

KYRGYZ REPUBLIC

**BISHKEKTEPLOSET OJSC
COMMUNITY DEVELOPMENT AND INVESTMENT AGENCY**

Heat Supply Improvement Project

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

Bishkek

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Table of Contents

1. Executive summary	4
2. Project background	7
3. Description of the activities under the project and environmental screening.....	8
3.1 Description of the activities under the Project	8
3.2 Environmental screening	10
3.3 Social aspects	11
4. Legislative and institutional framework	13
4.1 National legal and regulatory framework.....	13
4.2 Institutional framework for environmental assessment and management and labor and fire safety	14
4.3 World Bank safeguard policies.....	15
4.4 Comparison of national legislation and World Bank environmental assessment requirements	16
4.5 Comparison of national legislation and World Bank requirements vis-à-vis involuntary resettlement	17
5. Description of the baseline environmental and social conditions.....	18
5.1 Physical environment.....	18
5.2 Location and site description.....	18
5.3 Social and economic conditions.....	19
6. Project potential environmental and social impacts and mitigation measures	21
6.1 Project scope of work	21
6.2 Environmental and social benefits.....	21
6.3 Potential adverse environmental and social impacts.....	22
6.4 Proposed mitigation measures	24
6.5 The scope and objective of an ESMP	27
7. Responsibilities and institutional arrangements	28
7.1 Monitoring of safeguards compliance	28
7.2 Reporting on safeguards compliance	29
7.3 Public consultation and coordination	29
ANNEX 1: Environmental and Social Management Plan for Modernization of individual (building-level) heat substations and Replacement and reconstruction of the ‘Vostok’ transmission network (Component 1)	30
ANNEX 2: Draft format for ESMP Checklist for Energy efficiency upgrades in public buildings (Component 3)	51
ANNEX 3: Eligibility criteria for selecting the efficient heating stoves and LPB models and their suppliers....	65
ANNEX 4: Field environmental monitoring checklist for supervision of civil works.....	68
ANNEX 5: Report on Consultation on the Draft Environmental and Social Management Framework.....	70
ANNEX 6: Other National Laws and Regulatory Framework	73
Annex 7: GRIEVANCES REDRESS PROCESS.....	75

List of Abbreviations and Acronyms

ARIS	Agentstvo Razvitiya I Investirovaniya Soobschtv Kyrgyzkoi Respubliki (Community Development and Investment Agency)
BTS	Bishkekteploset
CHP	Combined Heat and Power
CJSC	Closed Joint Stock Company
CO	Carbon Monoxide
DH	District Heating
DPO	Development Policy Operation
EA	Environmental Assessment
EBRD	European Bank for Reconstruction and Development
ECA	Eastern Europe and Central Asia
EIA	Environmental Impact Assessment
EPP	Electric Power Plant
ESMAP	Energy Sector Management Assistance Program
ESMF	Environmental and Social Management Plan Framework
FM	Financial Management
Gcal	Giga Calories
GDP	Gross Domestic Product
GNI	Gross National Income
GRM	Grievance Redress Mechanism
HSIP	Heat Supply Improvement Project
IAASB	International Auditing and Assurance Standards Board
IDA	International Development Association
IFAC	International Federation of Accountants
IHS	Individual Heat Substations
KR	Kyrgyz Republic
LPB	Low pressure boiler
M&E	Monitoring and Evaluation
NOx	Nitric and nitrogen dioxide
NSDS	National Sustainable Development Strategy
OJSC	Open Joint Stock Company
OM	Operational Manual
PAC	Project Advisory Committee
PAP	Project Affected Person
PIU	Project Implementation Unit
PM _{2.5}	Particulate Matter, 2.5 micrometers or less
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SCADA	Supervisory Control and Data Acquisition
SDC	Stove Development Center
SEE	Statement on Environmental Effects
T&D	Transmission and Distribution
ToR	Terms of Reference
US\$	United States Dollars
VSD	Variable Speed Drive

1. Executive summary

The Heat Supply Improvement Project (HSIP or the Project) for the Kyrgyz Republic (KR) aims to improve the efficiency and quality of heating in selected Project areas. To this end, the Project includes three components: (1) improving supply efficiency and quality of the district heating (DH) system in Bishkek; (2) piloting efficient and clean heating stoves; and (3) demonstrating the benefits of energy efficiency improvements in public buildings.

The Project will have overall positive environmental impacts and benefits at the proposed project locations: (i) improvement of the efficiency and quality of heat and hot water supply services (Component 1); (ii) reducing consumption of fuel (coal, fire wood, electricity, etc.) used by households for heating and reducing heat losses and improving efficiency in public buildings (Component 2 and 3); (iii) reducing public health risk due to lower indoor air pollution (Component 2).

The project, especially during civil works under Component 1, is expected to cause some short-term negative impacts on air, soil, water, and acoustic environment. Environmental issues likely to be associated with Component 1 activities include: noise generation; impact on soil and on water by the construction works; disturbance of traffic during construction and rehabilitation works; construction dust and wastes; and workers safety. However, these adverse impacts will be temporary and site specific and could be easily mitigated through implementing adequate avoidance and/or mitigation measures. Adverse impacts on natural environment, protected areas, physical cultural resources are not expected because of the location of the project in urbanized area.

Negative environmental impacts from implementation of Component 2 and 3 are not expected, however, there might be increased health and occupational hazards for workers, users and population during construction and operation phases. Such risks will be reduced by proper management and proper implementation practices.

The proposed Project is expected to have positive social impact on a broad range of stakeholders and beneficiaries, including the following: residential, public and commercial customers served by Bishkekteploset JSC (BTS) who will directly benefit from upgraded building-level substations, installed heat and hot water meters and the modernized transmission pipeline section. Low income households without access to DH who will directly benefit from efficient and clean heating stoves and low pressure boilers (LPB) at subsidized price. Students, patients and citizens in select public buildings who will benefit from improved heat supply, higher comfort levels and better functionality in select public buildings (e.g. schools, hospitals, kindergartens, clinic centers, etc.). Women, the elderly and children are expected to benefit from improved efficiency and quality of heat supply given that they spend more time at home, are disproportionately impacted by supply interruptions as well as low comfort levels (e.g. under-or over-heating, indoor air pollution), and are responsible for heating in most households that use solid fuel fired stoves/ LPB, as indicated in a baseline survey conducted as part of the pilot project.

Negative social impacts are minimal. There is a deep-seated mistrust on the part of the population that any reforms will improve services delivery and resources will be used as intended. Social tensions in the country (tied to regional and ethnic divides), coupled with a lack of transparency and accountability in the sector, and limited information about government priority investments in the sector can pose risks for the project. These risks will be mitigated by the careful targeting of beneficiaries, broad information campaigns and citizen engagement activities to improve transparency and accountability of the sector, client-customer relations and community engagement.

According to the results of the above environmental screening and taking into account the requirements of the World Bank's Operational Policy 4.01 "Environmental Assessment" regarding type, location, sensitivity and scale of the project and the nature and magnitude of its potential negative environmental impacts, it may be concluded that all sub-projects are classified as Environmental Category B. Because the exact

alignment of the transmission pipeline supported under Component 1 will be determined based on the detailed design that is currently in preparation, and given that the exact location of eligible households benefitting from clean and efficient stoves promoted under Component 2 and public buildings selected for energy efficient renovations under Components 3 will only be determined during Project implementation given the demand-based design, the Environmental and Social Management Framework (ESMF) and Resettlement Policy Framework (RPF) have been chosen as safeguard instruments for the Project. Once the exact alignment and location of investments supported under the Project are known, Environmental and Social Management Plans (ESMPs) and Resettlement Action Plans (RAPs), if needed, will be developed for pipeline sections to be rehabilitated as part of Component 1 and ESMP-checklists for public buildings selected under Component 3, defining site-specific environmental impacts and mitigation measures. In addition, the acceptance checklist to be developed for delivered stoves and the manual for stove installers (to be included in the Project Operations Manual) will include safety checklists to be completed by the PIU for delivered stoves and the installer for installed stoves, respectively.

ESMF is considered as a mandatory document which should be followed during the project implementation. An ESMF consists of the set of mitigation, monitoring, and institutional responsibility measures to be taken during implementation and operation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. ESMP provided in Annex 1 provides mitigation measures to cover typical impacts from rehabilitation / construction of heat transmission pipeline, upgrading equipment at substations, including workers' health and safety, earthworks, and solid and hazardous waste management.

As the Project would also involve typical small scale rehabilitation activities (Component 3) a generic ESMP checklist-type format ("ESMP Checklist"), developed by the World Bank to provide "pragmatic good practice" and designed to be user friendly and compatible with safeguard requirements, will be used (template is presented in Annex 2). The document covers typical avoidance, preventive and mitigation approaches to common civil works contracts and dismantling or installing heating equipment with localized impacts. It should be drafted/adjusted using the details of the environmental impacts identified during the first stage of the subproject Environmental and Social Assessment (ESA).

No adverse or irreversible environmental impacts are anticipated from activities funded under Component 2, provided that stove designs and stove producers meet the eligibility criteria (as included in the Project Operational Manual and listed in Annex 3 of the ESMF) and follow the relevant provisions to mitigate any possible environmental risks. In order to ensure the sustainable dismantling and the disposal of old stoves in compliance with the ESMF, relevant arrangements will be described in the Project OM and relevant provisions included in respective service contracts. For activities related to Component 2, safety checklists will be included in the compliance protocol to be developed for delivered stoves (based on which the PIU will accept produced stoves for payment) and the manual for stove installers (which outlines detailed instructions for service providers on the proper and safe installation of stoves and LPBs). The checklist and the manuals will be developed together with the Project OM before Project effectiveness and will be approved by the World Bank.

BTS and ARIS through the respective Project Implementation Units (PIUs) will be responsible for monitoring of the compliance of all Project-financed activities with the environmental and social safeguard policies of the World Bank triggered for HSIP, as well as with the requirements of the national legislation of the KR. Environmental monitoring of works shall be undertaken according to the ESMPs presented in this document. PIUs will undertake this task using its in-house capacity as well as hired environmental and/or social consultants. Environmental and social monitoring implies regular field supervision of all physical activities being implemented with the Project funding by contractors under Project and tracking implementation of ESMPs and Resettlement Action Plans (RAPs), if applicable. Field supervision form for construction/reconstruction works and energy efficiency upgrades is developed to facilitate environmental and social monitoring (Annex 4).

Compliance with the project ESMPs (and RAPs where appropriate), is mandatory for Project contractors. Construction contractor should have specially assigned staff responsible for the ESMP implementation during construction phase. PIU will monitor implementation of mitigation measures and good practices prescribed by these documents and in case of revealing shortfalls, will notify sub-project contractors/beneficiaries on the outstanding issues and request remedial action. If incompliance persists, and requirements of RAP/ESMP are severely infringed, PIU will undertake penalty actions established for violation of the terms of contract. The ESMPs will be included into the tender documents for works and RAP if applicable will be attached to contracts with works providers, so that contractors are legally bound to adherence to these. The contractor will receive a copy of a RAP once it is completed and when relevant, to inform him about the anticipated resettlement impact and to ensure such impact is kept to a minimum. In cases where RAP requires repair and/or restoration of Project Affected Persons' (PAP's) assets, these activities may be included as required in the contract with the civil works provider.

PIU is responsible for documenting environmental and social monitoring work by completing and storing of field supervision forms, and producing regular narrative reports on the outcomes of monitoring. These reports will summarize findings of field work, analyze common issues encountered, explain the nature of remedial actions worked out for addressing issues, and assess status of remedial actions undertaken upon recommendation issues under a previous report period. This reporting will include not only environmental and social safeguards issues, but also wider environmental and social issues (e.g. gender, grievance redress etc.).

PIU will produce reports on the status of environmental and social compliance prior to the Project implementation support missions to be undertaken by the World Bank or more frequently if needed. Analytical information of the safeguards compliance will be part of the HSIP annual progress reports too. Reports will be supplemented with dated photo documentation. All field monitoring checklists and narrative reports will be stored in the electronic and/or hard format at PIU in a systemic manner, and shall be made available to the World Bank upon request.

BTS and ARIS though PIUs will be responsible for the disclosure of environmental and social documents developed for the purposes of HSIP. These include the present Environmental and Social Management Framework (ESMF), as well as the Resettlement Policy Framework (RPF) and all site-specific ESMPs and RAPs developed for individual sub-projects. Consultation with the project stakeholders, especially the local communities which will be directly affected by the Project, is mandatory for the development of the safeguards instruments. Public feedback shall be incorporated in the drafts of these documents prior to their finalization. The present ESMF will be disclosed in Russian and English languages through the web pages of BTS and ARIS and other relevant media, and it will be discussed with all stakeholders of HSIP. Following a formal approval from the WB, the ESMF will also be disclosed on the WB Infoshop.

Consultation process for each sub-project will be carried out prior to commencement of works at a given sub-project site.

2. Project background

Access to reliable and adequate heat supply is critical for the wellbeing of the population and the delivery of public services in the Kyrgyz Republic. Given the cold climate and long heating season, access to reliable and adequate heat supply is an essential need in the Kyrgyz Republic. Access to district heating (DH) is limited to about 17% of Kyrgyz households, mainly located in Bishkek and other urban centers. The remaining 907,000 households have to rely on individual heating options. Among these households without access to DH, 85% of households use individual coal-based solutions as their primary heating source, followed by electricity (8%), gas (6%), dung and wood (3%). Adequately meeting heating demand, however, remains a daunting challenge for a large part of the population and an estimated 25% of residential and public heat demand in urban areas alone remains unmet every winter due to a number of key challenges the sector is facing.

Supply reliability and service quality of the largest DH system is deteriorating. The largest DH system in the country is located in Bishkek and provides heat generated at the Combined Heat and Power (CHP) plant to about 103,000 end-consumers (accounting for more than 70% of all households with access to DH). The CHP is operated by the state-owned company Electric Power Plant (EPP) Open Joint Stock Company (OJSC) - owning and operating all major power and heat generation assets in the Kyrgyz Republic, including the CHPs in Bishkek and Osh - while the state-owned company Bishkekteploset CJSC (BTS) operates the transmission and distribution network connected to the CHP. The reliability of the DH system is deteriorating as evidenced by the number of network failures, which increased from around 50 in 1991 to more than 300 in recent years. In terms of quality of supply, around 85% of households with access to DH in Bishkek complain that their apartment is either too warm or too cold. Providing adequate heat supply is particularly difficult during peak hours and at the outskirts of the DH network, where heat and hot water supply are often insufficient, resulting in under-heated apartments or requiring customers to occasionally resort to back-up solutions, such as electric heating.

High heat and water losses on the supply-side are accentuated by a lack of incentives for demand-side energy efficiency. Underlying the deteriorating supply reliability is the ageing infrastructure – around 70% of the steam and hot water pipelines in Bishkek have been commissioned more than 25 years ago and have exceeded their service life. As a result, thermal energy losses in BTS' network account for 33% of the heat dispatched from the CHP, while water losses amount to about 46%. These supply-side losses are accentuated by the lack of incentives for energy efficiency on the demand-side, which is mainly due to the absence of control and metering equipment and related norm-based billing practice. Less than 9% of residential and about 30% of public buildings are equipped with heat meters and even less with hot water meters – all other buildings are billed based on normative consumption, which provides no incentives to consumers to save energy.

The proposed Heat Supply Improvement Project (HSIP) supports the Government's objectives in the heating sector and helps to address recurrent winter energy shortages. Specifically, improving the efficiency and quality of heat supply for customers connected to the largest DH system in the Kyrgyz Republic, for households without access to DH and for select public buildings supports the Government's long-term strategy in the heating sector in the following ways: (i) helping to avoid a further increase in electricity consumption for heating by improving DH services in Bishkek, reducing heat losses and electricity consumption in select public buildings and improving the efficiency of non-electricity-based individual heating solutions; (ii) complementing the ongoing modernization of the CHP plant by network improvements to ensure that the expected benefits of the investment reach end-users; (iii) ensuring that current and future heat and hot water tariff increases are accompanied by improved heat supply quality and reliability as well as the ability for customers to better control their heating bills; and (iv) reducing fuel consumption, expenditures and health costs associated with the use of inefficient and polluting heating technologies for vulnerable households.

3. Description of the activities under the project and environmental screening

3.1 Description of the activities under the Project

The Heat Supply Improvement Project (Project) for the Kyrgyz Republic (KR) aims to improve the efficiency and quality of heat supply in project target areas. To this end, the Project includes three components.

Component 1: Improving supply efficiency and quality of the DH system (estimated US\$31 million IDA financing). This Component will support priority investments and capacity building activities to help improve the reliability and efficiency of the DH system in Bishkek. The Component will be implemented by BTS, responsible for the transmission and distribution (T&D) of thermal energy and domestic hot water to residential, public and commercial customers in Bishkek. BTS owns and operates a city-wide T&D network, 19 booster pumping stations and consumer heat interface units. Heat delivered by BTS is generated at the CHP, which is owned and operated by EPP, and located east of the city center. Specifically, BTS operates 429 km of heat supply networks consisting of 388 km of DH water and 41 km of steam/condensate pipelines. The transmission network (DN 300 -1020mm) includes 28 km above-ground and 112 km underground pipelines (mostly in non-accessible reinforced concrete ducts). The distribution network is comprised of 9 km above-ground and 239 km underground pipelines. About 70% of the DH network has been commissioned more than 25 years ago, and DH pipe technologies from that time remained to be the prevailing method for gradual extension, replacement and repairs of the network. The above-ground pipes are insulated with mineral wool, Ruberoid (roofing felt) or asbestos plaster. In many places, the insulation is damaged or completely lacking due to wear and tear, theft and vandalism. Mineral wool insulation is used for underground pipes as well, installed in concrete channels. Due to lack of water tight outer casing (as in pre-insulated pipes) the steel pipes are heavily exposed to external corrosion.

The DH system is of so-called open system design, i.e. there are no heat exchangers at building- or apartment-level which would hydraulically separate the DH circulation water, the building-internal heating circuits (radiators) and the domestic hot water.

Subcomponent 1.1: Priority investment program for DH rehabilitation (estimated US\$30 million IDA financing). This subcomponent will finance two priority investment packages and related consulting services (e.g. designs and supervision). The two priority investment packages proposed for financing include:

Package 1: Modernization of individual (building-level) heat substations (estimated US\$20.8 million IDA financing). This package will support: (i) the installation and renovation of individual heat substations (IHS), including installation of heat and hot water meters with remote reading functions ('smart meters') in 1,931 residential buildings; and (ii) the installation of a preventive maintenance information system for substations.

IHS investment package. Currently, two types of open-system substations are used in buildings served by BTS: (i) substations equipped with mixing pumps and control valves for regulating the heating circuit and hot water temperature, used in about 90% of the residential multi-apartment buildings served by BTS; and (ii) old Soviet-type hydro elevator connections, installed in the remaining 10% of multi-apartment buildings. To date, only about 10% of the residential customers and 30% of public customers are equipped with heat/hot water meters. This means that the large majority of customers served by BTS are billed for heat and hot water based on norms, rather than actual consumption. As part of this investment package, IHS with smart heat and hot water meters will be installed in 231 residential multi-apartment buildings (replacing old hydro-elevators) and 1,700 existing IHS will be repaired and modernized, including installation of heat and hot water meters.

Package 2: Replacement and reconstruction of the 'Vostok' transmission network (estimated costs of US\$9.2 million IDA financing). As part of this investment package, the most critical sections of one of the five main transmission pipelines ('Vostok transmission pipeline') will be replaced with pre-insulated pipes

(700-900 mm diameter) and partly re-routed (about 2.9 km in trench length). The selected sections are dated (with a service life between 30-50 years) and worn-out due to extensive corrosion and loss of insulation.

Section II of the proposed Vostok transmission pipeline will be constructed using funding from the Russian Kyrgyz Development Fund (RKDF). As this activity is (i) directly and significantly related to the bank-assisted Project; (ii) is necessary to achieve the Project objectives; and (iii) is carried out contemporaneously with the Project, World Bank safeguards policies, including OP 4.01 on Environmental Assessment and OP 4.12 on Involuntary Resettlement, apply to it.

Limited environmental impacts and no temporary or permanent land acquisition, restriction of access or economic impact is expected as a result of civil works related to the reconstruction of section II of the transmission pipeline. At the same time, civil works to carry out this reconstruction of the transmission pipeline will be timed to coincide with the road expansion project that is planned and financed by Bishkek Municipality in order to minimize impact and disruption on the population and economic activity. Any impacts due to the road expansion do not fall under the scope of the World Bank safeguards policies and the OP 4.01 and OP4.12 will not apply in this case.

Subcomponent 1.2: Operational capacity strengthening and Project implementation support for BTS (estimated US\$1 million IDA financing). This Subcomponent will finance activities aimed at strengthening BTS' technical, operational, fiduciary, customer orientation and corporate resource management functions, and ensure effective Project implementation.

Component 2. Piloting efficient and clean heating stoves (estimated US\$5 million IDA financing). This Component aims to pilot efficient and clean heating solutions for households that don't have access to DH and are relying on traditional, inefficient and polluting solid fuel-fired heating stoves and LPBs. This Component will be implemented by the Community Development and Investment Agency (ARIS) and consists of two Subcomponents.

Activity 1: Incentive program for low income households (estimated US\$4.4 million IDA financing). As part of the program, eligible households will have access to efficient and clean heating stoves and LPBs at subsidized price. To be eligible, households have to meet two main criteria: (i) low income status as confirmed through the so-called social passport issued to households with an average monthly income of Som 2,631 (US\$36) per person; and (ii) no access to DH and reliance on solid fuel-fired stoves or LPB to be confirmed through verification at registration and installation stage. Eligible households will be able to select among different heating stoves and LPB models, which meet the following key criteria (further described in Annex 3): (i) minimum performance criteria in terms of thermal efficiency (< 70%) and emissions (CO and PM_{2.5}); and (ii) capacity, safety and durability requirements. Compliance with eligibility criteria for stoves/LPBs will be confirmed through tests at an acceptable laboratory. In addition, suppliers of eligible stoves and LPBs will have to meet criteria related to production capacity, quality control, warranty, after-sales services, safeguards and other aspects (as further described in Annex 3).

Activity 2: Simulation of production and use of efficient and clean heating stoves through capacity building and awareness raising (estimated US\$0.58 million). This activity aims to improve and stimulate market capacity and awareness for the production and use of efficient and clean heating technologies through capacity building and awareness raising.

Component 3: Improving energy efficiency in public buildings. This Component consists of two Subcomponents.

Subcomponent 3.1: Energy efficiency investments in select public buildings (estimated US\$9 million IDA financing). This subcomponent includes two activities:

Activity 1 will finance energy efficiency and seismic retrofits in select public buildings and related consulting services (e.g. energy audits, designs, preparation of bidding documents, supervision, commissioning as well

as M&E of results achieved in retrofitted buildings. In each of the selected buildings, energy audits will be conducted to identify the economically most viable energy efficiency measures. Eligible measures will include: building envelope measures (walls, basements, roof, windows, doors); heating system upgrades (boiler or burner, valves and controls, pipes, chiller/air conditioners, heat pumps, solar water heating); lighting (compact fluorescent lamps, light emitting diodes); other energy saving measures; and seismic reinforcements needed to comply with local legislation. A limited amount of funds (10-15% of total investment costs) may be made available for additional works to ensure reasonably full renovation or longevity of investments (e.g. painting, wiring, roof repairs, replacement of old gutters and down sprouts to avoid water damages).

Activity 2 will support targeted capacity building activities to improve the enabling environment for energy efficiency, enhance market capacity and build public awareness on energy efficiency. As part of training workshops that are likely to be organized for local service providers, a special module on World Bank safeguard requirements and their implementation will be included.

Subcomponent 3.2: Project implementation support (estimated US\$1 million). This Subcomponent will provide support for the effective implementation of Component 2 and 3, including PIU staff and select local experts, M&E activities, annual Project audits and project-related operating costs.

3.2 Environmental screening

The Project will have overall positive environmental impacts and benefits at the proposed project locations: (i) improvement of the efficiency and quality of heat and hot water supply services (Component 1); (ii) reducing consumption of fuel (coal, fire wood, electricity, etc.) used by households for heating and reducing heat losses and improving efficiency in public buildings (Component 2 and 3); (iii) reducing public health risk due to lower indoor air pollution (Component 2).

The project, especially during civil works under Component 1 (Package 2 - Replacement and reconstruction of the 'Vostok' transmission network), is expected to cause some short-term negative impacts on air, soil, water, and acoustic environment. Environmental issues likely to be associated with Component 1 activities include: noise generation; impact on soil and on water by the construction works; disturbance of traffic during construction and rehabilitation works; construction dust and wastes; and workers safety. However, these adverse impacts will be temporary and site specific and could be easily mitigated through implementing adequate avoidance and/or mitigation measures. Adverse impacts on natural environment, protected areas, physical cultural resources are not expected because of the location of the project in urbanized area.

Given the location of the construction sites in the capital city, existing local capacity and the scale of civil works, construction camps for workers are not expected to be organized.

Negative environmental impacts from implementation of Component 2 and 3 are not expected, however, there might be increased health and occupational hazards for workers, users and population during construction and operation phases. Such risks will be reduced by proper management and proper implementation practices.

According to the results of the above environmental screening and taking into account the requirements of the World Bank's Operational Policy 4.01 "Environmental Assessment" regarding type, location, sensitivity and scale of the project and the nature and magnitude of its potential negative environmental impacts, it may be concluded that all sub-projects are classified as Environmental Category B. Thus, Environmental and Social Management Plan (ESMP) should be developed defining site-specific environmental and social impacts and mitigation measures for each sub-project. For activities related to Component 2, safety checklists will be included in the compliance protocol to be developed for delivered stoves and the environmental and social safeguard arrangements, including for sustainable dismantling and disposal of old

stoves, described in the Project Operational Manual.

3.3 Social aspects

Gender. Women are expected to be the key beneficiaries of the Project, as improved heating services will impact them directly. The Project will disaggregate the overall number of Project beneficiaries by gender. During implementation, under Component 1, the Project will disaggregate customer satisfaction data collected by the BTS by gender to ensure the voices of women are reflected and help to inform the company's strategy to improve service provision. Additionally, under Component 2, the Project will establish and monitor female beneficiaries of efficient and clean heating technologies installed in households. Women will also be engaged in community monitoring activities. Information campaigns will formulate gender-targeted messages and utilize varying tools to reach out to both men and women.

The implementing agencies will adopt a number of measures to ensure that community consultations will involve women that will be included in the Operational Manual. The ESMP will include along with the demographic information, specific measures appropriate for each site to engage women in project implementation and monitoring.

Citizen Engagement activities. In order to effectively engage direct and indirect Project beneficiaries, the following activities will be adopted by the Project:

- *Grievance Redress Mechanism (GRM)* will build on the mechanism required by OP 4.12 on Involuntary Resettlement to address grievances related to the process of land acquisition and resettlement. The GRM will be extended to encompass the range of issues related to overall Project implementation, including a customer complaint center specifically operated to collect, categorize and transmit household complaints related to the performance of installed stoves/ LPBs. This comprehensive Project level GRM will be further detailed in the OM and the RPF. Both BTS and ARIS will operate a grievance redress mechanism and coordinate their activities and grievance redress measures accordingly as specified in the OM.
- *Information campaigns* on Project activities, including improved DH services, efficient and clean heating technologies and energy efficiency will be conducted for both Project beneficiaries and broader audiences. This will help raise awareness about the benefits of energy efficiency investments and switching to efficient and clean individual heating technologies for households without access to DH. Targeted information campaigns conducted by BTS will also inform the population about priority investments in the DH sector and expected benefits, aiming to help improve transparency and trust of the population in the sector.

These activities will be complemented by BTS-run customer satisfaction survey and ARIS' managed community monitoring. These activities will be detailed in the Operational Manual.

Conflict Filter analysis undertaken during Project preparation identified a number of conflict stressors. These stressors include: low citizen trust in energy sector reforms, prior social upheavals related to energy tariff increases, perception of unequal distribution of Project benefits and unresolved regional and ethnic tensions, as well as a perception of socio-economic and political ties between energy sector and decision-makers in the country. Demographic shifts and rural-to-urban migration increases the number of people in urban centers, which in turn adds additional pressure on services, including heating. To mitigate these stressors, the Project will ensure that Project targeting does not prioritize any ethnic group or region. For that, site-specific ESMPs will include demographic information about the site. Additionally, the information about the selection will be made publically available for the communities to ascertain the selection. ESMPs will provide detailed information about potential social risks, including conflict stressors for each project

location where ESMP is prepared.

Involuntary Resettlement is expected to take place under the Project in limited scope. Civil works under Component 1 may result in temporary land acquisition, access restriction and/or livelihood impact. No physical displacement of permanent land acquisition is expected. To address potential resettlement impact, a Resettlement Policy Framework (RPF) has been prepared that specifies appropriate procedural requirements for resettlement instruments preparation and subsequent implementation in accordance with the WB OP 4.12 (Involuntary Resettlement).

4. Legislative and institutional framework

4.1 National legal and regulatory framework

The main normative documents governing the environmental protection and occupational health and safety issues in the Kyrgyz Republic (KR) are presented below. Other national laws and regulatory framework relevant to the project are presented in Annex 6.

The Constitution of KR (2010) is the foundation for the whole normative and legal framework. It stipulates the right of all citizens for an environment favorable for human's life and health and compensation for damage caused to health or property by nature management activities.

The Law of KR "On Environmental Protection"¹ is basis for comprehensive regulation of public relations in the sphere of interaction between the society and the nature. It sets basic principles of environmental protection and stipulates legal authorities for creating environmental quality, marking special protected territories, promulgation of rules and procedures for natural resources management, setting the environmental monitoring and oversight system, and reinforcing the emergency response procedures. The law prohibits financing and implementation of projects involving the use of natural resources without obtaining the positive opinion of the state environmental expertise.

The Law of KR "On Environmental Expertise"² ensures compliance of economic and other activities with environmental requirements. This Law is applied to projects that may have environmental impact, including feasibility studies and design documentation for construction, reconstruction, development, re-equipment, and for other projects that may have environmental impact, regardless of their estimated cost and title or ownership type.

The law obliges the project initiator to submit necessary documentation related to the project and its environmental impact to the State environmental expertise. The Expert Commission of the State Agency on Environment Protection and Forestry is responsible for review of the submitted documentation.

Positive decision of the State environmental expertise is required to trigger financing or implementation of the project. Negative opinion will ban implementation of the project.

Two types of environmental expertise are implemented in the Kyrgyz Republic: State environmental expertise and Public environmental expertise (conclusion of Public environmental expertise is a recommendation).

The Law of KR "On General Technical Regulations on Ensuring Ecological Safety in the Kyrgyz Republic"³ sets general requirements on ensuring ecological safety during design and operation of economic and other activities, involving production, storage, transportation and utilization of products.

The Law specifies the types of economic activities subject to environmental expertise and their hazard categories (I, II and III) based on the volumes of environmental pollution, quantity and composition of emissions to air, soil and water resources, as well as resulted waste (Annex 1 of this Law – The types of economic activities subject to mandatory environmental expertise). The hazard category is determined by the state authorized body based on the information provided by the developer.

Provisions "On procedure for conducting Environmental Impact Assessment in KR (2015) set out the procedure for conducting environmental impact assessment of the proposed activity. National EIA (or OVOS)

¹ Dated June 16, 1999 #53 (with amendments and additions dated February 4, 2002 #22; June 11, 2003 # 101; August 11, 2004 # 113; August 6, 2005 # 124; April 27, 2009 # 131).

² Dated June 16, 1999 # 54 (with amendments and additions dated June 11, 2003 # 102; February 26, 2007 # 21; May 04, 2015 #21)

³ Dated May 8, 2009 # 151 (with amendments and additions dated March 1, 2012 # 11)

procedure comprises following stages: (1) decision on conducting EIA, (2) preliminary EIA (based on project feasibility study), (3) EIA (based on project basic design and detail design documentation) and (4) after design analysis (conducted after one year from the start of proposed activity). For the units having insignificant environmental impacts and listed in this Provisions, only filled form of Statement on Environmental Effects (SEE) is required.

The Law of KR “On Waste from Production and Consumption” (2001) specifies the relationship caused by generation, collection, storage, use, treatment, transportation and disposal of waste, state regulation, oversight and control in the field of waste management, as well as support to prevention of negative impacts of waste from production and consumption on environment and human health and to its maximum reuse as additional source of raw material.

According to this law, activities of legal entities and individuals associated with waste management are subject to licensing in accordance with the Law of the Kyrgyz Republic "On Licensing".

The Law of KR “On the Protection of Ambient Air” (1999-2016) defines the main principles of the KR, directed to provision of purity of atmospheric air and improvement of air quality, prevention and mitigation of the chemical, physical, biological and other impacts on air quality. According to this law contractor shall undertake demolition and construction activities as well as transportation and temporary storage of wastes the way to minimize dust and other emissions to the air.

The Law of KR “On Labor Safety”⁴ sets the legal framework for the regulation of relations in the field of labor safety between employers and employees and aims to create working conditions that meet the requirements for the protection of health and safety of workers in the workplace.

The Law of KR “On Industrial Safety of Hazardous Production Facilities”⁵ establishes legal, economic and social principles to ensure safe operation of hazardous production facilities and is aimed at accident prevention at hazardous production facilities and ensuring readiness of legal entities operating hazardous production facilities to localize and eliminate the consequences of the above accidents.

The Law of KR “On Technical Regulations for Industrial Safety” (2013) determines the main provisions of the technical regulation in the field of industrial safety and is aimed at preventing accidents at hazardous production facilities and the preparedness of organizations to localize their consequences.

The Law of KR “On Fire Safety” (2016) is aimed at protecting the life and health of citizens, property of individuals and legal entities, state and municipal property from fires. It defines the basic provisions of the technical regulation in the field of fire safety and establishes general requirements for fire safety for products, objects of protection, including the buildings and facilities, production facilities, fire-technical products and general products.

4.2 Institutional framework for environmental assessment and management and labor and fire safety

A range of government departments are responsible for management and protection of environment in the Kyrgyz Republic and occupational health and safety issues (Table 4.1). The chief agency is the State Agency on Environment Protection and Forestry has the main mandate for implementation of legislation on environmental protection.

⁴ Dated August 1, 2003 #167 (with amendments and additions dated April 17, 2009 #127; October 31, 2014 # 149.

⁵ Dated November 19, 2001 #93 (with amendments and additions dated April 30, 2009 #145.

Table 4.1: Major Government Bodies Performing Functions on Environmental and Occupational Health and Safety Protection

Agency	Relevant Functions
State Agency on Environment Protection and Forestry under the Government of the Kyrgyz Republic (SAEPF) Department of Ecological Monitoring	1) Sets the state policy on environmental protection; 2) Promulgates norms of quality and standards of environmental protection; 3) Establishes special protected areas; 4) Establishes the environmental monitoring system; 5) Carries out ecological review on project design and performing economic activity. Carries out impact monitoring for atmospheric pollution
State Inspectorate on environmental and technical safety under the Government of the Kyrgyz Republic	Performs state oversight and control over ecological and technical safety requirements Performs state oversight and control of compliance with labor safety and fire safety rules and provisions
Ministry of Health (MH) Department for Sanitary Epidemiological Supervision (SES)	Performs bacteriological and chemical monitoring of the quality of drinking water
Agency for hydrometeorology under the Ministry for Emergency Situations of the Kyrgyz Republic (Kyrgyzgidromet)	Monitors the state of atmospheric air and surface waters
Kyrgyz State Design Institute for Land Management under the State Registry; Kyrgyzgiprozem	Carries out a series of land management and cadaster activities throughout the territory of the Kyrgyz Republic regardless of organizational and legal form of land managing entities.

4.3 World Bank safeguard policies

Per the WB safeguards policies Environmental Assessment (EA) is a process of the pre-implementation stage which evaluates a project's potential environmental risks and impacts in its area of influence; examines project alternatives; identifies ways of improving project selection, siting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts; and includes the process of mitigating and managing adverse environmental impacts throughout project implementation. EA is mandatory for projects, which may potentially have negative impacts. Furthermore, a well-organized public participation is mandatory in all the stages of the process. In the case when the projects activities to be financed are not identified at the design stage, the Bank applies an Environmental and Social Management Framework (ESMF) which should provide details on procedures, criteria and responsibilities for subproject screening, preparing, implementing and monitoring of subproject specific ESAs.

There are 10+1 Environmental and Social World Bank Safeguard Policies which are intended to ensure that potential adverse environmental and social effects of projects financed by the WB are identified, minimized and mitigated. World Bank's Safeguard Policies applicable to the project and their relevance to the project are presented in the Table 4.2 below.

Table 4.2: World Bank’s Safeguard Policies and their Relevance to Project

Safeguard Policies	Relevance
Environmental Assessment (OP/BP 4.01)	This OP is triggered as the project will generate some adverse environmental and social impacts related to: soil degradation; water and air pollution; labor safety issues and health impacts, etc. It is also expected these potential impacts will be mostly temporary by nature and site specific. To address these impacts the client prepared the ESMF which specify the rules and procedures for subprojects Environmental Assessment as well as provide eligibility criteria for selecting the efficient heating technologies for individual households
Involuntary Resettlement (OP/BP 4.12)	This OP is triggered as activities under subcomponent 1.1, specifically building a bypass and replacement of the most dilapidated and critical sections of the transmission network, may result in economic displacements and restriction of access.
Disclosure Policy (BP 17.50)	The ESMF and RPF will be disclosed and consulted in the country and will be also disclosed in the WB Infoshop before project appraisal. All subsequently prepared safeguards instruments will also follow Bank’s disclosure policy.

The Bank undertakes environmental screening of each proposed project to determine the appropriate extent and type of EA. The Bank classifies the proposed project into one of three categories, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts.

For all Category A and B projects proposed for WB financing, during the EA process, the borrower consults all involved parties, including project-affected groups and local nongovernmental organizations (NGOs) about the project's environmental aspects and takes their views into account. For meaningful consultations between the borrower and project-affected groups and local NGOs, the borrower provides relevant material in a timely manner prior to consultation and in a form and language that are understandable and accessible to the groups being consulted. Any Category B EA report for a project proposed for WB financing is made available to project-affected groups and local NGOs. Public availability in the borrowing country and official receipt by the Bank of Category A and B EA report for projects proposed for WB funding, are prerequisites to Bank appraisal of these projects.

Resettlement impact in the form of temporary land acquisition, access restriction and/or direction of livelihoods, is expected under Component 1 due to civil works to replace and reconstruct part of the transmission network. The exact alignment of the transmission network and the scale of civil works will not be known prior to Project Appraisal. Consequently, a Resettlement Policy Framework (RPF) has been prepared and disclosed before appraisal. The RPF outlines principle that will guide resettlement process under the Project. It also specifies eligibility requirements and compensation entitlement. Once the project design is finalized and the exact alignment is known, borrower will prepare Resettlement Action Plan (RAP) which complies with the provisions of the RPF, and will clear it with the WB, discuss with project affected people, and disclose. The RAP should be implemented in full to the satisfaction of the WB prior to construction commencing. No civil works can commence unless the RAP is fully implemented.

4.4 Comparison of national legislation and World Bank environmental assessment requirements

While the basic provisions of the National EA rules and procedures are to some extent similar to the WB requirements, there is a difference related primarily to the project environmental screening categories. The national legislation specifies the types of economic activities subject to mandatory environmental expertise. National EIA (or OVOS) procedure comprises following stages: (1) decision on conducting EIA, (2) preliminary

EIA based on project feasibility study, (3) EIA based on project basic design and detail design documentation and (4) after design analysis conducted after one year from the start of proposed activity. For the units having insignificant environmental impacts and listed in relevant legislation, only filled form of Statement on Environmental Effects is required.

Two types of environmental expertise can be implemented in the Kyrgyz Republic: State environmental expertise and Public environmental expertise, however, the conclusion of Public environmental expertise is a recommendation.

4.5 Comparison of national legislation and World Bank requirements vis-à-vis involuntary resettlement

The RPF includes comparison of national legislation and World Bank requirements vis-à-vis involuntary resettlement. The RPF outlines the guiding principles of resettlement. In cases where there is discrepancy between national laws and WB policies, the WB policies prevail.

5. Description of the baseline environmental and social conditions

5.1 Physical environment

Thermal conditions of the region are specified by a complex combination of solar radiation and atmospheric circulation becoming apparent in a complex alternation of incoming warm air from the south and cold air from the north. Combination of these factors leads to a wide diversity of temperature conditions on a daily, seasonal and annual basis. Average annual air temperature is 10.2°C. The coldest month is January (-4.6°C), and the warmest one is July (24.5°C). The lowest air temperature was observed in December 1930 (-38°C), and the record heat was registered in July 1983 (43°C).

Daytime thawing is usual in winter, on average 18 days per month. Daytime temperatures can reach 20°C. In contrast, there can be periods of up to 30 days without daytime thaws where daytime temperatures are below 0°C. Sometimes falls of temperature are so severe that during 8 days or more the average diurnal air temperature is below -25°C (December 1954, January 1955). During some years abnormally cold or abnormally warm weather may be kept for the whole winter. Such winters are observed one-two times in 10 years.

The average monthly relative humidity varies from 44% in June and July to 74% in March, and the average yearly relative humidity is 60%.

Within a year an average atmospheric precipitation is 409 mm. which falls mainly in March – June. Snow cover begins in the middle of December and remains until the end of February. The highest average snow cover reaches 13 cm, and in winters with little snow the depth of the snow cover is 3-7 cm.

The average yearly air pressure is 929 millibars. The lowest average air pressure is in July – 922 millibars, and the highest one is in November – 936 millibars.

The location of Bishkek in the central part of Chu valley formed by Kyrgyz ridge (in the south) and Chu-Ili Mountains (in the north) determines, mainly, the peculiarities of wind conditions of the city. Due to significant roughness of the underlying surface Bishkek is characterized by weak wind velocity.

Wind conditions of the city are characterized by the prevalence of mountain-valley winds, the average velocity of which does not exceed 2-3 m/s, and repeatability of calms is 20%. During a year there are, on the average, about 30 cases of wind intensification up to 15 m/s and more, mainly, from the western direction. On the average, once in 5-7 years there may be very strong winds with a velocity of 25 m/s.

The prevailing wind directions in Bishkek are from the South-East through to South-West which account for 50% of the time, with nearly 20% attributed to calm conditions.

5.2 Location and site description

The route of proposed transmission pipeline (final alignment will be defined as part of the design documents, which are in preparation and expected to be completed towards the end of 2017) is located along roads on the outskirts of Bishkek city and within areas without sensitive zones or natural habitats. Furthermore, there are no registered physical cultural resources or resources of local or national interest in the vicinity of the proposed pipeline route. The estimated length of the pipeline route is 2.9 km, approximately half of the route goes along the railway tracks.⁶ It is expected that the transmission pipeline will go under a new paved automobile road that is to be constructed along the railway tracks (currently, there is an unpaved auxiliary road). The width of the corridor of the road varies along its route. There is a residential area opposite from the railway track along the other side of the automobile road. The installation of the pipeline will use the opportunity of the road construction and will carefully sequence the works to ensure that the heating

⁶ Up-to-date information on population and the type of residences on the pipeline route is currently unavailable, but it will be obtained as part of customer satisfaction survey.

network pipeline are installed at the time the road construction is ongoing to minimize impact on the population residing in the area. The second part of the route is planned to go under an already existing automobile paved road, sidewalks and small landscaped areas with trees. On this road, based on the visual assessment, it is estimated that a number of businesses (such as gas station, cafes, stores, bar and a parking lot) will potentially be impacted by the installation of the heating pipeline.

The majority of *individual heating substations* are located in the basement of apartment buildings in Bishkek city, occupying very limited areas, while others are installed in small separate houses in the buildings' yard.

Public buildings subject to energy efficiency upgrades will comprise schools, kindergartens, hospitals and clinic centers around the country. They will be selected and retrofitted during project implementation based on 3-4 call for nominations and agreed eligibility/ selection criteria.

5.3 Social and economic conditions

The Kyrgyz Republic with a Gross National Income (GNI) per capita (Atlas method) of US\$1,250 in 2014 remains one of the poorest countries in the Eastern Europe and Central Asia (ECA) region. During 2003 to 2014, GDP growth averaged just above 4% annually, with significant variations from -0.5% in 2010 to 10.9% in 2013. Underlying these variations have been external shocks (world food and energy price shocks in 2008), domestic events (energy supply crisis in 2009 and political turmoil in 2010), and fluctuations in gold production stemming from both geological factors and ad-hoc events. Between 2006 and 2011, economic growth was inclusive with consumption among the bottom 40 percent's income growing at a faster pace than the average. In 2013, it was estimated that around 38% of the population lived in poverty and 2.8% lived in extreme poverty. Regional disparities are significant. There is a large gap in living standards between the capital city Bishkek and the rest of the country: 18% versus 40% of the population below the poverty line respectively⁷. The risk of poverty for women, especially in old age, is higher than for men⁸. Women earn on average 30% less than men and are underrepresented in decision-making and business⁹. Occupational segregation, strong traditional gender norms, women's limited participation in the formal economy and decision-making are reasons for socioeconomic vulnerability of women in the country.

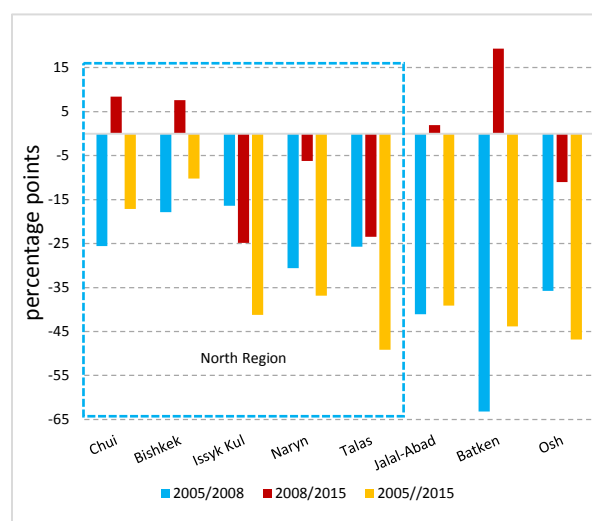
Urban and rural poverty rates converged over the past decade such that, by 2014, the gap had shrunk to 4 percentage points. Earlier in the period, this convergence mainly reflected faster relative gains in rural areas; later on, it resulted mostly from increasing urban poverty, while poverty in rural areas stagnated. Nonetheless, almost 70 percent of all poor households are in rural areas. Poverty also varies greatly by region, in particular between the north and south of the country. Although poverty reduction was mostly due to intra-oblast effects, almost half of the poor are concentrated in two southern oblasts (Jalal-Abad and Osh), reflecting both a higher prevalence of poverty in these regions and their greater demographic weight. In terms of trends, *oblast*-level changes appear to be heterogeneous, pointing to local-specific drivers of poverty reduction that may reflect small local markets, production specialization patterns and/or a clustering of the population around the poverty line.

⁷ Country Partnership Strategy (CPS) 2013-2017

⁸ CPS 2013-2017; World Bank 2014, Poverty and Social Impacts of Energy reforms in the Kyrgyz Republic: Summary of Qualitative Assessment

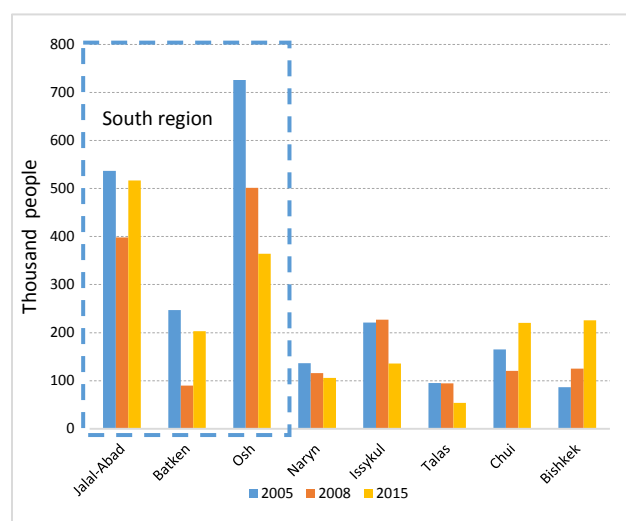
⁹ World Bank 2012, Kyrgyz Republic Gender Disparities in Endowments and Access to Economic Opportunities

Figure 1: Despite massive reductions
(Change in absolute poverty by oblast)



Source: Bank estimates using KIHS 2005-15

Figure 2: Most of the poor in two southern oblasts
(Absolute number of poor by oblast)



Source: Bank estimates using KIHS 2005, 2008, 2015

The energy sector of the Kyrgyz Republic, largely publicly owned, is critical for economic growth. The sector accounts for about 4% of GDP and 16% of industrial production.

Lack of heating has more adverse impacts on women, the elderly, and people with disabilities who spend more time than men at home during winter months. In many households, women carry primary responsibility for household chores such as furnishing fuel for stoves, keeping the home warm, refueling the stoves/boilers, paying utility bills, managing family budgets, and taking children to hospitals when children get ill because of cold temperature at home. These tasks consume considerable amount of women's time and energy.

6. Project potential environmental and social impacts and mitigation measures

6.1 Project scope of work

Component 1 – Improving supply efficiency and quality of the DH system:

Package 1: Modernization of individual (building-level) heat substations consists of (i) installation and renovation of individual heat substations (IHS) by replacing pumps, valves and pipes and installation of heat and hot water meters with remote reading functions ('smart meters') in 1,931 residential buildings; and (ii) installation of a preventive maintenance information system

Package 2: Replacement and reconstruction of the 'Vostok' transmission network will comprise the following construction/rehabilitation activities:

1. Excavation of old transmission pipeline with evacuation of soil to dumps;
2. Dismantling upper trays of the concrete duct;
3. Dismantling above-ground old pipeline, insulated by mineral wool, Ruberoid (roofing felt) or asbestos plaster;
4. Dismantling underground old pipeline, insulated with mineral wool;
5. Dismantling lower trays of the concrete duct;
6. Installation of new lower trays of the concrete duct;
7. Assembling of new above-ground pre-insulated pipes;
8. Assembling of new underground pre-insulated pipes;
9. Installation of upper trays of the concrete duct; and
10. Back-filling by fill material.

For installation of underground pipeline, up to 10 m wide and 3.5 m deep trench will be dug out and reinstated upon closure.

Component 2 – Piloting efficient and clean heating stoves:

The Project Component 2 will improve access to affordable, efficient and clean heating stoves and LPBs for low income households that meet eligibility criteria outlined in Annex 3 by providing subsidies towards their purchase and installation of the equipment in eligible households.

Component 3 – Demonstrating the benefits of energy efficiency improvements in public buildings

The Project Component 3 will primarily finance energy efficiency improvements of the building envelope (e.g. insulation of walls, basement and attics, repair/ replacement of external doors and windows, window optimization), heating and cooling systems (e.g. boiler upgrade/ replacement, heat pumps, solar water heaters, chiller/air condition replacement), lighting (e.g. compact fluorescent lamps, light emitting diodes) and other typical energy efficiency measures.

6.2 Environmental and social benefits

The Project will have overall positive environmental and social impacts and benefits at the proposed project locations.

Expected key benefits of Component 1 investments include: (i) reduced heat and hot water losses through the installation of modernized substations, building-level heat and hot water meters and pre-insulated pipelines; (ii) improved reliability and quality of heat supply by focusing on the most dilapidated sections of a critical transmission pipeline, and improving temperature and flow controls at building-level; (iii) increased

transmission and distribution capacity to end-consumers; (iv) improved access to heating for low income households without access to DH; and (iv) improved incentives for end-user energy efficiency by enabling the transition from norm-based to consumption-based billing (at building-level) for 56% of BTS' residential customers.

Expected key benefits of switching to efficient and clean heating stoves and LPBs include: reduced solid fuel consumption and related household expenditures; significant reduction of PM_{2.5} and CO emission, which will help to decrease exposure to indoor air pollution; improved comfort levels in terms of higher indoor temperature and quality of life; enhanced user convenience by reducing the need for constant refueling and extensive cleaning of chimneys; affordable heating for low income households; and reduced number of household chores for women, the elderly, and children.

Improving energy efficiency in public buildings will help to reduce heat losses, enhance comfort levels and improve the efficiency and quality of heat supply in the selected buildings. Energy efficiency investments are also expected to reduce energy and in particular electricity consumption, and decrease related public energy expenditures – the extend will be subject to current comfort levels as some of the savings may be used to increase temperature levels in the building.

6.3 Potential adverse environmental and social impacts

The Project, especially during civil works under Component 1 (package 2), is expected to cause some short-term negative impacts on air, soil, water, and acoustic environment. Environmental issues likely to be associated with Component 1 (package 2) activities include: noise generation; impact on soil and on water by the construction works; disturbance of traffic during construction and rehabilitation works; construction dust and wastes; and workers safety. However, these adverse impacts will be temporary and site specific and could be easily mitigated through implementing adequate avoidance and/or mitigation measures. Adverse impacts on natural environment, protected areas, physical cultural resources are not expected because of the location of the project in urbanized area. Negative social impacts include: perceived disparities in project benefits for various groups of beneficiaries.

Regarding Component 3, negative environmental impacts from implementation of energy efficiency upgrade of public buildings are not expected, however, there might be increased health and occupational hazards for workers, users and population during construction and operation phases. Such risks will be reduced by proper management and proper implementation practices. Construction materials for energy efficiency upgrade of public buildings will be purchased from registered providers to ensure their reliability and safety for human health. It should also be noted that the Kyrgyz Republic is a zone of high seismic activity, with a significant number of cities falling under current regulation on seismic construction. Renovation measures in selected public buildings financed under Component 3 will not only include energy efficiency upgrades but also seismic reinforcements to ensure compliance with current seismic regulations.

Regarding Component 2, heating stoves and LPB models as well as eligible producers will have to meet criteria related to production capacity, quality control, warranty, after-sales services, safeguards and other aspects (as further described in Annex 3). The selection of eligible products and suppliers will be based on a pre-screening process, and related eligibility criteria will be reviewed annually to reflect lessons learned as well as experience and capacity. Component 2 will also cover costs related transportation, installation (including basic improvements of the connecting parts, such as heating walls or chimneys, to ensure safe operation of the stove), and recycling of the old stoves. On the recycling of old stoves, a clause will be included in the contract of the selected service providers that an agreement needs to be concluded with companies that take old stoves for dismantling and disposal.

As a result of implementation of Component 1, the main potential negative environmental impacts during project implementation are as follows:

Pollution with construction run-offs. As a result of fuel/lubricant leakage from machinery and stock piled waste materials, oil products and chemicals may pollute soil, penetrate to the ground water or run off to surface water bodies. Servicing and washing of vehicles and machinery in proximity to natural streams may also result in water pollution from construction run-offs. If construction camps are established on-site, environment pollution may occur from sanitation facilities provided at these camps.

Impacts on the biodiversity. During the construction period, earth works required for the construction of pipeline trenches may result in damage to the vegetative cover and loss of planted trees. Borrowing for construction materials, disposal of excess material and waste may also lead to disturbance of wildlife, including impacts on habitats. However, because all works will be undertaken mainly in developed area, significant damages are unlikely, as well as impacts on critical or natural habitats.

Noise, vibration and temporary air pollution. Dust will be generated due to earth works, transportation of construction materials/waste and truck traffic. Dust and the bitumen smoke arising from road construction works will have localized and temporary negative impact on the air quality. Significant increase in noise levels is expected during demolition, construction and transportation activities, in particular, during the earth works, pneumatic drilling, cranes operations, equipment dismantling or installation. Noise and vibration will cause nuisance to local communities during works undertaken in the immediate proximity to settlements.

Seismicity. According to the data of the Institute of Seismology of the National Academy of Sciences of the Kyrgyz Republic, the seismic activity magnitude of Bishkek city is 8 and above (8, 9 and >9). The design and construction of pipeline and foundations to be constructed in this area should consider and be able to withstand these potential seismic forces.

Generation of excavated material and construction waste. The following types of wastes will be generated during the construction phase of Component 1: (i) demolition debris including fragments of removed pavement, concrete stubs, road rails; other types of waste, such as excess soil and rock; removed trees, shrubs or branches; household waste; obsolete equipment and materials; and (ii) hazardous – asbestos plaster, mineral wool and Ruberoid containing construction waste; used tires, filters, and oils of construction machinery and vehicles.

Safety hazards from construction activities. Direct impacts on health and safety during construction of the planned transmission pipeline may result from various factors such as working at heights, crane/bulldozer operations, welding works, and sanitary situation during construction etc. A potential impact for the health and safety of workers could be further related to work accidents during construction (fall of pipes, structures) or due to contaminated drinking water or food.

Traffic. The negative interference to traffic could be expected to occur during rehabilitation / construction of transmission pipeline. All efforts will be made to minimize the amount of time that construction machinery and trucks are on roadway in order to avoid any accidents, or damage to material assets. The construction contractor will station workers on highways to block traffic when necessary and to notify drivers to proceed with caution. They also will direct traffic when heavy equipment is crossing the road. Increased speed and expected higher traffic volumes can increase the number of traffic accidents. Proper traffic management will avoid negative impacts on traffic as far as possible.

Historic and Cultural Sites. There are no registered physical cultural resources or resources of local or national interest in the vicinity of the proposed route. Provisions regulating actions in case of chance finds are included in the present ESMF.

Transboundary impacts. The proposed project will not cause any transboundary impacts.

Social impacts. Negative social impacts of the construction phase are expected to be minimal – confined to nuisance from noise, vibration, and possibly some disruption of traffic in those sections of pipeline routes that are located in or around human settlements. Works may also limit or block access of people to their

houses, land plots or other private or communal property. Some economic resettlement is expected (described in more detail in the RPF). Local residents may not be notified well on time about upcoming works and about temporary disruption of municipal service provision or communications resulting from works on roads. There is a likelihood of project-affected people suffering from inappropriate behavior of works' contractors or observing negative impacts of ongoing works while not knowing how to voice their concerns and make their voices heard.

It is expected that local laborers will be hired as part of an installation and civil works contract following NCB for both Component 1 and 3.

Under component 2, poor targeting can potential benefit people other than those that intended under the project.

6.4 Proposed mitigation measures

All works should be carried out only after necessary permits and approvals have been obtained.

Organizational measures. Before starting civil activities it is necessary to inform the local construction and environment inspectorates and communities about upcoming activities in the media and/or at publicly accessible sites (including the site of the works), through disclosure of site-specific ESMPs and RAPs (if needed) for each sub-project. All activities required for implementation of environmental safeguards measures and monitoring are to be planned and budgeted in work plans of the Client, contractors and sub-contractors. All works should be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment.

Health and safety during civil works. Construction workers should be properly dressed, having hardhats, as needed masks and safety glasses, harnesses and safety boots. Prior to starting civil works, all workers have to pass labor safety training course. In addition, it is necessary to carry out the routine inspection of the machinery and equipment for the purpose of trouble shooting and observance of the time of repair, training and instruction of the workers engaged in maintenance of the machinery, tools and equipment on safe methods and techniques of work. It is prohibited to distribute faulty or unchecked tools for work performance as well as to leave off-hand mechanical tools connected to the electrical supply network or compressed air pipelines; to pull up and bend the cables and air hose pipes; to lay cables and hose pipes with their intersection by wire ropes, electric cables, to handle the rotating elements of power driven hand tools. It is imperative to obey the existing national regulations on cranes/ earthmoving machines operations and welding works. Most important requirements in that regard are specified in the proposed mitigation measures of the ESMP.

Emergency preparedness and response. Effective Emergency Preparedness and Response Plan should be in place to address hazards associated with accidental failures of heat transmission pipeline during operation phase.

Protection of air quality and dust minimization. During construction /rehabilitation activities it is necessary to keep demolition debris in a controlled area, spraying with water mist to reduce debris dust. It is also necessary to suppress dust during pneumatic drilling/wall destruction by ongoing water spraying and/or installing dust screen enclosures at site. It is strictly prohibited burning of construction/waste material at the site. For the transportation of any other dusty material to the rehabilitation site watering or covering of the cargo should be implemented. Reduction of dust on rehabilitation site during the dry season of the year can be accomplished by watering the ground surface.

Reducing impacts on vegetative cover. Construction workers must operate in a manner to minimize environmental footprint at the work site. Movement of vehicles and construction machinery shall be allowed only within along the designated access roads in order to avoid damage of grass cover and other vegetation around the work site. If removal of trees is needed within the right of way in order to allow space

for adjusting alignment, arranging road shoulders, or allowing operation of construction machinery, then cutting should be undertaken under strict control to avoid extraction of unnecessary number of trees and an avoidable damage to other trees growing nearby. In case when cutting trees and shrubs is unavoidable, compensatory planting of trees/shrubs in locations agreed with authorities will be carried out..

Preventing pollution of soil and water. Servicing and fueling of construction vehicles and machinery should be undertaken at service centers away from work sites to the extent possible. If performed on-site, a non-permeable surface should be provided for fueling and a stock of absorbents should be kept for addressing accidental spills. Washing of machinery must be forbidden in proximity to surface water bodies. Stockpiling of construction material should be avoided if possible. If not, construction material should be stored on the construction site, and protected from weathering. Used automobile oil, stock of fuel and oil, and other hazardous substances must be kept also upon non-permeable surfaces, preferably under shelter and in safe from fire. In case of construction camps include housing for workers, septic tanks or pit toilets should be provided and maintained in a manner preventing direct discharge to surface water bodies and deterioration of sanitary conditions.

Avoiding soil erosion. Earth works may last over extended period of time along site alignments and at borrowing sites. Compacting, landscaping and reinstatement of excavated plots should be undertaken promptly upon completion of works in individual segments of an affected area, rather than being delayed till full completion of works. Sawing or planting of vegetation should be undertaken as required to avoid erosion. Topsoil must always be stripped from excavation sites and kept separately during earth works, so that it can be used effectively for site reinstatement and permit natural regeneration of vegetation to the extent possible. Use of the existing quarries should be encouraged to avoid extended environmental foot print of works.

Waste management. Wastes, wherever possible, should be minimized, separated and handled accordingly. Open burning and illegal dumping of any waste is strictly prohibited.

Non-hazardous - demolition debris and other as well as asbestos containing waste will be disposed to the designated landfill of Bishkek city. Excess material from excavation will be disposed to the formally designated locations. Permission for disposal from the Bishkek Municipality shall be obtained by Construction Contractor prior to disposal.

Obsolete equipment and materials will be stored at BTS facilities before being sold or possible reuse by BTS.

Asbestos plaster, mineral wool and Ruberoid containing construction waste will be disposed to the formally designated landfill. Permission for disposal from the Bishkek Municipality shall be obtained by Construction Contractor prior to disposal.

The maintenance of construction machinery and vehicles will be performed at specialized service centers, which also accept used tires, filters, and oils.

Waste collection containers will be placed to collect household waste from the construction site and construction base (if any). Agreement with Bishkek Municipality will be reached on regular disposal of domestic waste.

Handling Asbestos, Ruberoid and mineral wool. The general approach while handling these materials is that constructors should avoid crushing/destruction of waste, burying it in a locked location, to ensure people do not remove them for personal use. Also, constructors should avoid releasing asbestos fibers into the air from being crushed. It is also imperative that while working with asbestos plaster, Ruberoid and mineral wool workers wear special clothing, gloves and respirators. The use of asbestos containing material will be not allowed within the selected subprojects.

Handling chance finds. If chance find is encountered in the course of earth works, then works contractor must immediately stop all physical activities on site and notify the BTS/PIU. The BTS/PIU shall communicate

information to the Ministry of Culture, Information and Tourism and keep works on hold till written communication is received from this Ministry clearing resumption of works.

Managing nuisance to local communities. Local communities should be notified about timing and scope of planned works upfront. If pipeline construction / rehabilitation will cause temporary disruption of utility or communication services, then service users should also be notified about this in advance. If works are performed within or in the immediate proximity to settlements, then working hours should be strictly limited to daytime hours and dust control through sprinkling should be applied. Special signage and possibly fencing should be used if works are ongoing near children's institutions. Speed limits should be imposed for vehicle movement within settlements. Temporary storage of construction materials and waste as well as parking of construction machinery shall not block or limit access of local residents to their property and to public spaces or, if this is inevitable, then alternative temporary access should be provided.

The BTS shall establish and effectively operate grievance redress mechanism which would allow project-affected people to communicate their concerns and seek their resolution following a pre-defined set-up (the mechanism and requirements of the GRM is detailed in the OM).

Traffic and Pedestrian Safety. Sites of waste and material storage, work camps and access roads should be clearly demarcated. Works on transmission pipeline should be planned and undertaken in the manner minimizing traffic disruption and risks to local residents. Personnel operating construction machinery and heavy vehicles should hold relevant licenses and be adequately trained.

Resettlement issues. The World Bank's Operational Policy OP 4.12 Involuntary Resettlement provides safeguards to address and mitigate impoverishment risks related to involuntary resettlement under development projects. The main objectives of OP 4.12 are that involuntary resettlement should be avoided where feasible. At least, its social and economic impacts should be minimized and affected parties should be enabled to share the project benefits. Project affected persons should be consulted and be given the opportunity to participate in the planning and implementation of the resettlement program. Displaced persons should be assisted to improve their livelihoods or at least to restore them to pre-project levels.

To address the negative impacts of involuntary resettlement, the World Bank policy requires that affected persons are:

- (a) informed about their options and rights pertaining to resettlement;
- (b) consulted on and provided with feasible resettlement alternatives;
- (c) provided with prompt and full replacement costs for losses of assets;
- (d) provided with assistance such as moving allowances during relocation;
- (e) provided with development assistance in addition to the compensation, such as credit facilities, training or job opportunities;
- (f) Vulnerable persons among the displaced people, such as the handicapped, elderly people, women, widows, and children should be provided with specific social assistance.

All work on these OTLs will be conducted in full compliance with all of the terms of the HSIP Resettlement Policy Framework (RPF), including with regard to the preparation of Resettlement Action Plans (RAPs), if needed.

Project targeting: As part of Component 2, the Project design stipulates community monitoring of the selection of beneficiaries, proper installation and use of the stoves. Broad CE activities complemented by information campaign will inform direct and indirect beneficiaries about the project activities and its benefits. These activities will also share the information about targeting in order to mitigate potential social risks and mis-information. The project-level GRM will collect any grievances or requests related to project implementation. Women, the minorities and the vulnerable will be specifically reach out by the implementing agencies. GRM will also capture information about sourcing of labor and behavior of

employed labor force in the communities. All employed workers under the project will abide by the Code of Conduct.

6.5 The scope and objective of an ESMP

Preparing an ESMP for each sub-project (Component 1 and Component 3) is the next step in the ESA process. ESMP is considered as a mandatory document which should be followed during the project implementation. An ESMP is developed on the basis provided by ESMF and consists of the set of mitigation, monitoring, and institutional responsibility measures to be taken during implementation and operation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. Environmental Management Plan provided in Annex 1 provides mitigation measures to cover typical impacts from rehabilitation / construction of heat transmission pipeline, upgrading equipment at substations, including workers' health and safety, earthworks, and solid and hazardous waste management.

As the Project would also involve typical small scale rehabilitation activities at public buildings under Component 3 (schools, kindergartens, etc.) a generic checklist-type ESMP ("ESMP Checklist"), developed by the World Bank to provide "pragmatic good practice" and designed to be user friendly and compatible with safeguard requirements shall be used for each sub-project (see it presented in the Annex 2) will be used. The document covers typical avoidance, preventive and mitigation approaches to common civil works contracts and dismantling or installing heating equipment with localized impacts. It may be drafted/adjusted using the details of the environmental impacts identified during the first stage of the subproject ESA.

For activities on Component 2, safety checklists will be included in the acceptance protocol to be developed for delivered stoves (based on which the PIU will accept produced stoves for payment) and the manual for stove installers (which outlines detailed instructions for service providers on the proper and safe installation of stoves and LPBs). The checklist and the manual will be developed together with the Project OM before Project effectiveness and will be approved by the World Bank.

7. Responsibilities and institutional arrangements

The State Committee for Industry, Energy and Mining assumes the overall policy responsibility for the preparation and implementation of the Project. A Project Advisory Committee (PAC), chaired by the State Committee and involving all key stakeholders, will facilitate coordination and provide strategic advice throughout Project implementation.

BTS – Implementing entity for Component 1. The PIU within BTS will be responsible for day-to-day implementation of all activities supported under Component 1, including the preparation and implementation of safeguard instruments. While BTS and its PIU have adequate technical expertise, experience in implementing World Bank-financed projects, including familiarity with the WB safeguards and reporting requirements, are limited. To ensure adequate implementation capacity, the PIU will hire Safeguard Specialist based on ToRs satisfactory to the World Bank. An environmental and social specialist will cover environmental and social aspects of project Component 1, including compliance with the ESMP and RAP, requirements of the national legislation of the KR, and tracking operation of grievance mechanisms.

ARIS – Implementing entity for Component 2 and 3. A Project PIU within ARIS will be responsible for implementing all activities supported under Component 2 and 3. ARIS has adequate capacity and experience in managing and implementing World Bank-financed projects. For the purpose of the HSIP, ARIS will assign Safeguard Specialist responsible for the compliance with the safeguard policies of the WB triggered for HSIP, and with the requirements of the national legislation.

Both BTS and ARIS will operate a grievance redress mechanism and coordinate their activities to properly track various grievances received. The project level GRM will be comprehensive and incorporate all issues related to the project implementation. Each agency will designate a specialist responsible for operation of the GRM. The grievance redress process is detailed in Annex 7. The GRM will be detailed in the OM and the information will be reflected in the RAPs and ESMPs.

7.1 Monitoring of safeguards compliance

BTS and ARIS through the appropriate PIUs will be responsible for monitoring of the compliance of all Project-financed activities with the environmental and social safeguard policies of the World Bank triggered for HSIP, and with the requirements of the national legislation of the KR. Environmental monitoring of works shall be undertaken according to the ESMPs presented in this document. PIUs will undertake this task using its in-house capacity as well as hired environmental and/or social consultants. Environmental and social monitoring implies regular field supervision of all physical activities being implemented with the Project funding by contractors under Project and tracking implementation of ESMPs and RAPs, if applicable. Field supervision form for construction/reconstruction works and energy efficiency upgrades is developed to facilitate environmental and social monitoring (Annex 4).

Compliance with the project ESMPs is mandatory for Project contractors and beneficiaries. Construction contractor should have specially assigned staff responsible for the ESMP implementation during construction phase. PIU will monitor implementation of mitigation measures and good practices prescribed by these documents and in case of revealing shortfalls, will notify sub-project contractors/beneficiaries on the outstanding issues and request remedial action. If non-compliance persists, and requirements of RPF/ESMP are severely infringed, PIU will undertake penalty actions established for violation of the terms of contract. The ESMPs will be included into the tender documents for works and RAP if applicable, will be attached to contracts with works providers, so that contractors are legally bound to adherence to these. The contractor will receive a copy of a RAP once it is completed and when relevant, be informed about the anticipated resettlement impact and to ensure such impact is kept to a minimum. In cases where RAP requires repair and/or restoration of PAP's assets, these activities may be included as a required in the contract with the civil works provider.

7.2 Reporting on safeguards compliance

PIU is responsible for documenting environmental and social monitoring work by completing and storing of field supervision forms, and producing regular narrative reports on the outcomes of monitoring. These reports will summarize findings of field work, analyze common issues encountered, explain the nature of remedial actions worked out for addressing issues, and assess status of remedial actions undertaken upon recommendation issues under a previous report period. This reporting will include not only environmental and social safeguards issues, but also wider environmental and social issues (e.g. gender, grievance redress etc.).

PIU will produce reports on the status of environmental and social compliance prior to the Project implementation support missions to be undertaken by the World Bank. Analytical information of the safeguards compliance will be part of the HSIP annual progress reports too. Reports will be supplemented with dated photo documentation. All field monitoring checklists and narrative reports will be stored in the electronic and/or hard format at PIU in a systemic manner, and shall be made available to the World Bank upon request.

7.3 Public consultation and coordination

BTS and ARIS though PIUs will be responsible for the disclosure of environmental and social documents developed for the purposes of HSIP. These include the present ESMF, as well as the RPF and all site-specific ESMPs and RAPs developed for individual sub-projects. Consultation with the project stakeholders, especially the local communities which will be directly affected by the Project, is mandatory for the development of the ESMF and RPF. Public feedback shall be incorporated in the drafts of these documents prior to their finalization. Present ESMF will be disclosed in Russian and English languages through the web pages of BTS and ARIS and other relevant media, and it will be discussed with all stakeholders of HSIP. Inputs obtained during ESMF/ESMPs and RAP disclosure/consultations will be taken into account when the final version of is the documents are prepared.

Consultation process for each sub-project will be carried out prior to commencement of works at a given sub-project site.

ESMP disclosure for Improving supply reliability and efficiency of the DH system and Improving energy efficiency in public buildings sub-projects. Site-specific ESMPs (and RAPs, if applicable) will be disclosed in a timely manner prior to consultation with project-affected groups and local NGOs and in form and language that are understandable and accessible to the group being consulted. Consultation process for each sub-project will be carried out prior to commencement of works at a given sub-project site. Minutes of the public consultation meetings will be attached to all ESMPs/RAPs.

7.4. Grievance Redress Mechanism

A comprehensive project-level GRM will be available to the project beneficiaries. The manner in which the GRM operates, will be detailed in the Project operational manual. The GRM will cover all project implementation –related issues, include environmental and social safeguards.

ANNEX 1: Environmental and Social Management Plan for Modernization of individual (building-level) heat substations and Replacement and reconstruction of the 'Vostok' transmission network (Component 1)

Environmental Management Plan

Activity	Potential Impact	Mitigation Measure	Indicator of Mitigation	Cost of Mitigation	Responsibility for Mitigation
CONSTRUCTION /INSTALLATION PHASE					
1. Labor safety	Traumatism and accidents at work site during crane/ excavators/ bulldozers operations	<ul style="list-style-type: none"> - Provision of construction workers with uniforms and PPE; - Strict compliance with the national regulations on crane/ excavators/ bulldozers operations; - Carrying out of works under the supervision of electricians while approaching to the overhead electrical lines under tension; - Installation and fixation of cranes in a stable position to prevent their tipping or spontaneous displacement under the action of its own weight, and the engine; - Checking the serviceability of machineries, availability of their fencing and safety devices for mechanized management of earthworks. Prohibiting working on defective machines; - Provision of workers serving machines with instructions, comprising following: (a) machine controlling instruction and caring about the workplace; (b) safety engineering requirements; (c) guidance of signals system; (d) the 	<ul style="list-style-type: none"> - Construction workers found wearing uniforms and adequate protective gear during inspections; - No violations of equipment operation and use instructions and regulations registered during inspections; - Machines are controlled only by specially trained personnel having certificate of competence of controlling machines. 	No specific extra cost: common responsibility of works contractor	Construction Contractor

Activity	Potential Impact	Mitigation Measure	Indicator of Mitigation	Cost of Mitigation	Responsibility for Mitigation
		<p>maximum loads and speeds of machines; (e) the measures have to be taken by the worker in the case of accident or malfunction of the machines;</p> <ul style="list-style-type: none"> - Strict compliance with the safe operating rules of relevant machines; - Allowing only specially trained personnel having certificate of competence of controlling machines to control the machines; - Strict compliance with the following basic requirements of cranes and bulldozers operations: (a) all rotating parts of machines – gears, chain and temporary transfer, fans, flywheels, etc. must be fenced by casing. Turning on the mechanisms without fences is prohibited; (b) examination, adjustment, tightening bolts, lubrication and preventive maintenance of the equipment during their work is banned; and (c) in areas where these machines work implementation of any other works and existence of people are not allowed. If in exploit soil will be found large stones, stumps or other objects the machine must be stopped and the objects which can 			

Activity	Potential Impact	Mitigation Measure	Indicator of Mitigation	Cost of Mitigation	Responsibility for Mitigation
		cause an accident should be removed.			
	Traumatism and accidents at work site during welding works	<ul style="list-style-type: none"> - Strict compliance with the national regulations on welding works; - Provision of welding workers with protective equipment, rubber gloves, special boots, and helmets; - Provision of labor safety training to all workers prior to starting welding operations; - Strict compliance with the usage of protective gear which as minimum includes: (a) respirator/welders mask; (b) protective clothing: all skin areas need to be protected to protect against molten metal and sparks. This includes: long sleeve shirts; pants that cover the tops of shoes; gloves; shoes or boots; (c) eye protection devices against injuries from debris and from the effects of the ultraviolet light; (d) helmets; - Strict compliance with the fire safety requirements: prepare and use extinguishers as well as sand and water. 	<ul style="list-style-type: none"> - Welding workers found wearing uniforms and adequate protective gear during inspections; - No violations of regulations on welding works registered during inspections; - Labor safety training records available on site; - Presence of basic fire extinguishing means on site. 	No specific extra cost: common responsibility of works contractor	Construction Contractor
2. Demolition and construction	Air pollution with dust and emissions	<ul style="list-style-type: none"> - Keeping demolition debris in controlled area and spraying with water mist to reduce debris dust; - Suppression of dust during pneumatic drilling/wall destruction 	<ul style="list-style-type: none"> - No demolition debris found in uncontrolled area and unsprayed with water; - No pneumatic 	No specific extra cost: common responsibility of works contractor	Construction Contractor

Activity	Potential Impact	Mitigation Measure	Indicator of Mitigation	Cost of Mitigation	Responsibility for Mitigation
		<ul style="list-style-type: none"> by ongoing water spraying and/or installing dust screen enclosures at site; - Keeping the surrounding environment (sidewalks, roads) free of debris to minimize dust; - Prohibiting open burning of construction / waste material at the site; - Keeping construction vehicles and machinery in adequate technical condition excluding excessive emissions; - No idling of construction vehicles at sites. 	<ul style="list-style-type: none"> drilling/wall destruction activity without suppression of dust by ongoing water spraying and/or installing dust screen enclosures at site; - Surrounding environment (sidewalks, roads) found free of debris during inspections; - No open burning of construction / waste material found at the site during inspections; - During inspections, construction vehicles and machinery found operating without excessive emissions; - No complaints from nearby residents. 		
	Generation of noise	<ul style="list-style-type: none"> - Respecting working hours; - Closing the engine covers of generators, air compressors and other powered mechanical equipment during operations, and placing of equipment as far away from residential areas as possible; - Fitting noise mufflers to mobile plant and equipment; 	<ul style="list-style-type: none"> - No construction equipment found operational out of working hours; - Construction equipment found in decent technical condition during inspections; 	No specific extra cost: common responsibility of works contractor	Construction Contractor

Activity	Potential Impact	Mitigation Measure	Indicator of Mitigation	Cost of Mitigation	Responsibility for Mitigation
		<ul style="list-style-type: none"> - Preventative maintenance of equipment to minimize noise; - Switching off unnecessary or idle equipment. 	<ul style="list-style-type: none"> - No switched on unnecessary or idle equipment found during inspections; - No complaints from nearby residents. 		
3. Provision of construction materials	Delivery of substandard materials which may cause risks to the safety of structure and to health of people	Purchase of construction materials from the registered providers	Delivery of standard quality construction materials carrying relevant certificates of origin	None	Construction Contractor
4. Transportation of construction materials and waste Movement of construction machinery	<ul style="list-style-type: none"> - Pollution due to poor technical condition of vehicles and movement of uncovered truckloads; - Nuisance to local residents from noise and dust. 	<ul style="list-style-type: none"> - Adequate technical condition of vehicles and machinery; - Confinement and protection of truck loads with lining; - Respect of the established hours and routes of transportation. 	<ul style="list-style-type: none"> - Vehicles and machinery found in decent technical condition during inspections; - No uncovered truck loads found during inspections; - No activity ongoing out of working hours which may be disturbing for nearby population; - No complaints from nearby residents. 	No specific extra cost: common responsibility of works contractor	Construction Contractor
5. Operation of construction equipment on site	<ul style="list-style-type: none"> - Pollution of environment with emissions and leakages; - Nuisance for nearby population. 	<ul style="list-style-type: none"> - Adequate technical condition of construction equipment; - No excessive exhaust; - No fuel and lubricant leakage; - Observation of working hours. 	<ul style="list-style-type: none"> - Vehicles and machinery found in decent technical condition during inspections; - No heavy vehicles and machinery found 	No specific extra cost: common responsibility of works contractor	Construction Contractor

Activity	Potential Impact	Mitigation Measure	Indicator of Mitigation	Cost of Mitigation	Responsibility for Mitigation
			operational out of the established hours; - No complaints from nearby population.		
6. Maintenance of construction equipment	<ul style="list-style-type: none"> - Pollution of ground water and soil with oil products due to operation of equipment; - Damage in case of fire. 	<ul style="list-style-type: none"> - Washing of cars and construction equipment outside the construction site or on maximum distance from natural streams; - Refueling or lubrication of construction equipment at predetermined filling stations/service centers. 	<ul style="list-style-type: none"> - No direct entry of runoff from car-wash to water bodies; - No spillages of fuel and lubricants found on the ground within and nearby the construction site; - Presence of basic fire extinguishing means on site. 	No specific extra cost: common responsibility of works contractor	Construction Contractor
7. Earth works	<ul style="list-style-type: none"> - Loss of vegetation due to ground piling and pollution of surface water body with particles; - Loss of trees. 	<ul style="list-style-type: none"> - Topsoil removal and temporary stockpiling for re-cultivation of the land; - Temporary storage of excavated soil at determined places; - Backfilling of the excavated ground as needed and disposal of the excess mass to the places, approved in writing; - Limitation of cutting trees wherever feasible; - Compensation is paid for felled trees to the Municipality; - Determination of necessary lay down areas together with the environmental site manager to prevent the cutting of trees; 	<ul style="list-style-type: none"> - Excess material disposed at the agreed upon safe permanent storage sites with no threat of erosion and no blocking of waterways; - No remnants of excess material at the construction site upon completion of works. 	<p>Contractor has to include the cost of transportation of excess material to the sites of final disposal into the bill of quantities.</p> <p>Compensation for felled trees has to be included in project costs</p>	Construction Contractor PIU

Activity	Potential Impact	Mitigation Measure	Indicator of Mitigation	Cost of Mitigation	Responsibility for Mitigation
		<ul style="list-style-type: none"> - 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; 			
8. Extraction of inert material	<ul style="list-style-type: none"> - Slopes erosion and landscape damage; - River banks erosion, pollution of water flow with weighted particles, and disturbance of aquatic life 	<ul style="list-style-type: none"> - Purchase of inert materials from the existing suppliers, if such opportunity exists - Obtaining of the license for production of inert materials and strict compliance with the license; - Terracing of quarries, backfilling of exploited areas and harmonization with the landscape; - Excavating gravel outside water flow, arrangement of separating ridges between water flow and excavation area, banning entrance of watery by vehicles and machinery. 	<ul style="list-style-type: none"> - Construction contractor (if mining) or an external provider of inert materials able to present relevant license for mining upon inspection - Mining activity of construction contractor (if being undertaken) found technically sound and compliant with the license conditions. 	Common responsibility of works contractor	Construction Contractor
9. Generation of household waste	<ul style="list-style-type: none"> - Pollution of soil and water with domestic waste 	<ul style="list-style-type: none"> - Placement of waste collection containers at the construction site and construction base (if any); - Agreement with Bishkek Municipality on regular disposal of domestic waste. 	<ul style="list-style-type: none"> - Waste collection containers found at the construction site and construction base; - No pollution of the construction site and construction base with household waste. 	No specific extra cost: common responsibility of works contractor	Bishkek Municipality Construction Contractor

Activity	Potential Impact	Mitigation Measure	Indicator of Mitigation	Cost of Mitigation	Responsibility for Mitigation
10.Generation of non-hazardous construction waste	<ul style="list-style-type: none"> - Pollution of soil, surface water and ground water; - Accidents at construction site due to scattered fragments of construction materials and debris; - Deterioration of esthetic appearance of construction site and its surroundings. 	<ul style="list-style-type: none"> - Temporary storage of construction waste in especially allocated areas; - Written agreement on the disposal of excess material and construction waste obtained from Municipality of Bishkek; - Timely disposal of wastes to the formally designated locations. 	<ul style="list-style-type: none"> - Construction waste found at the work site piled up in designated locations; - No excessive amount of construction waste stored on site. 	Contractor shall include cost of waste transportation/disposal into the bill of quantities.	<p>Bishkek Municipality</p> <p>Construction Contractor</p>
11.Generation of non-hazardous liquid wastes	<ul style="list-style-type: none"> - Pollution of surface and ground water; - Deterioration of sanitary conditions at work site. 	Arrangement and maintenance of toilets in compliance with sanitation norms at the construction site.	Toilets provided at the construction site and found in good sanitary condition	No specific extra cost: common responsibility of works contractor	Construction Contractor
12.Generation of metal waste from the removal of heat substation obsolete equipment and transmission network pipes	<ul style="list-style-type: none"> - Pollution of soil, surface water and ground water; - Accidents at construction site due to scattered decommissioned materials and equipment; - Deterioration of esthetic 	<ul style="list-style-type: none"> - Temporary storage of decommissioned equipment and pipes in especially designated locations; - Transportation of decommissioned equipment and pipes to metal recycling facility. 	<ul style="list-style-type: none"> - Decommissioned equipment and materials found collected in designated locations; - Scrap metal accepted by recycling facility. 	Included in project costs	<p>Construction Contractor</p> <p>PIU</p>

Activity	Potential Impact	Mitigation Measure	Indicator of Mitigation	Cost of Mitigation	Responsibility for Mitigation
	appearance of construction site and its surroundings.				
13.Generation of asbestos (asbestos plaster), Ruberoid and mineral wool containing construction waste from replacement of pipes	<ul style="list-style-type: none"> - Pollution of soil, surface water and ground water; - Health hazards to construction workers and other people which may enter the construction site; - Health hazards to waste disposal workers and other people which may enter waste disposal site. 	<ul style="list-style-type: none"> - Removal of asbestos, Ruberoid and mineral wool containing materials with minimal fragmentation to avoid dust generation; - Watering of asbestos plaster during removal to minimize dust generation; - Temporary storage of removed waste under a cover in a designated location; - Timely removal of waste to the designated disposal site in a covered truck; - Covering of waste with a layer of earth at the site of its final disposal; - Wearing uniforms and protective gear (eyeglasses and respirators) by personnel handling asbestos, Ruberoid and mineral wool containing waste at any stage. 	<ul style="list-style-type: none"> - Asbestos, Ruberoid and mineral wool containing construction waste found at the work site piled up in designated locations; - Asbestos, Ruberoid and mineral wool containing waste found at the work site separated from other waste; - No excessive amount of asbestos, Ruberoid and mineral wool containing construction waste stored on site; - Personnel handling asbestos, Ruberoid and mineral wool containing waste found wearing uniforms and protective gear (eyeglasses and respirators) during inspections. 	Contractor shall include cost of asbestos, Ruberoid and mineral wool containing waste transportation/ disposal into the bill of quantities.	Bishkek Municipality Construction Contractor
14.Construction site re-cultivation and	Loss of aesthetical value of the	- Dismantlement of construction base and temporary access roads to	- No remnants of a work camp left behind after	Included in project costs	Construction Contractor

Activity	Potential Impact	Mitigation Measure	Indicator of Mitigation	Cost of Mitigation	Responsibility for Mitigation
landscaping	landscape due to replacement and reconstruction of the transmission network	<p>the construction sites (if any) and harmonization of the areas with the landscape;</p> <ul style="list-style-type: none"> - Final cleaning of the construction sites and permanent access roads and landscaping-greening of the area. 	<p>demobilization of contractor;</p> <ul style="list-style-type: none"> - Temporary access roads harmonized with landscape and enabling conditions provided for natural regeneration of vegetation; - Construction site landscaped and greened. 		
15. Traffic and Pedestrian Safety	Direct or indirect hazards to public traffic and pedestrians by construction activities	<ul style="list-style-type: none"> - Signposting, warning signs, barriers and traffic diversions; - 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 during rush hours; - Active traffic management by trained and visible staff at the site, if required for safe and convenient passage for the public. 	<ul style="list-style-type: none"> - Properly secured construction site; - Clearly visible site and the public warned of all potential hazards; - Regulated construction related traffic. 	Included in project costs	Construction Contractor
16. All types of construction works	Public grievances	<ul style="list-style-type: none"> - Develop and implement, immediately after the project launch, a grievance mechanism for PAPs to address feedback and complaints at the local level; 	<ul style="list-style-type: none"> - Grievance mechanism in place; - Information campaigns through public meetings and 	Included in project costs	PIU

Activity	Potential Impact	Mitigation Measure	Indicator of Mitigation	Cost of Mitigation	Responsibility for Mitigation
		- Conduct information campaigns through public meetings and circulated documents regarding planned activities, as well as measures planned to avoid and mitigate potential impacts of construction works including safety measures in the vicinity of the construction site, interruptions in heat and hot water supply, traffic management, employment opportunities, grievance mechanisms and others identified through the development of the ESMP.	circulated documents conducted.		
	Gender impacts	- Strengthen distinct administrations on gender issues (i.e. receive complaints by women); - Promote gender-sensitive temporary employment opportunities around project works, as feasible.	- Properly administered gender issues, including consultations; - Gender-sensitive temporary employment opportunities promoted.	Included in project costs	PIU
	Influx of labor force	- Locally recruit workers, those who reside in the area where works take place or who can commute daily to the construction site	- Locally sourced labor force, when feasible	No specific extra cost: common responsibility of works contractor	BTS
OPERATION PHASE					
1. Operation and maintenance of substation	Disruption of the heat substation's operation causing nuisance to the consumers	Regular servicing of the substation	Smooth operation of the substation	To be included in the substation's operation and maintenance budget	BTS

Activity	Potential Impact	Mitigation Measure	Indicator of Mitigation	Cost of Mitigation	Responsibility for Mitigation
2. Emergency preparedness for transmission network failures	<ul style="list-style-type: none"> - Disruption of the heat and hot water supply causing nuisance to the consumers; - Public and personnel health risks due to hot water leaks. 	<ul style="list-style-type: none"> - Regular preventive maintenance of transmission network; - Emergency Preparedness and Response Plan in place; - Equipment and materials required for enacting Emergency Preparedness and Response plan provided on-site; - Personnel trained in the emergency response. 	<ul style="list-style-type: none"> - Smooth operation of transmission network and reduced water losses; - Safe conditions around transmission network. 	To be included in the BTS' operation and maintenance budget	BTS
3. Seismic risks	<ul style="list-style-type: none"> - Earthquakes impacting stability and operation of upgraded transmission pipeline 	<ul style="list-style-type: none"> - Design of the transmission pipeline has to comply with local regulation on seismic activity 	<ul style="list-style-type: none"> - Civil works and installation done in accordance with design 	To be included as part of the civil works	Construction supervisor BTS

ENVIRONMENTAL MONITORING PLAN

Activity	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Who (Is responsible for monitoring?)
CONSTRUCTION PHASE						
1. General conditions	- All legally required permits; parameters given in construction permit - all special conditions of construction issued by different bodies	Project documentation; Construction permit	A part of regular inspection by PIU	During construction/ installation and prior to issuance of the Operation permit	Regular review stipulated in the construction permits to ensure compliance with the specified by national legislation and ESMP environmental requirements	Construction Supervisor PIU
2. Provision of construction materials	Purchase of construction materials from the registered providers	In the provider's office or warehouse	Verification of labels of the materials and/or certificates if any	During conclusion of supply contracts	Ensure reliability of construction materials and their safety for human health	Construction supervisor PIU
3. Transportation of construction materials and waste Movement of construction machinery	- Technical condition of vehicles and machinery; - Confinement and protection of truck loads with lining; - Respect of the established hours and routes of transportation.	- Construction site; - Routes of transportation of construction materials and wastes.	Inspection of roads adjacent to the substations and transmission pipeline in the direction of the movement route	Selective inspections during work hours	- Limit pollution of soil and air from emissions; - Limit nuisance to local communities from noise and vibration; - Minimize traffic disruption.	Construction supervisor PIU Traffic Police

Activity	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Who (Is responsible for monitoring?)
4. Dust	Air condition on-site	Construction site and access road	Visual inspection	Recurrent	Reduce risks for the staff and neighboring communities	Construction supervisor PIU
5. Noise	<ul style="list-style-type: none"> - Observance of working hours; - Technical condition of vehicles and machinery; - Noise levels (in case of complaints). 	Construction site	<ul style="list-style-type: none"> - Visual inspection; - Instrumental measurement of noise levels (in case of complaints) 	<ul style="list-style-type: none"> - Recurrent - Within 2 weeks following a complaint 	Reduce nuisance for staff and neighboring communities	Construction supervisor PIU
6. Maintenance of construction equipment	<ul style="list-style-type: none"> - Washing of cars and construction equipment outside the construction site or on maximum distance from natural streams; - Refueling or lubrication of construction equipment at the predetermined filling stations/service centers. 	Construction site	Inspection of activities	Selective inspections during work hours	<ul style="list-style-type: none"> - Avoid pollution of water and soil with oil products due to operation of equipment; - Timely localize fire and decrease possible damage. 	Construction supervisor PIU

Activity	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Who (Is responsible for monitoring?)
7. Earth works	<ul style="list-style-type: none"> - Topsoil removal and temporary stockpiling for re-cultivation of the land; - Temporary storage of excavated soil at determined places; - Backfilling of the excavated ground as needed and disposal of the excess mass to the places, approved in writing; - An inventory made for large trees in the vicinity of the construction activity, marking and fencing of large trees, protection of their root system; - Limitation of tree cutting wherever feasible. 	Construction site	Inspection of activities	During earth works	<ul style="list-style-type: none"> - Limit loss of vegetation due to ground piling and minimization of pollution of surface water reservoirs with particles; - Limit pollution with contaminated soil of surface and ground waters. 	Construction supervisor PIU
8. Extraction of inert material	<ul style="list-style-type: none"> - Purchase of inert materials from the existing suppliers, if such opportunity exists - Obtaining of the license for production of inert materials and strict compliance with the license; 	Quarries of inert materials	<ul style="list-style-type: none"> Inspection of documents Inspection of activities 	During excavation and reclamation at quarries	<ul style="list-style-type: none"> - Limit slope erosion and landscape damage; - Limit erosion of river banks, pollution of water flow with weighted 	Construction supervisor PIU State Inspectorate on environment

Activity	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Who (Is responsible for monitoring?)
	<ul style="list-style-type: none"> - Terracing of quarries, backfilling of exploited areas and harmonization with the landscape; - Excavating gravel outside water flow, arrangement of separating ridges between water flow and excavation area, banning entrance of watery by vehicles and machinery. 				particles and disturbance of aquatic life.	al and technical safety
9. Generation of domestic waste	<ul style="list-style-type: none"> - Placement of waste collection containers at the construction site and construction base (if any); - Agreement with Bishkek Municipality on regular disposal of domestic waste 	Construction site and construction base (if any)	Visual observation	Total period of construction	Prevent pollution of soil and water with domestic waste	Construction supervisor PIU Bishkek Municipality
10. Generation of non-hazardous construction waste	<ul style="list-style-type: none"> - Temporary storage of construction waste in especially allocated areas; - Timely disposal of wastes to the formally designated locations. 	Construction site; Waste disposal site	Inspection of activities	Periodically during construction and upon its completion	<ul style="list-style-type: none"> - Prevent pollution of soil, surface water and ground water; - Avoid accidents at the SS site due to scattered fragments of construction 	Construction supervisor PIU Bishkek Municipality

Activity	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Who (Is responsible for monitoring?)
					materials and debris; - Retain esthetic appearance of the sites area and its surroundings.	
11.Production of liquid wastes	- Arrangement and maintenance of toilets in compliance with sanitation norms at the construction site	Construction site	Inspection of activities	Total period of construction	Reduce pollution of surface and ground waters	Construction Contractor
12.Generation of metal waste from the removal of heat substation obsolete equipment and transmission network pipes	- Temporary storage of decommissioned equipment and pipes in especially designated location; - Transportation of decommissioned equipment and pipes to metal recycling facility.	Pipeline route and surroundings of substations	Inspection of activities	Periodically during construction and upon its completion	- Prevent pollution of soil, surface water and ground water; - Avoid accidents at the construction site due to scattered decommissioned materials and equipment; - Retain esthetic appearance of the substations and pipeline route	Construction supervisor (transmission pipeline) PIU

Activity	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Who (Is responsible for monitoring?)
					surroundings.	
13.Generation of asbestos (asbestos plaster), Ruberoid and mineral wool containing construction waste from replacement of pipes	<ul style="list-style-type: none"> - Removal of asbestos, Ruberoid and mineral wool containing waste with minimal fragmentation to avoid dust generation; - Watering of asbestos plaster during removal to minimize dust generation; - Temporary storage of removed asbestos, Ruberoid and mineral wool containing waste under a cover in a designated location; - Timely removal of asbestos, Ruberoid and mineral wool containing waste to the designated disposal site in a covered truck; - Covering of asbestos, Ruberoid and mineral wool containing waste with a layer of earth at the site of its final disposal; - Wearing uniforms and 	Construction site; Waste disposal site	Inspection of activities	Periodically during construction and upon its completion	<ul style="list-style-type: none"> - Prevention of health hazards to construction workers and other people which may enter the construction site; - Prevention of health hazards to waste disposal workers and other people which may enter waste disposal site. 	Construction supervisor PIU Bishkek Municipality

Activity	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Who (Is responsible for monitoring?)
	protective gear (eyeglasses and respirators) by workers and personnel handling asbestos, Ruberoid and mineral wool containing waste at any stage.					
14. Construction site re-cultivation and landscaping	<ul style="list-style-type: none"> - Dismantlement of construction base and temporary access roads to the construction sites (if any) and harmonization of the areas with the landscape; - Final cleaning of the construction sites and permanent access roads and landscaping-greening of the area. 	Construction sites, access roads	Inspection of activities	Final period of construction	Reduce loss aesthetical value of the landscape due to replacement and reconstruction of the transmission network	Construction supervisor PIU Bishkek Municipality
15. Workers' health and safety	<ul style="list-style-type: none"> - Construction workers wearing uniforms and PPE; - Strict compliance with the rules of construction equipment operation and usage of PPE; - Strict compliance with the national regulations for construction works; - Presence of basic fire 	Construction site	Visual observation and analysis of presented documentation	Total period of works	Reduce probability of traumas and accidents to constructors	Construction supervisor PIU

Activity	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Who (Is responsible for monitoring?)
	extinguishing means; - Availability of labor safety training and instruction records.					
16.All types of construction works	- Operation of grievance mechanism for PAPs to address feedback and complaints at the local level; - Communication with local communities on planned and ongoing activities and measures applied for mitigation of their negative impacts; - Distinct administration on gender issues (e.g. receive complaints by women); - Gender-sensitive temporary employment opportunities around project works.	Along transmission line route and in the vicinity of heat substations	- Review of complaints log book and the response and handling of the complaints; - Interviews with local residents.	During all types of physical works	- Maintain cooperative relations with affected persons and reduce their dissatisfaction with temporary nuisance; - Reduce gender imparity	PIU
OPERATION PHASE						
1. Workers' health and safety	- Workers wearing uniforms and PPE; - Strict compliance with the rules of substations' equipment operation and maintenance of	At the heat substations and transmission network	Periodic check-ups	Periodically per specified in national norms and procedures	Avoid accidents and health impacts to maintenance personal	BTS

Activity	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Who (Is responsible for monitoring?)
	transmission network and usage of PPE; - Availability of training records.					
2. Operation and maintenance of substation	Regular servicing of the substation being undertaken	Substation area	Periodic check-ups	Total period of operation of the facility	- Reduce risks for neighboring communities; - Avoid disruption of substations' operation.	BTS State Inspectorate on environmental and technical safety
3. Emergency preparedness for transmission network failures	- Regular preventive maintenance of transmission network; - Emergency Preparedness and Response Plan in place; - Equipment and materials required for enacting Emergency Preparedness and Response plan provided on-site; - Personnel trained in the emergency response	Transmission pipeline route; BTS office	- Review of the Emergency Preparedness and Response Plan; - Visual inspection of site	Total period of operation of the network	- Avoid disruption of network operation; - Protect health and safety of neighboring communities and staff.	BTS State Inspectorate on environmental and technical safety

ANNEX 2: Draft format for ESMP Checklist for Energy efficiency upgrades in public buildings (Component 3)

The checklist ESMP has the following sections:

- Part 1 includes a descriptive part that characterizes the project, specifies institutional and regulatory aspects, describes technical project content, outlines any potential need for capacity building and briefly characterizes the public consultation process. Description should include social significance of the building, number of people using/benefiting from the building improvement, and gender aspects noted where appropriate and relevant. This section should indicatively be up to two pages long. Attachments for additional information may be supplemented as needed.
- Part 2 includes a screening checklist of potential environmental and social impacts, where activities and potential environmental issues can be checked in a simple Yes/No format. If any given activity/issue is triggered by checking “yes”, a reference to the appropriate section in the table in the subsequent Part C can be followed, which contains clearly formulated environmental and social management and mitigation measures.
- Part 3 represents the environmental monitoring plan to follow up proper implementation of the measures triggered under Part B. It has the same format as required for MPs produced under standard safeguards requirements for Category B projects.
- Part 4 contains a simple monitoring plan to enable both the Contractor as well as authorities and the World Bank specialists to monitoring due implementation of environmental management and protection measures and detect deviations and shortcomings in a timely manner.

Part 2 and 3 have been structured in a way to provide concrete and enforceable environmental and social measures, which are understandable to non-specialists (such as Contractor’s site managers) and are easy to check and enforce. The ESMP should be prepared by the PIU and included in the BoQ (bill of quantities) and the implementation priced by the bidders. Part 4 has also been designed intentionally simple to enable monitoring of key parameters with simple means and non-specialist staff.

CONTENTS

- Part 1 General Project and Site Information**
- Part 2 Safeguards Information**
- Part 3 Mitigation Measures**
- Part 4 Monitoring Plan**

PART 1: GENERAL PROJECT AND SITE INFORMATION

PART 1: GENERAL PROJECT AND SITE INFORMATION INSTITUTIONAL & ADMINISTRATIVE				
Country				
Project title				
Scope of project and activity				
Institutional arrangements (Name and contacts)	WB (Project Team Leader)	Project Management	Local Counterpart and/or Recipient	
Implementation arrangements (Name and contacts)	Safeguard Supervision	Local Counterpart Supervision	Local Inspectorate Supervision	Contractor
SITE DESCRIPTION				
Name of site				
Describe site location			Attachment 1: Site Map []Y [] N Attachment 2: Waste disposal agreement / permit Attachment 3: Construction permit (if required)	
Who owns the land?				
Who will benefit from Project intervention (e.g. pupils, teachers, hospitalized population, etc.)?				
Description of geographic, physical, biological, geological, hydrographic and socio-economic context				
Locations and distance for material sourcing, especially aggregates, water, stones				
LEGISLATION				
Identify national & local legislation & permits that apply to project activity				
PUBLIC CONSULTATION				
Identify when/where the public consultation				

process took place, including gender aspects	
INSTITUTIONAL CAPACITY BUILDING	
Will there be any capacity building?	<input type="checkbox"/> N or <input type="checkbox"/> Y if Yes, Attachment 4 includes the capacity building program
Was the labor sourced locally	<input type="checkbox"/> N or <input type="checkbox"/> Y if no, provide brief explanation

PART 2: SAFEGUARDS SCREENING AND TRIGGERS

ENVIRONMENTAL /SOCIAL SCREENING FOR SAFEGUARDS TRIGGERS			
	Activity/Issue	Status	Triggered Actions
Will the site activity include/involve any of the following?	X. Do project activities fall under Category A as defined in OP 4.01 p.8a)	<input type="checkbox"/> Yes <input type="checkbox"/> No	If "Yes", project is not eligible
	A. Building rehabilitation	<input type="checkbox"/> Yes <input type="checkbox"/> No	If "Yes", see Section A below
	B. New construction of small structures or infrastructure	<input type="checkbox"/> Yes <input type="checkbox"/> No	If "Yes", see Section A below
	C. Impacts on surface drainage system	<input type="checkbox"/> Yes <input type="checkbox"/> No	If "Yes", see Section B below
	D. Historic building(s) and districts	<input type="checkbox"/> Yes <input type="checkbox"/> No	If "Yes", see Section C below
	E. Acquisition of land ¹⁰	<input type="checkbox"/> Yes <input type="checkbox"/> No	If "Yes", see Section D below
	F. Hazardous or toxic materials ¹¹	<input type="checkbox"/> Yes <input type="checkbox"/> No	If "Yes", see Section E below
	G. Impacts on forests and/or protected areas	<input type="checkbox"/> Yes <input type="checkbox"/> No	If "Yes", see Section F below
	H. Risk of unexploded ordinance (UXO)	<input type="checkbox"/> Yes <input type="checkbox"/> No	If "Yes", see Section G below
	I. Traffic and Pedestrian Safety	<input type="checkbox"/> Yes <input type="checkbox"/> No	If "Yes", see Section H below

¹⁰ Land acquisitions includes displacement of people, change of livelihood encroachment on private property this is to land that is purchased/transferred and affects people who are living and/or squatters and/or operate a business (kiosks) on land that is being acquired.

¹¹ Toxic/hazardous material includes but is not limited to asbestos, toxic paints, noxious solvents, removal of lead paint, etc.

PART 3: MITIGATION MEASURES

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
0. General Conditions	Notification and Worker Safety	<ul style="list-style-type: none"> (a) The local construction and environment inspectorates and communities have been notified of upcoming activities. (b) 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). (c) All legally required permits have been acquired for construction and/or rehabilitation. (d) 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. (e) Workers' PPE will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots). (f) Appropriate signposting of the sites will inform workers of key rules and regulations to follow.
A. General Rehabilitation and/or Construction Activities	Air Quality	<ul style="list-style-type: none"> (a) During excavation works dust control measures shall be employed, e.g. by spraying and moistening the ground. (b) Demolition debris, excavated soil and aggregates shall be kept in controlled area and sprayed with water mist to reduce debris dust. (c) During pneumatic drilling or breaking of pavement and foundations dust shall be suppressed by ongoing water spraying and/or installing dust screen enclosures at site. (d) The surrounding environment (sidewalks, roads) shall be kept free of soil and debris to minimize dust. (e) There will be no open burning of construction/waste material at the site. (f) All machinery will comply with Kyrgyz Republic emission regulations, shall well maintain and service and there will be no excessive idling of construction vehicles at sites.
	Noise	<ul style="list-style-type: none"> (a) Construction noise will be limited to restricted times agreed to in the permit. (b) 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"> (a) 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 canalization and nearby streams and rivers.
	Waste management	<ul style="list-style-type: none"> (a) Waste collection and disposal pathways and sites will be identified for all major waste types expected from excavation, demolition and construction activities. (b) Mineral construction and demolition wastes will be separated from general refuse, organic, liquid

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
		<p>and chemical wastes by on-site sorting and stored in appropriate containers.</p> <p>(c) Construction waste will be collected and disposed properly by licensed collectors.</p> <p>(d) The records of waste disposal will be maintained as proof for proper management as designed.</p> <p>(e) Whenever feasible Contractor will reuse and recycle appropriate and viable materials (except when containing asbestos).</p>
B. Impacts on surface drainage system	Water Quality	<p>(a) There will be no unregulated extraction of groundwater, nor uncontrolled discharge of process waters, cement slurries, or any other contaminated waters into the ground or adjacent streams or rivers; the Contractor will obtain all necessary licenses and permits for water extraction and regulated discharge into the public wastewater system.</p> <p>(b) There will be proper storm water drainage systems installed and care taken not to silt, pollute, block or otherwise negatively impact natural streams, rivers, ponds and lakes by construction activities.</p> <p>(c) There will be procedures for prevention of and response to accidental spills of fuels, lubricants and other toxic or noxious substances.</p> <p>(d) Construction vehicles and machinery will be washed only in designated areas where runoff will not pollute natural surface water bodies.</p>
C. Historic building(s)	Cultural Heritage	<p>(a) If construction works take place close to a designated historic structure, or are located in a designated historic district, notification shall be made and approvals/permits be obtained from local authorities and all construction activities planned and carried out in line with local and national legislation.</p> <p>(b) It shall be ensured that provisions are put in place so that artefacts or other possible “chance finds” encountered in excavation or construction are noted and registered, responsible officials contacted, and works activities delayed or modified to account for such finds.</p>
D. Acquisition of land	Land Acquisition Plan/Framework	<p>(a) If expropriation of land was not expected but is required, or if loss of access to income of legal or illegal users of land was not expected but may occur, that the Bank’s Task Team Leader shall be immediately consulted.</p> <p>(b) The approved Land Acquisition Plan/Framework (if required by the project) will be implemented.</p>
E. Toxic materials	Asbestos management	<p>(a) If asbestos is located on the project site, it shall be marked clearly as hazardous material.</p> <p>(b) When possible the asbestos will be appropriately contained and sealed to minimize exposure.</p> <p>(c) The asbestos prior to removal (if removal is necessary) will be treated with a wetting agent to minimize asbestos dust.</p> <p>(d) Asbestos will be handled and disposed by skilled & experienced professionals.</p>

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
	Toxic/hazardous waste management	<p>(e) If asbestos material is be stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately. Security measures will be taken against unauthorized removal from the site.</p> <p>(f) The removed asbestos will not be reused.</p> <p>(a) Temporarily storage on site of all hazardous or toxic substances will be in safe containers labelled with details of composition, properties and handling information.</p> <p>(b) The containers of hazardous substances shall be placed in a leak-proof container to prevent spillage.</p> <p>(c) The wastes shall be transported by specially licensed carriers and disposed in a licensed facility.</p> <p>(d) Paints with toxic ingredients or solvents or lead-based paints will not be used.</p>

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
F. Affected forests, wetlands and/or protected areas	Ecosystem protection	(a) 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. (b) 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. (c) Adjacent wetlands and streams 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. (d) There will be no unlicensed borrow pits, quarries or waste dumps in adjacent areas, especially not in protected areas.
G. Risk of unexploded ordinance (UXO)	Hazard to human health and safety	(a) Before start of any excavation works the Contractor will verify that the construction area has been checked and cleared regarding UXO by the appropriate authorities.
H. Traffic and pedestrian safety	Direct or indirect hazards to public traffic and pedestrians by construction activities	(a) In compliance with national regulations the Contractor will insure that the construction site is properly secured and construction related traffic regulated. This includes but is not limited to: <ul style="list-style-type: none"> ▪ 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 during rush hours or times of livestock movement. ▪ If required, active traffic management by trained and visible staff at the site for safe passage for the public. ▪ Ensuring safe and continuous access to all adjacent office facilities, shops and residences during construction.

PART 3: MONITORING PLAN							
Phase/project activity	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Cost (if not included in project budget)	Who (Is responsible for monitoring?)
During project implementation							
Workers' health and safety	<ul style="list-style-type: none"> - Construction workers wearing uniforms and PPE; - Strict compliance with the rules of construction equipment operation and usage of PPE; - Strict compliance with the national regulations for construction works; - Presence of basic fire extinguishing means; - Availability of labor safety training and instruction records. 	Construction site	Visual observation and analysis of presented documentation	During construction and per national requirements in terms of ensuring labour safety	Reduce probability of traumas and accidents to constructors	<p>Included in construction supervisor contract</p> <p>PIU expenditures as part of the project implementation costs</p>	<p>Construction supervisor</p> <p>PIU</p>
Provision of construction materials (e.g. paints / solvents)	Purchase of construction materials from the registered providers	In the provider's office or warehouse	Verification of labels of the materials and/or certificates if any	During conclusion of supply contracts	Ensure reliability of construction materials and their safety for human health	<p>Included in construction supervisor contract</p> <p>PIU expenditures as part of the project implementation costs</p>	<p>Construction supervisor</p> <p>PIU</p>

<p>Transportation of construction materials and waste</p> <p>Movement of construction machinery</p>	<ul style="list-style-type: none"> - Technical condition of vehicles and machinery; - Confinement and protection of truck loads with lining; - Respect of the established hours and routes of transportation 	<ul style="list-style-type: none"> - Construction site - Routes of transportation of construction materials and wastes 	<p>Inspection of roads adjacent to the construction object in the direction of the movement route</p>	<p>Selective inspections during work hours</p>	<ul style="list-style-type: none"> - Limit pollution of soil and air from emissions; - Limit nuisance to local communities from noise and vibration; - Minimize traffic disruption. 	<p>PIU expenditures as part of the project implementation costs</p>	<p>PIU</p> <p>Traffic Police</p>
<p>Maintenance of construction equipment</p>	<ul style="list-style-type: none"> - Washing of cars and construction equipment outside the construction site or on maximum distance from natural streams; - Refueling or lubrication of construction equipment outside the construction site or at the predetermined confined area 	<p>Construction site</p>	<p>Inspection of activities</p>	<p>Selective inspections during work hours</p>	<ul style="list-style-type: none"> - Avoid pollution of water and soil with oil products due to operation of equipment; - Timely localize and decrease expected damage in case of fire. 	<p>Included in construction supervisor contract</p> <p>PIU expenditures as part of the project implementation costs</p>	<p>Construction supervisor</p> <p>PIU</p>
<p>Generation of non-hazardous construction waste</p>	<ul style="list-style-type: none"> - Temporary storage of construction waste in especially allocated areas; - Timely disposal of wastes to the formally designated locations. 	<p>Construction site; Waste disposal site</p>	<p>Inspection of activities and analysing supporting documents for waste collection and transportation</p>	<p>Periodically during construction and upon its completion</p>	<ul style="list-style-type: none"> - Prevent pollution of soil, surface water and ground water; - Avoid accidents at the construction site due to scattered fragments of 	<p>Included in construction supervisor contract</p> <p>PIU expenditures as part of the project implementation costs</p>	<p>Construction supervisor</p> <p>PIU</p> <p>Municipality</p>

					<p>construction materials and debris;</p> <ul style="list-style-type: none"> - Retain esthetic appearance of the construction site and its surroundings. 	No specific extra cost: common responsibility of the Municipality	
Generation of waste from the removal of obsolete equipment	<ul style="list-style-type: none"> - Temporary storage of decommissioned equipment in especially designated location; - Transportation of decommissioned equipment to metal recycling facility. 	Construction site / Installation site Recycling facility	Inspection of activities	Periodically during construction/ installation and upon its completion	<ul style="list-style-type: none"> - Prevent pollution of soil, surface water and ground water; - Avoid accidents at the construction site due to scattered decommissioned materials and equipment; - Retain esthetic appearance of construction site and its surroundings. 	<p>Included in construction supervisor contract</p> <p>PIU expenditures as part of the project implementation costs</p>	<p>Construction supervisor</p> <p>PIU</p>
Generation of asbestos containing construction waste from roof replacement	<ul style="list-style-type: none"> - Removal of asbestos containing roof sheets with minimal fragmentation to avoid dust generation; - Watering of roof sheets 	Construction site; Waste disposal site	Inspection of activities and analysing supporting documents for waste	Periodically during construction and upon its completion	<ul style="list-style-type: none"> - Prevention of health hazards to construction workers and other people which may 	<p>Included in construction supervisor contract</p> <p>PIU expenditures</p>	<p>Construction supervisor</p> <p>PIU</p> <p>Municipality</p>

	<p>during removal to minimize dust generation;</p> <ul style="list-style-type: none"> - Temporary storage of removed roof sheets under a cover in a designated location; - Timely removal of roof sheets to the designated disposal site in a covered truck; - Covering of asbestos containing waste with a layer of earth at the site of its final disposal; - Wearing uniforms and protective gear (eyeglasses and respirators) by workers and personnel handling asbestos containing waste at any stage. 		collection and transportation		<p>enter the construction site;</p> <ul style="list-style-type: none"> - Prevention of health hazards to waste disposal workers and other people which may enter waste disposal site. 	<p>as part of the project implementation costs</p> <p>No specific extra cost: common responsibility of the Municipality</p>	
Generation of toxic waste from replacement of mercury vapor lamps	<ul style="list-style-type: none"> - Strict separation of used mercury vapor lamps from other types of waste generated at public buildings; - Preparation of toxic waste for temporary storage through placement in containers and full labeling (details 	<ul style="list-style-type: none"> - Premises of public building; - Recycling facility. 	Visual inspection	Periodically during temporary storage and recycling of toxic waste.	Avoid pollution of soil and water	<p>Included in construction supervisor contract</p> <p>PIU expenditures as part of the project implementation costs</p>	<p>Construction supervisor</p> <p>PIU</p> <p>State Inspectorate on environmental and technical safety</p>

	of composition, properties and handling information); - Recycling and disposal through licensed waste contractor.						
Civil works (construction /installation/ rehabilitation)	Parameters given in construction permit - all special conditions of construction issued by different bodies	Project documentation; Construction permit	A part of regular inspection by PIU	During construction/ installation and prior to issuance of the Operation permit	Regular review stipulated in the construction permits to ensure compliance with the specified by national legislation and ESMP environmental requirements	Included in the costs of Contractors	Construction Supervisor PIU
	Air quality and noise	At the construction site	Visually	During construction phase	To avoid environmental pollution and workers health impacts	Included in the costs of Contractors	Construction Supervisor PIU
	Waste water	At the construction site	Visually	During construction phase	To avoid environmental pollution and workers health impacts	Included in the costs of Contractors	Construction Supervisor PIU
Construction site re-cultivation and landscaping	Final cleaning of the construction site and permanent access roads and landscaping-greening	Construction site	Inspection of activities	Final period of construction	Reduce loss of aesthetical value of the landscape due to	Included in the costs of Contractors	Construction Supervisor PIU

	of the area as required				construction activities		
During operation							
Operation and maintenance of the boiler house and heating system	Regular servicing of the boiler and entire heating system being undertaken	Premises of the public building	Site inspection	Total period of operation of the heating system	Maintenance of heating system in safe and operable condition	To be included in responsible public administration's operation and maintenance budget	Administration of public building
Natural gas combustion at rehabilitated boiler houses	Air emissions of NOx, CO	At the stack of the boiler house	Instrumental methods	Yearly	Reduce GNG emissions	To be included in responsible public administration's operation and maintenance budget	Administration of public building Technical Supervisor
Emergency preparedness of rehabilitated boiler houses	Presence of fire protection equipment in accordance with national regulations	Premises of the public building	Periodic check-ups	Total period of operation of the facility	<ul style="list-style-type: none"> - Reduce risks for the staff and visitors - Avoid disruption of operation and nuisance to staff and visitors 	To be included in responsible public administration's operation and maintenance budget	Administration of public building State Inspectorate on environmental and technical safety

ANNEX 3: Eligibility criteria for selecting the efficient heating stoves and LPB models and their suppliers

To be eligible for the program, stoves/ LPBs have to meet a number of performance criteria, which are summarized in Table below and will be detailed in the OM. The list will be finalized and confirmed before Project effectiveness. Compliance with these performance criteria will be confirmed through tests at an acceptable laboratory.

№	Criteria	Indicators/values
1	Fuel	Fuels include all solid fuels, including coal, dung and wood; the laboratory testing result are relevant only for the selected stove-fuel combination
2	Type of heating system	The system has to be designed to provide primarily heat, cooking can be included as an option
3	Heating capacity of the stove	More than 5 kW and less than 30 kW of heating power, averaged over the whole test cycle
4	Overall thermal efficiency burning the specified fuel	>70%
5	Particulate matter emission (PM _{2.5} g/MJnet)	[To be determined after laboratory tests of pilot stoves and LPBs] PM _{2.5} : particulate matter 2.5 microns or smaller emitted

Table 3-1. Key Stove Eligibility Criteria

		MJ: Mega Joule of heat emitted from stove into the room (not the MJ of fire)
6.	CO emission	[To be determined after laboratory tests of pilot stoves and LPB]
7	Safety	Safety of the product needs to comply with safety checklist for stoves to be developed by ARIS as part of the OM, including aspects such as: <ul style="list-style-type: none"> - Safety pressure valve must be installed for LPBs; - Safe manufacturing (e.g. absence of cutting edges); Safe handling and adequate strong components of the stove/ LPB must be ensured
8	Workmanship & durability	The product should last for 5 years or more. Two year manufacturer's warranty is required

Eligibility criteria for stove suppliers are summarized in Table 3-2 below. The PIU will be responsible for verifying and confirming the eligibility of suppliers based on its review of submitted documentation and site visits. Upon confirmed eligibility, the PIU signs a Participation Agreement with the supplier, which stipulates the terms and conditions for participation in the efficient and clean heating stove program, including requirements related to after-sales services, penalties for non-compliance, compliance with safeguards instruments, expected delivery times as well as periodic quality and performance inspections.

Table 3-2. Key Stove Producers' Eligibility Criteria

No	Criteria	Parameter/values
1	Stove model	Having successfully submitted a stove model that has been declared eligible
2	Production capacity	Being able to supply a minimum of 100 [to be confirmed based on stakeholder consultations to ensure suppliers have enough capacity] eligible stoves within a 4 month period after obtaining a purchase order
3	Quality control	Suppliers have to: <ul style="list-style-type: none"> - Accept defined quality assurance process, including penalties as detailed in the Participation Agreement - Agree that PIU periodically or at random intervals verifies the quality and performance of installed stoves/ LPB - Give permission to the PIU to publish product performance parameters, production capacity and price
4	Warranty	Providing a warranty to users, guaranteeing that the stove will be repaired or replaced during a 2 year period following the purchase, if there are defects, breakage, or component malfunctions due to manufacturing defects
5	After sales service	Setting-up of an after-sales service system and providing information to households on how to access it (e.g. phone number, email, etc.)
6	Participation	Signing a Participation Agreement with the PIU
7	Safeguards	Complying with project safeguards requirements
8	Operation and maintenance manual	Developing a basic operation and maintenance manual for their product specifying how it is to be operated by the user in order to get optimum performance and what safety instructions need to be observed by users
9	Legal Entity	Holding a valid business license

ANNEX 4: Field environmental monitoring checklist for supervision of civil works

Site location					
Name of contractor					
Name of supervisor					
Date of site visit					
Status of civil works					
Documents and activities to be examined	Status				Comments
	Yes	Partially	No	N/A	
Contractor holds license for extraction of natural resources					
Contractor holds permit for operating concrete/asphalt plant					
Contractor holds agreement for final disposal of waste					
Contractor holds agreement with service provider for removal of household waste from site					
Work site is fenced and warning signs installed					
Works do not impede pedestrian access and motor traffic, or temporary alternative access is provided					
Working hours are observed					
Construction machinery and equipment is in standard technical condition (no excessive exhaust and noise, no leakage of fuels and lubricants)					
Construction materials and waste are transported under the covered hood					
Construction site is watered in case of excessively dusty works					
Contractor's camp or work base is fenced; sites for temporary storage of waste and for vehicle/equipment servicing are designated					
Contractor's camp is supplied with water and sanitation is provided					
Contractor's camp or work base is equipped with first medical aid and fire-fighting kits					
Workers wear uniforms and protective gear adequate for technological processes (gloves, helmets, respirators, eye-glasses, etc.)					
Servicing and fueling of vehicles and machinery is undertaken on an impermeable surface in a confined space which can contain operational and emergency spills					
Vehicles and machinery are washed away from natural water bodies in the way preventing direct discharge of runoff into the water bodies					

Construction waste is being disposed exclusively in the designated locations					
Extraction of natural construction material takes place strictly under conditions specified in the license					
Excess material and topsoil generated from soil excavation are stored separately and used for backfilling / site reinstatement as required					
Works taken on hold if chance find encountered and communication made to the State agencies responsible for cultural heritage preservation					
Upon completion of physical activity on site, the site and contractor's camp/base cleared of any remaining left-over from works and harmonized with surrounding landscape					

ANNEX 5: Report on Consultation on the Draft Environmental and Social Management Framework

MINUTES

of the public consultations devoted to the discussion of the Environmental and Social Management Framework and the Resettlement Policy Framework as part of the Heat Supply Improvement Project conducted with participation of interested parties

City of Bishkek

March 10, 2017

Venue of the consultations – the central office of ARIS

Number of participants - 28

THE ORGANIZING COMMITTEE

Raimbekov Uran Kamiljanovich – first deputy general director of OAO Bishkekteploset'

Abykeev Almaz Keneshovich – coordinator of the Village Investment Project -3, ARIS

AGENDA:

Discussion of the ESMF and the RPF as part of the HSIP

PRESENTERS

After the welcome remarks, Raimbekov U.K, deputy general director of Bishkekteploset and Abykeev A.K, coordinator of ARIS, made presentations on the components of the project: Component 1: Improving supply reliability and efficiency of the DH system (estimated US\$31 million IDA financing); Component 2: Efficient and clean heating stove program (estimated US\$5 million IDA financing); Component 3: Improving energy efficiency in public buildings (estimated US\$8.8 million IDA financing).

The next presenter – Kutmanova E.V, the consultant on environmental and social issues, made a presentation on the ESMF and the RPF. As part of the presentation, Kutmanova provided a detailed description of various parts of the prepared documents, its main objectives, and its mechanisms for implementation.

Following Kutmanova's presentation, the participants of the public consultations engaged in a lively discussion of the technical aspects of the projects, its components, and the contents of the ESMF and the RPF, and they openly expressed their views. The participants raised the following issues:

Question 1: What is the selection criteria of beneficiaries (schools) under component 3?

The response by Abykeev A.K: During the first year, beneficiaries will be selected based on the list that will be approved by the Ministry of Education and the Ministry of Health of the Kyrgyz Republic. In the subsequent years, there will be a more regional coverage whereby each oblast

will present its own lists of potential beneficiaries. ARIS has recommended to include municipal buildings into the list of beneficiary entities (in addition to public schools).

Question 2: Regarding the reconstruction of the DH (district heating) system of the Oktyabr' rayon [one of four administrative districts of the city of Bishkek]. When will the reconstruction begin and what is the timeline for completion? Will you be able to complete the reconstruction works before the start of the next heating period?

Response of Raimbekov U.K: According to the initial plan, the reconstruction plan envisioned civil works in residential areas, which increased the risk of project impacts on people and the risk of resettlement. To avoid such impacts and minimize potential negative impacts on residents, we have decided to conduct construction of heating pipeline along the new route. The new pipeline network will not depend on the existing DH; therefore, we do not expect disruptions in the supply of heating to the residents.

Question 3: Will the project start this year?

Response of Abykeev A.K: No, the project will start next year.

Question 4: What is the primary cost of heating stoves under component 2?

Response of Abykeev A.K: A heating stove costs USD 150; the cost of the low pressure heating stove is USD 250.

Question 5: Will there be an increase in [heating] tariff?

Response of Raimbekov U.K: It is anticipated that from 2018 to 2021, there will be an increase of the tariff from 7 to 10 percent; but this increase is unrelated to the project, this increase is linked to the plan of the development of the city of Bishkek [the plan has been prepared by the Bishkek city mayor's office].

Suggestion 6: We recommend that you start the project in colder regions of the country, for example Ak-Su and Alai raions.

Response of Abykeev A.K: Thank you for the recommendation; we will ensure that in the future all regions [of the country] are covered by the project.

Question 7: You mentioned in your presentation [on environmental issues] that the auto vehicles of construction workers will be inspected. How will this requirement be implemented in practice?

Response of Kutmanova E.V: When conducting tenders for the selection of construction companies, the Project Implementing Unit [PIU] of Bishkekteploset will conduct a thorough

inspection of the technical equipment of the contractor company, including its vehicles, which will be considered in the final decision on the selection of project contractors.

Question 8: How will the selection of contractors will be conducted under component 1?

Response of Raimbekov U.K: Yes, there will be a tender on the selection of contractors.

Question 9: Will civil works implemented at night time?

Response of Raimbekov U.K: The civil works will be conducted only during daytime and during working days. The ESMF has described in detail the measures designed to reduce negative impact, including noise; this provision/document is part of tender documents.

Question 10: Who is responsible for the environmental monitoring?

Response: The Project Implementing Unit [PIU] is responsible for the environmental monitoring.

DECISIONS ADOPTED:

1. The ESMF and RPF are to be considered as applicable for the implementation as part of HSIP.

Chair

Abykeev A.K.

Secretary

Kerimbekova M.

ANNEX 6: Other National Laws and Regulatory Framework

The Law of KR “On Rate of Payment for Environmental Pollution (emission, pollutant discharge, and waste disposal)” (2002) fixes the rate for pollution of the environment per specific value (ton) of pollutant.

The Law of KR “On Water”¹² regulates relations in management and protection of water resources, prevention of adverse impact of economic and other activities on water bodies and waterworks facilities, reinforcement of legality in water related relations. This Law regulates the quantity and the quality of waters discharged to nature, prohibits discharge of industrial, domestic and other waste and effluents into water bodies.

The Law of KR “On Licensing” (1997-2011). According to this Law, the license is required for the following activities: (1) recycling, placement, destruction and disposal of toxic materials and substances, including radioactive materials; (2) transportation (including transboundary) of toxic waste from production.

The specific legal acts and regulatory measures governing rehabilitation works at substation are as follows:

1. SNiP # 4-01-01 “Design of heating network”;
2. Rules and regulations 41-105-2002 “Design and construction of heat networks with underground steel pipes with industrial thermal insulation from polyurethane foam in polyethylene sheath”,
3. GOST (all union State standard) 30732-2006 "Pipe and fittings with thermal insulation from polyurethane foam with a protective shell";
4. Kyrgyz Republic Government decree №252 dated 30.05.2008 "On approval of the Regulations on the procedure of issuing permits for the design, construction, and other changes of real estate objects and procedure for acceptance in operation of completed construction objects in the Kyrgyz Republic".

Ambient air quality standards are shown in Table 6.1.

Table 6.1: Ambient Air Quality Standards (mg/m3)

Pollutant	Maximum Permissible Concentration	Average Daily Concentration	Hazard Class
Total suspended particulate (TSP)	0.15	0.05	3
Sulfur dioxide (SO ₂)	0.5	0.05	3
Carbon monoxide (CO)	5	3	4
Nitrogen dioxide (NO ₂)	0.085	0.04	2
Nitrogen Oxide (NO)	0.40	0.06	3
Tetraethyl Lead	0.0001	0.00004	1
Source: Hygienic norms GN - Maximum Permissible Concentrations of air pollutants in populated areas (Kyrgyz Republic Government decree №20 dated 11.04.2016, Annex 17)			

¹² Dated January 14, 1994 # 1423- XII

Water quality standards have been defined for 3 general categories: fisheries, drinking water, and wastewater discharge. Water quality standards include:

(i) Hygienic norms “Maximum Permissible Concentrations (MAC) of Chemical Substances in the Water of Water Bodies used for Drinking and Domestic-Recreation Purposes” (Kyrgyz Republic Government decree №20 dated 11.04.2016, Annex 16);

(ii) Hygienic norms “Tentative Permissible Levels (TPL) of Chemical Substances in the Water of Water Bodies used for Drinking and Domestic-Recreation Purposes” (Kyrgyz Republic Government decree №20 dated 11.04.2016, Annex 20).

International Conventions

The Kyrgyz Republic has ratified the following international Conventions related to environmental management:

1. Aarhus Convention on access to information, public participation in decision-making and access to justice in environmental matters, 1998
2. Basel Conventions on the Control of Transboundary Movement of Hazardous Wastes and their Disposal, 1996
3. Convention of Biological Diversity (CBD), 1996
4. Convention of Long Range Transboundary Air Pollution, 2000
5. UN framework Convention on Climate change (UNFCCC), 2000
6. Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, 2000
7. Vienna Convention of the Protection of Ozone Layer, 2000
8. Montreal Protocol on Ozone Depleting Substances, 2000
9. Stockholm Convention on Persistent Organic Pollutants, 2002
10. Espoo Convention on Environmental Impact Assessment in a Transboundary Context, 2001
11. Ramsar Convention on Wetlands, 2003
12. The UNECE Convention on Access to Information, Public Participation in Decision making and Access to Justice in Environmental Matters, acceded in 2001
13. United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, acceded in 1999
14. Convention on International Trade in Endangered Species of Wild Fauna and Flora, acceded in 2006
15. Cartagena Protocol on Biosafety, acceded in 2005
16. Convention Concerning the Protection of World Cultural and Natural Heritage, acceded in 1995.

Annex 7: GRIEVANCES REDRESS PROCESS

The Grievance redress process includes several steps that both implementing agencies will follow. During the initial stages of the valuation process, the affected persons or any other interested party will be given copies of grievance procedures as a guide on how to handle the grievances;

1. The first step in the grievance process will be to verbally contact a representative of the BTS or ARIS or appeal by phone (the BTS hotline telephone number and ARIS institutional GRM contact information will be provided on the information boards of local municipalities or indicated in the announcement placed on popular public places). The BTS and ARIS representative or the hotline operator will record the petition in the special registry and notify the petitioner about the receipt of the petition. The petitioner will also be informed about the duration for the consideration of the petition and the next steps. If the petition cannot be resolved within 5 days, then it will be reviewed at the next level.

2. The affected person should file his/ her grievance, related to any issue associated with project implementation, including environmental and social safeguards in writing to HSIP Safeguards specialist. The grievance note should be signed and dated by the aggrieved person. Anonymous and confidential complaints will be considered too. HSIP Safeguards specialist will be the direct liaison with the complainant and define validity of grievance and notify the aggrieved person on forthcoming assistance. The answer will be provided within 14 working days, within which meetings and discussions with the aggrieved person will be conducted. A designated GRM operator from the BTS and ARIS will assist to the aggrieved person throughout all stages of grievance redress to ensure that the grievance is being redressed properly.

3. Depending on the nature and seriousness of the petition, an investigation may be conducted by a special commission formed by the director of the BTS and ARIS, which will include the director, the Safeguards specialist and other staffers. The information provided by the complainant will be verified by site visits, meeting with people involved in the issue, meetings with the complainant himself/herself, review of documents, etc. The commission will then prepare a report containing recommendations and submits it to the BTS and ARIS director who then makes the final decision on the petition.

If the petitioner is not satisfied with the decision of the project implementation units, and if a response to the petition is not provided within 30 working days, the petitioner is entitled to take the case to adjudication at local courts.

HANDLING GRIEVANCES RECEIVED

The process of in-take and review of grievance is the following:

A designated specialist in the PIU will ensure weekly transmission of grievances received from the PAP to BTS and ARIS, along with the proposed/ agreed actions. The grievances review follows the requirements of BTS and ARIS, and at first, are registered in the appropriate logbook.

The designated person assigns an individual number to each grievance and the review process is reflected in a matrix, developed in the OM. The following information is captured in the matrix:

- Date the grievance received;
- Date the grievance registered;
- Date the grievance responded/ resolved;

Information about the grievances and the GRM will be shared with the World Bank on regular basis.