosed on the Project website and made available in the Jamoats or at the houses of the village heads.

11. Grievance Redress Mechanism (GRM)

Issues and complaints can arise during the course of the project from actions by Pamir Energy or its contractors and subcontractors. At present, Pamir Energy operates a “customer hotline” that is used to report power outages and other issues. During construction, Pamir Energy will establish a separate mechanism to deal with construction-related issues, including issues regarding compensation and resettlement. The Stakeholder Engagement Plan and Resettlement Policy Framework include a Grievance Redress Mechanism (GRM) by which any external stakeholder can submit questions, comments, concerns, and complaints and be assured they will be handled in a timely and responsible manner and that they will be informed of the ultimate resolution. A separate mechanism will be used for worker grievances.

The GRM described here is the same as is presented in the Stakeholder Engagement Plan. It is repeated here so that reviewers of this ESIA do not have to consult another document to understand how they can interact with the project.

Project-affected-people and any other stakeholder may submit comments or complaints at any time by using the project’s GRM. The overall objectives of the GRM are to:

- Provide a transparent process for timely identification and resolution of issues affecting the project and people, including issues related to the resettlement and compensation program.
- Strengthen accountability to beneficiaries, including project affected people.

The GRM will be accessible to the full range of project stakeholders, including affected people, community members, civil society, media, and other interested parties. Stakeholders can use the GRM to submit complaints, feedback, queries, suggestions, or even compliments related to the overall management and implementation of the project, including the resettlement and compensation program. The Grievance Resolution Mechanism (GRM) is intended to address issues and complaints from external stakeholders in an efficient, timely, and cost-effective manner. A separate mechanism will be used for worker grievances.

Pamir Energy will be responsible for managing the stakeholder GRM, but many or most grievances are likely to result from actions of the construction contractors and so will need to be resolved by the contractors themselves, with Pamir Energy oversight. Typical grievances for transmission line projects could include issues related to:

- Land acquisition and compensation
- Construction damages to property, crops, or animals
- Traffic
- Environmental impacts such as erosion
- Nuisances such as dust or noise
- Worker misbehavior.

The GRM will be in place and operational well before Pamir Energy begins construction activities and will function until the completion of all construction activities and beyond, till the contractor's defect liability period ends. Initial compensation, for land and property needed for the project, will be completed before construction begins. People who reside near the line and others who may be affected will be informed, in meetings and with brochures, of the GRM's purpose, functions, procedures, timelines and contact persons. Additional measures will be taken to inform those who are determined to be eligible for compensation.

The project GRM will include three successive tiers of extra-judicial grievance review and resolution:

- The first tier will be the Pamir Energy E&S team, including the Community Liaison Officer. They will deal quickly with issues that can be quickly resolved, and would always involve direct communication with the person(s) who submitted the grievance.
- The second tier will be a Grievance Resolution Committee (GRC1) that includes representatives of Pamir Energy and of the complainant's village and Jamoat. The GRC1 will deal with issues that could not be resolved in the first tier.
- The third tier will be a Grievance Redress Commission (GRC2) that included one or more senior Pamir Energy managers and one or more Jamoat and/or village leaders. GRC2 will resolve issues that could not be resolved by GRC1.

Grievances would be handled as described in the following subsection.

11.1 Submission of grievances

Grievances may be submitted by any person at any time, in writing or in person or by telephone. They may be submitted:

- Using the grievance form provided in Annex 1 and submitting to Pamir Energy or the contractor. . People who submit grievances may identify themselves on the form or submit the grievance anonymously.
- Given to electricity inspectors (who will be trained to receive and turn in grievances to the Community Liaison Officer
- Handed to or spoken to the Pamir Energy Community Liaison Officer, any Pamir Energy manager or supervisor, or to contractor supervisors (who will be trained to turn over grievances to Pamir Energy if they cannot be dealt with by the contractor)
- Placed in locked "Suggestion/Complaint" boxes that will be placed at work camps, in Jamoats, and in contractor and Pamir Energy offices. The Pamir Energy Community Liaison Officer and HR Manager will have keys and will collect grievances at least once per week.
- Mailed or emailed to Pamir Energy at the address below

The Community Liaison Officer for Pamir Energy is identified here:

<i>Description</i>	<i>Contact details</i>
Name	Asligul Mamadatoeva
Address:	75 Gulmamadova Street 736000 Khorog, GBAO, Tajikistan
E-mail:	mavluda.mamadatoeva@pamirenergy.com
Telephone:	+992 35 222 23 10

11.2 Grievance resolution process

Information about the GRM will be publicized as part of the initial disclosure consultations in the participating Jamoats and villages. Brochures will be distributed during consultations and public meetings, and posters will be displayed in public places such as in government offices, project offices, village notice boards, community centers, etc. Information about the GRM will also be posted online on the Pamir Energy website (<http://www.pamirenergy.com/en/presscenter/public.php>).

The overall process for the GRM will include six steps, as shown on Figure 7 and described below.

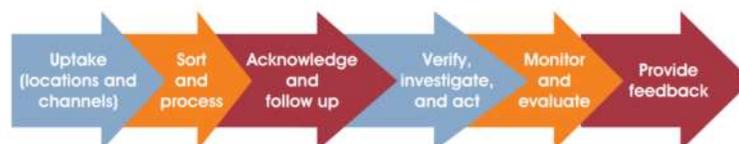


Figure 7. Feedback and GRM process

Source: Agarwal, Sanjay and David Post. 2009. Feedback Matters: Designing Effective Grievance Redress Mechanisms for Bank-Financed Projects – Part I. SDV. World Bank.

- **Step 1: Uptake.** Project stakeholders will be able to provide feedback and report complaints through several channels, as described above: in person at offices (village/mahalla, Jamoat, project, and Pamir Energy offices) and at project sites, and by mail, telephone, and email.
- **Step 2: Sorting and processing.** Complaints and feedback will be compiled by the Community Liaison Officer and recorded in a register. Submissions related to the resettlement and compensation program will be referred to the HSE Department for processing and resolution. The Department will assign one individual to be responsible for dealing with each complaint, including following through within Pamir Energy and with the complainant to arrive at a resolution, with the goal to resolve complaints within 15 days of receipt.
- **Step 3: Acknowledgement and follow-up.** Within seven (7) days of the date a complaint is submitted, the responsible person will communicate with the complainant and provide information on the likely course of action and the anticipated timeframe for resolution of the complaint. If complaints are not resolved within 15 days, the responsible person will provide an update about the status of the complaint/question to the complainant and again provide

an estimate of how long it will take to resolve the issue. In addition, the HSE Department will report to the General Director every two weeks on grievances that have remained unresolved for 30 days or more.

- **Step 4: Verification, investigation and action.** This step involves gathering information about the grievance to determine the facts surrounding the issue and verifying the complaint's validity, and then developing a proposed resolution, which could include changes of decisions concerning eligibility for compensation, additional compensation or assistance, changes in the program itself, other actions, or no actions. Depending on the nature of the complaint, the process can include site visits, document reviews, a meeting with the complainant (if known and willing to engage), and meetings with others (both those associated with the project and outside) who may have knowledge or can otherwise help resolve the issue. It is expected that many or most grievances would be resolved at this stage. All activities taken during this and the other steps will be fully documented, and any resolution logged in the register.
- **Step 5: Monitoring and evaluation.** Monitoring refers to the process of tracking grievances and assessing the progress that has been toward resolution. The HSE Department will be responsible for consolidating, monitoring, and reporting on complaints, enquiries and other feedback that have been received, resolved, or pending. This will be accomplished by maintaining the grievance register and records of all steps taken to resolve grievances or otherwise respond to feedback and questions.
- **Step 6: Providing Feedback.** This step involves informing those to submit complaints, feedback, and questions about how issues were resolved, or providing answers to questions. Whenever possible, complainants should be informed of the proposed resolution in person. If the complainant is not satisfied with the resolution, he or she will be informed of further options, which would include pursuing remedies through the World Bank, as described below, or through avenues afforded by the Tajikistan legal system. On a monthly basis, the HSE Department will report to the General Director on grievances resolved since the previous report and on grievances that remain unresolved, with an explanation as to steps to be taken to resolve grievances that have not been resolved within 30 days. Data on grievances and/or original grievance logs will be made available to World Bank missions on request, and summaries of grievances and resolutions will be included in periodic reports to the World Bank.

Pamir Energy will be responsible for carrying grievances through all six steps. Step 4 (Verify, Investigate, and Act) could involve interviews of the aggrieved party, workers, or other stakeholders; review of records; consultation with authorities; and/or other fact-finding activities. If the grievance cannot be resolved to the satisfaction of all parties, it will be referred to GRC1, who would retrace Step 4 as needed. The steps following the initial investigation and proposed solution would proceed as follows:

- Determination of proposed resolution or referral to second tier:
 - If resolution is proposed: referral to E&S manager for review and approval (including refinements). Once approved, responsible person would communicate resolution to complainant and refer to corporate management for implementation.

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- If referred to second tier, GRC1 would consider facts determined by initial review and conduct such other fact-finding as needed, including interviews of complainant and others if necessary.
 - GRC1 recommends resolution or refers to GRC2:
 - If resolution is proposed: referral to Pamir Energy for implementation, including communication to complainant.
 - If referred to third tier, GRC2 to meet and discuss facts as determined by initial tiers and make determination of proposed resolution.
 - GRC2-recommended resolution: referred to Pamir Energy for communication to complainant and implementation of recommended actions (if any)
 - Complainant would be asked to acknowledge acceptance (or rejection) of the resolution.
 - Pamir Energy would then implement actions that are part of the resolution (if any).

If a person who submits a grievance is not satisfied with the resolution at the first or second tiers, he or she may request it be elevated to the next tier. If they are not satisfied with the ultimate resolution, they may pursue legal remedies in court or pursue other avenues as described in section 11.6 below. Throughout the entire process, Pamir Energy will maintain detailed records of all deliberations, investigations, findings, and actions, and will maintain a summary log that tracks the overall process.

11.3 Grievance processing

Anyone who believes they are eligible for compensation can submit a grievance:

- By completing a written grievance form that will be available (a) in the Jamoat and in the villages crossed by the line, (b) at Pamir Energy’s offices in Khorog and on their website, and (c) from CLOs or other members of the HSE Department. An example of a grievance registration form is provided in Annex 1.
- By contacting the Pamir Energy Community Liaison Officer or other member of the Pamir Energy HSE Department team, either by telephone or in person. In addition, grievances may be communicated to contractor supervisors or to Pamir Energy electrical inspectors, who will be briefed on receiving and reporting complaints. Grievances received verbally will be recorded by the Community Liaison Officer on a grievance registration form and logged into the Grievance Register. A copy of the logged grievance will be given to the complainant, giving them the opportunity to alert Pamir Energy if the grievance has not been noted down correctly.
- Pamir Energy will explain to local communities the possibilities and ways to raise a grievance during consultation meetings organized in each village when this draft SEP and other draft documents are disclosed and then at quarterly meetings thereafter. The GRM procedures will be disclosed through the Project’s website and will also be described in a brochure or pamphlet made available in Jamoat administration buildings.

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- The Pamir Energy Community Liaison Officer team will be responsible for logging and tracking grievances. As noted above, one person will be assigned responsibility for investigating and recommending resolution to each grievance, or to recommend referral to GRC1.
 - Information to be recorded in the grievance log will include name and contact details of the complainant and a summary of the grievance and how and when it was submitted, acknowledged, responded to and closed out. All grievances will be acknowledged within 7 days and resolved as quickly as possible. If there has been no resolution within 30 days, the person assigned responsibility for the grievance will contact the complainant to explain the reason for the delay. On at least a monthly basis, a summary of grievances and resolutions will be provided to the Pamir Energy General Director. A generic flow chart for registering and processing grievances is shown as Figure 8 below. The status, number, and trends of grievances will be discussed between the project team and Pamir Energy senior management during meetings held at least monthly and more frequently as needed.

A grievance will be considered “resolved” or “closed” when a resolution satisfactory to both parties has been reached, and after any required corrective measures have been successfully implemented. When a proposed solution is agreed by the complainant, the time needed to implement it will depend on the nature of the solution. Once the solution is being implemented or is implemented to the satisfaction of the complainant, the complaint will be closed out and acknowledged in writing by both the complainant and Pamir Energy.

certain situations, it may not be possible to reach a satisfactory resolution. This could occur if a complaint cannot be substantiated or is proved to be speculative or fraudulent. In such situations, Pamir Energy’s efforts to investigate the grievance and to arrive at a conclusion will be well documented and the complainant advised of the situation. It is also possible that a complainant will not be satisfied with the proposed resolution. In such cases, if Pamir Energy cannot do more, the complainant will be asked to acknowledge refusal of the proposed resolution in writing. Pamir Energy will then decide whether to implement the resolution without the agreement of the complainant and the complainant will decide whether to pursue legal remedies.

11.4 Grievance Logs

As noted previously, the HSE Department will maintain a grievance log. This log will include at least the following information:

- Individual reference number
- Name of the person submitting the complaint, question, or other feedback, address and/or contact information (unless the complaint has been submitted anonymously)

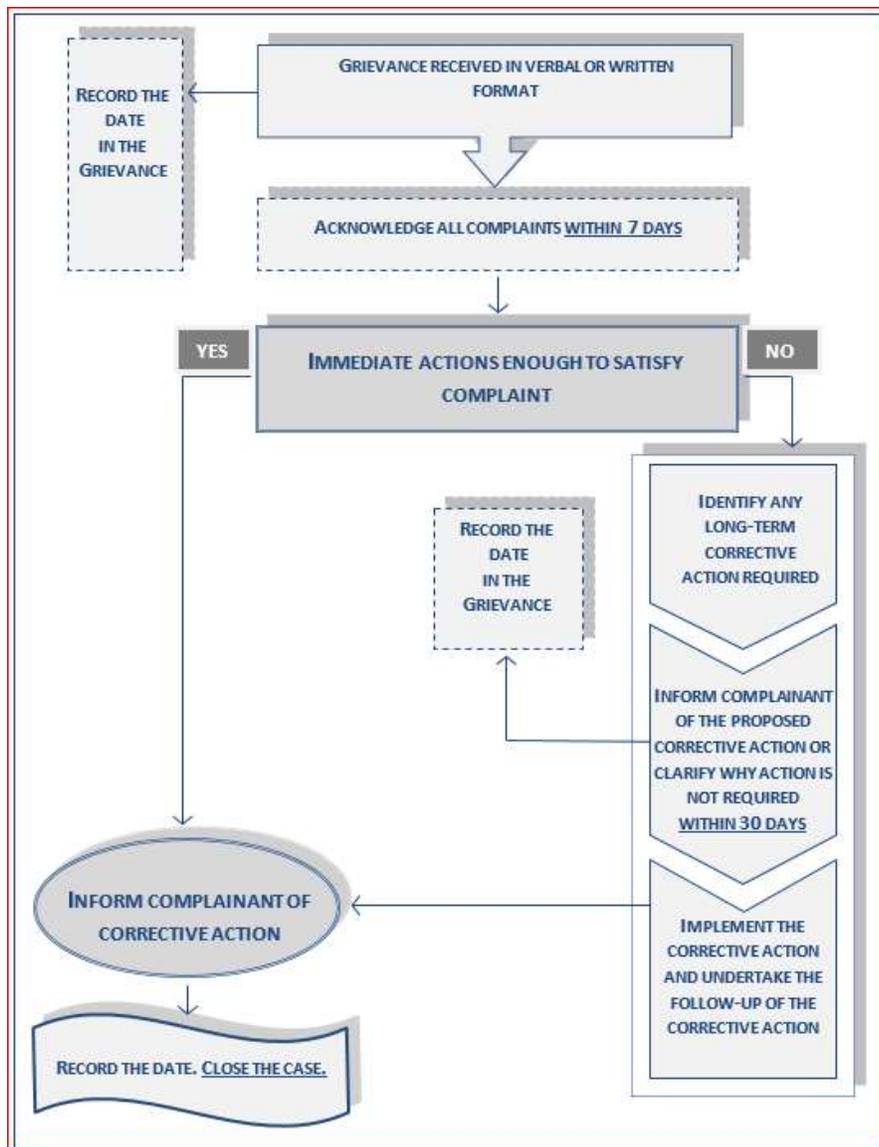


Figure 8. Typical grievance handling process

- Details of the complaint, feedback, or question/her location and details of his / her complaint
- Date of the complaint
- Name of person assigned to deal with the complaint (acknowledge to the complainant, investigate, propose resolutions, etc.)
- Details of proposed resolution, including person(s) who will be responsible for authorizing and implementing any corrective actions that are part of the proposed resolution
- Date when proposed resolution was communicated to the complainant (unless anonymous)
- Date when the complainant acknowledged, in writing if possible, being informed of the proposed resolution

-
- Details of whether the complainant was satisfied with the resolution, and whether the complaint can be closed out
 - If necessary, details of GRC1 and GRC2 referrals, activities, and decisions
 - Date when the resolution is implemented (if any).

11.5 Monitoring and reporting on grievances

Details of monitoring and reporting are described above. Day-to-day implementation of the GRM and reporting to the World Bank will be the responsibility of the HSE Department. To ensure management oversight of grievance handling, the Internal Audit Unit will be responsible for monitoring the overall process, including verification that agreed resolutions are actually implemented.

11.6 World Bank Grievance Redress System

Communities and individuals who believe that they are adversely affected by a project supported by the World Bank may also complaints directly to the Bank through the Bank's Grievance Redress Service (GRS) (<http://projects-beta.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service>). A complaint may be submitted in English, Russian, Tajik, or Shugne, although additional processing time will be needed for complaints that are not in English.

A complaint can be submitted to the Bank GRS through the following channels:

- By email: grievances@worldbank.org or by fax: +1.202.614.7313
- By mail: The World Bank, Grievance Redress Service, MSN MC10-1018, 1818 H Street Northwest, Washington, DC 20433, USA
- Through the World Bank Tajikistan Country Office in Dushanbe: 48 Ayni Street, Business Center "Sozidanie", 3rd floor, Dushanbe, Tajikistan; Tel: +992 48 701-5810.

The complaint must clearly state the adverse impact(s) allegedly caused or likely to be caused by the Bank-supported project. This should be supported by available documentation and correspondence to the extent possible.. The complainant may also indicate the desired outcome. Finally, the complaint should identify the complainant(s) or assigned representative/s, and provide contact details. Complaints submitted via the GRS are promptly reviewed to allow quick attention to project-related concerns.

In addition, project-affected communities and individuals may submit complaints to the World Bank's independent Inspection Panel, which will then determine whether harm occurred, or could occur, as a result of the World Bank's non-compliance with its policies and procedures. Complaints may be submitted to the Inspection Panel at any time after concerns have been brought directly to the World Bank's attention, and after Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

Annex 1: Example Grievance Form

Grievance Form			
Grievance reference number (to be completed by Pamir Energy):			
Contact details (may be submitted anonymously)	Name (s):		
	Address:		
	Telephone:		
	Email:		
How would you prefer to be contacted (check one)	By mail/post: <input type="checkbox"/>	By phone: <input type="checkbox"/>	By email <input type="checkbox"/>
Preferred language	<input type="checkbox"/> Tajik	<input type="checkbox"/> Russian	<input type="checkbox"/> English
Provide details of your grievance. Please describe the problem, who it happened to, when and where it happened, how many times, etc. Describe in as much detail as possible.			
What is your suggested resolution for the grievance, if you have one? Is there something you would like Pamir Energy or another party/person to do to solve the problem?			
How have you submitted this form to the project?	Website <input type="checkbox"/>	email <input type="checkbox"/>	By hand <input type="checkbox"/>
	In person <input type="checkbox"/>	By telephone <input type="checkbox"/>	Other (specify) <input type="checkbox"/>
Who filled out this form (If not the person named above)?	Name and contact details:		
Signature			
Name of Pamir Energy person assigned responsibility			
Resolved or referred to GRC1?	<input type="checkbox"/> Resolved	<input type="checkbox"/> Referred	If referred, date:
Resolved referred to GRC2?	<input type="checkbox"/> Resolved	<input type="checkbox"/> Referred	If referred, date:
Completion			
Final resolution (briefly describe)			
	Short description	Accepted? (Y/N)	Acknowledgement signature
1 st proposed solution			
2 nd proposed solution			
3 rd proposed solution			

Annex 2: Example of ESMP Format

Example of ESMP format

No.	Activities	Potential Adverse Impact	Mitigation Measures/ Best Management Practice	Target outcome of mitigation	Responsible body
1.0 Procurement phases					
1.1	Preparation of bidding/procurement documents for transmission line		-		
2.0 Project preparation phase (“pre-construction”)					
2.1	Implementation of Stakeholder Engagement Plan (SEP)		-	-	
3.0 Project construction phase					
3.1			-	-	
			-	-	
			-	-	

Annex 3: Generic Mitigation Measures

Activity	Parameter	Mitigation measures checklist
General Conditions	Notification and Worker Safety	<ul style="list-style-type: none"> • The local construction and environment inspectorates and communities have been notified of upcoming activities • The public has been notified of the works through appropriate notification in the media and/or at publicly accessible sites (including the site of the works) • All legally required permits have been acquired for construction and/or rehabilitation • The Contractor formally agrees that all work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment. • Workers' PPE will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots) • Appropriate signposting of the sites will inform workers of key rules and regulations to follow.
Construction Activities	Air Quality	<ul style="list-style-type: none"> • During interior demolition debris-chutes shall be used above the first floor • Demolition debris shall be kept in controlled area and sprayed with water mist to reduce debris dust • During pneumatic drilling/wall destruction dust shall be suppressed by ongoing water spraying and/or installing dust screen enclosures at site • The surrounding environment (side-walks, roads) shall be kept free of debris to minimize dust • There will be no open burning of construction / waste material at the site • There will be no excessive idling of construction vehicles at sites
	Noise	<ul style="list-style-type: none"> • Construction noise will be limited to restricted times agreed to in the permit • During operations the engine covers of generators, air compressors and other powered mechanical equipment shall be closed, and equipment placed as far away from residential areas as possible
	Water Quality	<ul style="list-style-type: none"> • The site will establish appropriate erosion and sediment control measures such as e.g. hay bales and / or silt fences to prevent sediment from moving off site and causing excessive turbidity in nearby streams and rivers.

Activity	Parameter	Mitigation measures checklist
	Waste management	<ul style="list-style-type: none"> • Waste collection and disposal pathways and sites will be identified for all major waste types expected from demolition and construction activities. • Mineral construction and demolition wastes will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and stored in appropriate containers. • Construction waste will be collected and disposed properly by licensed collectors • The records of waste disposal will be maintained as proof for proper management as designed. • Whenever feasible the contractor will reuse and recycle appropriate and viable materials (except asbestos)
Individual wastewater treatment system	Water Quality	<ul style="list-style-type: none"> • The approach to handling sanitary wastes and wastewater from building sites (installation or reconstruction) must be approved by the local authorities • Before being discharged into receiving waters, effluents from individual wastewater systems must be treated in order to meet the minimal quality criteria set out by national guidelines on effluent quality and wastewater treatment • Monitoring of new wastewater systems (before/after) will be carried out • Construction vehicles and machinery will be washed only in designated areas where runoff will not pollute natural surface water bodies.
Affected forests, wetlands and/or protected areas	Protection	<ul style="list-style-type: none"> • All recognized natural habitats, wetlands and protected areas in the immediate vicinity of the activity will not be damaged or exploited, all staff will be strictly prohibited from hunting, foraging, logging or other damaging activities. • A survey and an inventory shall be made of large trees in the vicinity of the construction activity, large trees shall be marked and cordoned off with fencing, their root system protected, and any damage to the trees avoided • Adjacent streams and water bodies shall be protected from construction site run-off with appropriate erosion and sediment control feature to include by not limited to hay bales and silt fences • There will be no unlicensed borrow pits, quarries or waste dumps in adjacent areas, especially not in protected areas.

Activity	Parameter	Mitigation measures checklist
Traffic and Pedestrian Safety	Direct or indirect hazards to public traffic and pedestrians by construction activities	<ul style="list-style-type: none"> • In compliance with national regulations the contractor will ensure that the construction site is properly secured and construction related traffic regulated • Signposting, warning signs, barriers and traffic diversions: site will be clearly visible and the public warned of all potential hazards • Traffic management system and staff training, especially for site access and near-site heavy traffic. Provision of safe passages and crossings for pedestrians where construction traffic interferes. • Adjustment of working hours to local traffic patterns, e.g. avoiding major transport activities

Annex 4: Example of ESMP Monitoring Plan

Example of Monitoring Plan

<i>Activity</i>	<i>What (Is the parameter to be monitored?)</i>	<i>Where (Is the parameter to be monitored?)</i>	<i>How (Is the parameter to be monitored?)</i>	<i>When (Define the frequency / or continuous?)</i>	<i>Why (Is the parameter being monitored?)</i>	<i>Who (Is responsible for monitoring?)</i>
All construction works	Technical progress and implementation of mitigation measures, compliance with Tajik E&S law, World Bank ESF, and C-ESMP	All areas	<ul style="list-style-type: none"> - Observations during normal activities - Inspections - Monthly reports and incident reports 	Continuous or as necessary	Verify implementation of mitigation measures	Supervision Consultant
			E&S monitoring audit	Annually during construction	Verify implementation of C-ESMP	Third-party consultant appointed by Pamir Energy

Annex 5: Minutes for Consultation Meeting in Darzhomch Village

MINUTES OF MEETING

PROJECT NAME

Tajikistan Rural Electrification Project

VENUE	DATE OF MEETING
Darzhomch village, Bartang community of Rushan district, Viloyati Mukhtori Kuhistoni Dadakhshon (VMKB)	25/04/2019
PRESENT	
N. Khaydarova – Engineer, Pamir Energy Company R. Yormonov – Master of Rushan TEC, Pamir Energy Company I. Nasillobekov – PR Specialist, Pamir Energy Company M. Tolibshoev – Chairman of Bartang Community The community members [the list of participants is attached]	

1. Summary

For the consultative meeting (on TREP off-grid component, particularly E&S documentation) all village residents were invited and about 50 community members gathered and participated in the meeting. They received information and details about the planned project implementation as well as related environmental and social impacts that were identified in recent assessments. Given the lacking access to electricity (and related implications for living conditions) Darzhomch villagers very much welcome the project's implementation. They expressed no objection or concern related to the project and its impacts as they are generally very hopeful that it will contribute to positive developments for their village. Primarily, employment opportunities and compensation (in-kind) for potential loss of land were the main points of community interest and discussion.

2. Welcome and Introduction

An introductory speech was made by the chairman of Bartang community, Mr. Tolibshoev Mamadyor, who welcomed the representatives of Pamir Energy Company (PE) and expressed his opinion and the opinion of the local community about how pleased they are that the company had launched rural electrification project in non-electrified villages.

Ms. Nazira Khaydarova, a representative of PE, presented the Tajikistan Rural Electrification Project that was developed as part of the Government of Tajikistan and PE initiative on electrification of the off-grid rural population in VMKB and Khatlon regions in cooperation with the World Bank (WB). She mentioned that although within 16 years of operation, the company has significantly increased energy availability for 218,000 people (96% of the population) in Eastern Tajikistan, there are still 12,286 people, residing in 61 villages of VMKB, without electricity. Therefore, the given project aims at electrification of these people through the construction of hydropower plants, solar plants, and wind turbines, as well as the connection of

some villages to the company's power grid through the construction of transmission lines. The project will be financed by the WB. Along with the requirements of the legislation of the Republic of Tajikistan, as a precondition for financing, the WB also requires several activities including the environmental and social assessment, according to Ms. Khaydarova.

The environmental and social assessment will help to determine the potential environmental and social effects of the project, therefore, as she noted the additional research/assessment will be conducted on each individual project component and other required documents will be developed, which are listed in the brochures that I have distributed earlier. For instance, as a common practice, while implementing such projects, a plan for resettlement and compensation is developed. An example of the socio-economic aspect would be not only electrification of the targeted areas, but also employment opportunities for the local population.

Ms. Khaydarova also highlighted other components of the project, such as construction of 11 MW Sebzor HPP, construction of a 63 km of 110kV transmission line from “Khorog” substation to the “Kozidekh” substation of Ishkashim district, as well as 18 km T-line from the planned “Sebzor” substation to the 110/35kV “Khorog” substation. More detail information on the project as well as the developed documents on environmental and social aspects of the projects are available on the PE website, the brochures and newspapers (developed by PE) that are distributed, as well as on the regional newspaper – “Badakhshon” and messages sent to consumers via phones.

The link to the website is provided in the PE newspapers that were distributed during the meeting. The dates for consultative meetings with the local communities for each targeted village under the project are indicated in the newspaper. That is why we are here today – emphasized Ms. Khaydarova, to present the project’s objectives and activities as well as to know the communities’ opinions as stakeholders and to answer their queries.

According to Ms. Khaydarova, there is a small hydropower plant in Darzhomch village, the rehabilitation of which was included in the rural electrification project. PE is aware that the technical conditions of the HPP are terrible and all the equipment is worn out, therefore, the technical team suggested to reconstruct the HPP and increase its generation capacity. The company also intends repair electricity networks so that not only consumers of the Darzhomch village, but also residents of the Razuch and Ravivd villages of the Bartang valley of Rushan district could be supplied with the clean and reliable electricity.

Ms. Khaydarova also highlighted that Pamir Energy will design the transmission and distribution lines in a way that it will not result in any displacement. However, when towers are built on agricultural or other productive lands, it will take measures that people who are currently using the small plots of land are compensated for taking off their lands for towers. In-kind compensation is the preferred means of compensation that Pamir Energy generally aims to use in its projects, according to Ms. Khaydarova.

3. Questions and Answers

Mr. Khushqadam Muborakqadamov expressed his gratitude to Ms. Khaydarova for the meeting with the local community and mentioned that as electricity is the basic need for human beings, the community is glad that PE started implementing the project and expressed his as well as community’s willingness to assist in the timely implementation of the project. He further queried the implementation period of the project.

Ms. Khaydarova responded that the project implementation period primarily depends on the type of energy source that will be used, either hydropower plant, solar plant, wind turbine or construction of a transmission line to be connected to the existing grid. For example, the construction of hydropower plants usually takes 10 -18 months depending on the generation capacity of the hydropower plant. Construction of a wind or solar station takes approximately 6-10 months and construction of transmission lines depends on the length and terrain of the area, which takes from 8 to 14 months.

The community also queried about the staff – those who will be working during the operational stage at the HPP?

Ms. Khaydarova replied that the PE staff as well as local residents, who will be selected based on the required qualifications i.e. with relevant technical knowledge and education.

The people were also interested in employment opportunities and queried how the selection process will be held and what are the key requirements?

Ms. Khaydarova responded that prior to the construction, the contractor will announce the necessary vacancies and those interested can apply. The contractor will then shortlist the candidates and hire/select those who fit the best.

The representatives of Razuch village also participated in the meeting. They noted that if the capacity of the Darzhomch HPP will be increased, by constructing the transmission line, their village will also be electrified.

Ms. Khaydarova commented that as it was mentioned earlier, as part of the rural electrification project, PE aims at electrification of Razuch and Ravivd villages as well through connecting the villages to the Darzhomch HPP by increasing its generation capacity.

4. Closing Remarks

At the end of the meeting, project information brochures and regional and PE's newspapers were distributed to all the participants. The pictures of the meeting and the list of participants with their signatures are attached.

Signatures of PE representatives:

/s/ N. Khaydarova

/s/ R. Yormonov

/s/ I. Nasillobekov

Annex 6. Minutes of Consultation Meeting in Zaych

MINUTES OF MEETING

PROJECT NAME

Tajikistan Rural Electrification Project

VENUE Zaych village of Vanj district, Viloyati Mukhtori Kuhistoni Badakhshon (VMKB), Tajikistan	DATE OF MEETING 26/04/2019
PRESENT N. Khaydarova – Engineer, Pamir Energy Company M. Noyoftov – Master of “Andarbak HPP”, Pamir Energy Company I. Nasillobekov – PR Specialist, Pamir Energy Company The community members [the list of participants is attached]	

1. Summary

For the consultative meeting (on TREP off-grid component, particularly E&S documentation) all village residents were invited and about 37 community members gathered and participated in the meeting. They received information and details about the planned project implementation as well as related environmental and social impacts that were identified in recent assessments. Given the lacking access to electricity (and related implications for living conditions) Zaych villagers very much welcome the project’s implementation. They expressed no objection or concern related to the project and its impacts as they are generally very hopeful that it will contribute to positive developments for their village. Primarily, employment opportunities and compensation (in-kind) for potential loss of land were the main point of community interest and discussion.

2. Welcome and Introduction

An introductory speech was made by the head of Zaych community, who welcomed the representatives of Pamir Energy Company (PE) by emphasizing on the purpose of the meeting.

Ms. Nazira Khaydarova, a representative of PE, presented the Tajikistan Rural Electrification Project that was developed as part of the Government of Tajikistan and PE initiative on electrification of the off-grid rural population in VMKB and Khatlon regions in cooperation with the World Bank (WB). She mentioned that although within 16 years of operation, the company has significantly increased energy availability for 218,000 people (96% of the population) in Eastern Tajikistan, there are still 12,286 people, residing in 61 villages of VMKB, without electricity. Therefore, the given project aims at electrification of these people through the construction of hydropower plants, solar plants, and wind turbines, as well as the connection of

some villages to the company's power grid through the construction of transmission lines. The project will be financed by the WB. Along with the requirements of the legislation of the Republic of Tajikistan, as a precondition for financing, the WB also requires several activities including the environmental and social assessment/framework, according to Ms. Khaydarova.

The environmental and social assessment will help to determine the potential environmental and social effects of the project, therefore, as she noted, the additional research/assessment will be conducted on each individual project component and other required documents will be developed, which are listed in the brochures distributed earlier. For instance, as a common practice, while implementing such projects, a plan for resettlement and compensation is developed. An example of the socio-economic aspect would be not only electrification of the targeted areas, but also employment opportunities for the local population.

In regards to the 61 non-electrified villages in VMKB, Mr. Khaydarova mentioned that for electrification of each village, a separate solution was proposed, for instance, for some villages the construction of small hydropower plant is the best option, for others either solar, wind plants or where it is possible to connect the villages to the PE's grid. Those 61 villages are located in different parts of VMKB. For instance, as Ms. Khaydarova mentioned, for electrification of the Zaych village, the company plans to construct the distribution line from Zhamak village.

3. Questions and Answers

Mr. Navruzbek Aliev, the head of Zaych village, noted that they had been waiting for a long time when their village will get electricity. To this end, they applied many times to both related authorities and PE in regards to the electrification of their village and now finally they are glad to hear that the projects have begun. As he mentioned, in their turn, the local community is ready to cooperate to have the project implemented. He further mentioned that due to the high unemployment rate a large number of the male population travel either to Dushanbe or even to Russia to seek seasonal jobs and generate income for their households. However, the project might help with contributing to their local economy.

Mr. Arabsho Khudoydodov, a teacher at a local elementary school, noted that due to the lack of electricity they cannot even do the ironing. The most important thing is that children study in classes without electricity, only in daylight, they cannot show videos to the students as part of the study plan. Therefore, as he mentioned, the villagers have a positive opinion in regards to the project and its overall implementation.

According to Ms. Khaydarova during construction, the contractor will hire local people who will be selected based on the contractor's needs. The population might be involved in activities like digging/excavation of pits foundations for the transmission lines and etc. The projects will not only bring electricity to the population but will make sure that the local population gets economic benefit by being involved in the project implementation directly (i.e. as a worker).

Ms. Khaydarova also highlighted other components of the project, such as construction of 11 MW Sebzor HPP, construction of a 63 km of 110kV transmission line from "Khorog" substation to the "Kozidekh" substation of Ishkashim district, as well as 18 km T-line from the planned "Sebzor" substation to the 110/35kV "Khorog" substation. More detail information on the project and the developed documents on environmental and social aspects of the projects are available on the PE website, the brochures and

newspapers (developed by PE) that are distributed, as well as on the regional newspaper – “Badakhshon” and messages sent to consumers via phones. Although, as she mentioned, the company understands that there is no mobile connection in Zaych village, however, in order for the villagers- stakeholders to get acquainted with the project: its main components, activities, donors as well as to understand the potential risks and effects (positive/negative) of the project, it utilized all means available (mentioned earlier) to disclosure and disseminate the information.

Ms. Khaydarova also highlighted that Pamir Energy will design the transmission and distribution lines in a way that it will not result in any displacement. However, when towers are built on agricultural or other productive lands, it will take measures that people who are currently using the small plots of land are compensated for taking off their lands for towers. In-kind compensation is the preferred means of compensation that Pamir Energy generally aims to use in its projects, according to Ms. Khaydarova.

4. Closing Remarks

At the end of the meeting, project information brochures and regional and PE’s newspapers were distributed to all the participants. The pictures of the meeting and the list of participants with their signatures are attached.

Signatures of PE representatives:

/s/ N. Khaydarova

/s/ M. Noyoftov

/s/ I. Nasillobekov