Republic of Moldova

Second District Heating Efficiency Improvement Project

Environmental and Social Impact Assessment & Environmental and Social Management Framework

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Abbreviations

ACM	Azbestos Containing Material
CAP	Corrective Action Plan
CHPP	City Heating Power Plant
CO2	Carbon dioxide
DH	District heating
DHEIP	District Heating Efficiency Improvement Project
DHS	District Heating System
EA	Environmental Agency
EHS	Environmental and health and safety
EIA	Environmental Impact Assessment
ES	Environmental and social
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impact Assessment
ESMAP	Environmental and Social Mitigation Action Plan
ESMF	Environmental and Social Management Framework
ESS	Environmental and Social Standard
EU	European Union
GD	Governmental Decision
GHG	Greenhouse Gas
GoM	Government of Moldova
GRM	Grievance Redress Mechanism
GU	Generation Unit
HIS	Heating Installation System
HOB	Heat only boiler
ID	Identity Number
IFC	International Financial Corporation
IFI	International Financial Institution
ISO	International Standard Organization
JSC	Joint Stock Company
LMP	Labor Management Procedure
MAC	Maximum Admitted Concentration
MARDE	Ministry of Agriculture, Regional Development and Environment
ME	Municipal Enterprise
MEPIU	Moldova Energy Projects Implementation Unit
MGRES	Kuchurgan thermal power station (original – Moldavskaya GRES)
MW	Megawatts
NBS	National Bureau of Statistic
OHS	Occupational Health and Safety
OP	Operational Procedure
PM10	Particle matter with diameter of 10 microns
PM2.5	Particle matter with diameter of 2.5 microns
RTEC	Electric Transport Direction Chisinau (original – Regia Transport Electric Chisinau)
SA	Joint-stock company (original – Societatea pe Actiuni)

SEP	Stakeholders Engagement Plan
SIDA	Swedish International Development Agency
SO2	Sulphur dioxide
TC	Termocom SA
TE	Termoelectrica SA
TPP	Thermal Power Plant
US	United States
WB	World Bank
MoEI	Ministry of Economy and Infrastructure
ITP	Individual Thermal Point
GBV	Gender based violence
HIV/AIDS	Human immunodeficiency virus infection and acquired immune deficiency syndrome
TiP	Trafficking in persons
SH	Sexual harassment

Executive Summary

Project objective. The Development Objective of the Project is to increase the efficiency of heat and electricity production and improve the quality of heating services in the Chisinau District Heating System (DHS).

Project components and activities. The Project has three components:

Component 1. Optimization of Heat and Electricity Generation. This component will finance modernization of CHP Source-1 and installation of gas engines, including electrical connections, to increase and optimize the efficiency of heat and electricity production by Termoelectrica. Also, this component will finance a modern comprehensive Management Information System and a modern interactive Hydraulic System for Termoelectrica to improve its operational planning and control capabilities, and Technical Supervision for the sub-component 1.2. Component 1 will consist of five sub-components:

1.1. *Modernization of Generation at CHP Source-1*, including:

(i) Reconstruction of Unit 2, which will include reconstruction and retrofit of the steam turbine to extend its operational lifetime and to increase electricity production capacity, replacement of turbine associated equipment, power generator diagnostics, replacement of steam boiler burners (installation of modern efficient burners) and other equipment to increase boiler efficiency, modernization of vibration control system, installation of automated control systems for capacity regulation, safety and burning process control.
(ii) Major overhaul of turbine and replacement of boiler heat surface at Unit 3, which will include major overhaul of the steam turbine to extend its operational lifetime and replacement of steam boiler' economizer.

1.2. *Increasing Efficient Cogeneration*, including:

(i) Installation of efficient cogeneration units based on Gas Engines at HOB West and CHP Source-3, which will include construction of new facilities to accommodate the gas engines and associated equipment, and their installation – at HOB West and at CHP Source-3 [*a new dedicated facility within the territory of existing CHP Source-2*];
(ii) Installation of power transformers and 110 kV power facilities/switchgear, which will include installation of power transformers and 110 kV switchgear (new power facility ID-110 kV) for connection to the grid at HOB West, and installation of 110 kV switchgear (modernization of existing power facility ID-110 kV) at CHP Source-3.

1.3. *Implementation of a modern comprehensive Management Information System*. Development and installation of a modern comprehensive Management Information System for Termoelectrica to improve its operational planning and control capabilities.

1.4. *Implementation of a modern interactive Hydraulic System.* Development and installation of a modern interactive Hydraulic System for Termoelectrica.

1.5. *Technical Supervision for sub-component 1.2*. Technical Supervision for sub-component 1.2 (for the installation of cogeneration units based on Gas Engines and high-voltage power facilities at CHP Source-3 and HOB West).

Component 2. Pilot Energy Efficiency Investments. This component will finance pilot energy efficiency investments in residential buildings, including:

(i) Installation of circa 140 Individual Heat Substations (IHSs), including associated pipes, in residential buildings (eventually also in some public buildings, e.g. schools, kindergartens), where there are deficiencies with the quality/operation of internal heating systems and/or which do not have centralized domestic hot water (DHW) supply.
(ii) Reconstruction of the internal heating and DHW distribution systems in circa 40 residential buildings, which already have IHSs or where IHSs will be installed within the Project, providing heat consumption control and metering at apartment level by changing from vertical to horizontal distribution;
(iii) Thermal rehabilitation of circa 7 residential buildings, which already have IHSs and horizontal distribution systems or where they will be installed within the Project.

Component 3. Project Management. This component will finance consultancy support for project implementation and supervision, including fiduciary, safeguards, and project monitoring and reporting through the existing Moldova Energy Project Implementation Unit (MEPIU), as well as audits of Termoelectrica and Project accounts.

Project location. The proposed under Component 1 activities will be implemented at the TE premises: at Source-2 (CHPP-1), located in the industrial area of Chisinau municipality on 5 Vadul lui Voda street; and at the West Thermal Power Plant (West TPP), located in Chisinau municipality on 24, Prunului street. Both land plots are well fenced and owned by Termoelectrica SA. The project area for proposed activities under the Component 2 covers the area of whole Chisinau city, which is the capital of the Republic of Moldova. It is also the main industrial and commercial center, located in the middle of the country, on the Bic River, a tributary of Dniester River. The city population is of 532,513, while the population of the Municipality of Chisinau (which includes the city itself and other nearby communities) is about 662,836. The city lies in central Moldova and is surrounded by a relatively hilly landscape with fertile Chernozemic soils. The geology of the city is composed by limestone, sand and clay layers, with a series of hydrogeological horizons, which make it favorable for various geological processes such as landslides and ravine erosion. The city has many green spaces, including several relatively large parks (the biggest one is in the Botanica district, along the three lakes, which reaches the outskirts of the city center).

Project potential environmental risks and impacts. The proposed Component 1 "Optimization of Heat and Electricity Generation" will support mostly replacement of old and installation of new energy equipment (turbines; boilers; gas engines; power transformers and power facility/switch gears) and may generate a series of *moderate risks and impacts* such as: solid/scrap metal waste generation and disposal of obsolete equipment; and Occupational Health and Safety (OHS) risks associated with replacement of equipment activities, welding operations and other associated activities. Additionally, as these activities will require minor civil works for rehabilitation of the existing premises and small-scale construction of facilities by applying sandwich-panels technologies for installing the new gas engines at HOB West and CHP Source-3 sites. Respectively, the Project will also generate low-scale environmental risks and impacts such as soil and air pollution; generation of noise and construction wastes, labor safety, etc. All these impacts will occur during the construction phase, and will be short term, and site specific. No demolition or remodeling of existing facilities for proposed under this Component activities is envisioned.

During the project operational phase expected environmental risks and impacts will be associated with noise, vibration and GHGs emission and local air pollution.

The energy conservation and efficiency activities proposed under Component 2 (construction of Individual Heating Stations (IHSs); replacement of in-house heating distribution pipes, installation of new piping for DHW; pilot investments in switching from vertical to horizontal internal distribution; etc.) will have *minor environmental impacts and provide environmental benefits* (reductions in local pollution such as dust (PM10 and PM2.5) and sulfur dioxide; improving livelihoods by securing heat supply; etc.). It is also expected that the proposed energy efficiency and conservation activities will contribute to GHGs (CO2) emission reduction, - based on international experience, their implementation may bring reduction in heat consumption of multi-apartment houses by 20 to 40 percent. The potential adverse impacts of these activities will be primarily associated with small-scale civil works and related to the following: dust, noise, disposal of non-hazardous wastes and potentially of asbestos containing material (ACM); traffic disruption in residential areas (depending upon specific location), worker safety (e.g. welding operations); etc.). All of them will occur during the construction phase, short term, and site specific. No environmental risks and impacts during operational phase are anticipated.

Overall identified adverse environmental risks and impacts will be short-lived, and primarily limited to the project sites (except for movement of equipment and materials to/from the construction sites), and they can be addressed with good engineering and construction practices, as well as by preparing and implementing adequate mitigation measures.

Potential social risks and impacts. The reconstruction and upgrading of energy infrastructures under components 1 and 2 such as installation of gas engines, including electrical connections, replacement of boiler heating units, installation of IHSs and rehabilitation of internal heat distribution network in the public and residential buildings take place in existing premises and its vicinity belong to the TE. No additional or private land acquisition envisaged and all the civil works confined to the existing lands of the TE. However, there might be construction induced social impacts to the residences and business premises during the construction period, such as temporary interruption of heating service, access restrictions etc. There will be no physical or resettlement expected under the project. The improved heating and electricity supply to the city of Chisinau and sub-urban population expected to have positive social outcomes for health, education and better quality of life for elderly persons who are more often affected by poor and interrupted heat supply. Some social impacts such as access restrictions; temporary traffic disturbances; workforce composition; occupational health and safety for workers; implications for vulnerable groups may happen during the project implementation, in particular for the Component 2. All these issues have been assessed and reflected in the ESF documents. No labor influx or large number of outside laborers for construction works is expected.

Project social benefits. The Project will generate a series of social benefits, among which are providing reliable, efficient, and environmentally friendly heating services. This will have a larger impact on the most vulnerable households in the city since they are often dependent on inadequate or expensive sources of heating (such as coal and firewood stoves) during cold months. The Project would also be minimizing negative health impact caused by inefficient and dirty heating devices and indoor and outdoor air pollution. Lastly, the Project will benefit women, who work or stay at home more often than men.

Overall project environmental and social risk rating. Considering the scale of potential environmental and social risks and impacts, described above, as well as implementing agency institutional capacity, overall project environmental and social risk rating is assessed as ***Moderate***.

Relevance of Environmental and Social Standards (ESS) and triggered WB Operational Policies (OPs). The conducted project Environmental and Social Assessment (ESA) show most of the WB ESSs are relevant to the Project except for: *ESS5* (Land Acquisition, Restrictions on Land Use and Involuntary Resettlement), - as no needs for land acquisition or resettlement issues are anticipated; *ESS6* (Biodiversity Conservation and Sustainable Management of Living Natural Resources) – as all project activities will be implemented within Termoelectrica and city's boundaries and no impacts of Biodiversity or living organisms are anticipated; *ESS7* (Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities) – as no such group of communities are in Chisinau city; *ESS8* (Cultural Heritage) – as no buildings included in the national or city's list of CH objects will be financed under the Project; and *ESS9* (Financial Intermediaries) – as the Project will not use FIs. In terms of WB Operational Policies, both OP 7.60 (Projects in Disputed Areas) as well as OP 7.50 (International Waters) are not triggered by the proposed Project.

Scope of project Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Framework (ESMF) document. To address specified adverse environmental and social impacts and risks, Termoelectrica conducted an Environmental and Social Impact Assessment (ESIA) and prepared the site specific Environmental and Social Management Plan (ESMP) for Component 1, and prepared an Environmental and Social Management Framework (ESMF) for Component 2. The unified ESIA&ESMP and ESMF report includes the requirements of the World Bank's ESSs relevant to the Project, along with the description of the policies, legal, and administrative framework regarding environmental and social assessment and management, and the district heating sector in Moldova. The document includes also the following other aspects: (a) baseline analysis (for the Chisinau city as well as for concrete project sites for the proposed under Component 1 activities – TE CHP Source-1 and 3; and HOB West); (b) location and technical alternatives for Component 1 activities; (c) site specific potential environmental impacts and necessary activities targeted at mitigating them for Component 1, along with the potential risks impacts and well known generic mitigation measures, to be used for preparing ESMP Checklists, - for Component 2; (d) site specific ESMP for Component 1 and the description of structure of the ESMP Checklist to be applied for energy conservation and efficiency of public buildings for Component 2; (e) specific monitoring plan for ESMP implementation for Component 1 and description and requirements for monitoring plan under Component 2; (f) concrete ESMP's implementing arrangements for Component 1, as well as analysis of Termoelectrica company as regards the capacity for carrying on E&S requirements, and proposed implementing arrangements for Component 2. Additionally the document includes the results of TE environmental auditing. Per WB requirements, the ESIA&ESMF document has been disclosed and consulted with all interested parties.

Borrower's Environmental and Social Commitment Plan. The ESCP specifies the main responsibilities and actions to be undertaken by the TE and MEPIU to ensure project compliance with the WB ESSs and in particular: (a) implementing site-specific ESIA&ESMP for Component 1; (b) conducting environmental and social screening for Compoinent 2 activities via ESMP Checklist covering specified above aspects; (c) application of the ESMF to all Component 2 project activities, including the need to prepare site-specific ESMPs; (d) reporting on environmental and social performance, as well as on OHS incidents for all project activities on a biannual reports; (e) ensuring transparency in providing project environmental safeguards and ensuring all new ESMPs to be prepared for Component 2 activities are disclosed and publicly consulted with all interested parties; (f) maintaining through the whole period of project implementation human capacity to ensure ESMPs' supervision and monitoring and providing adequate reporting to the implementing agency and to the WB; (g) preparation and adherence to the Environment, Social, Health and Safety Code of Conduct by works contractors; and, (h)

implementing and reporting on: (i) Stakeholders Engagment Plan (SEP); (ii) Labor Management Plans (LMP); and Grievance Redress Mechanism (GRM).

ESA supervision and reporting. The status of the compliance with the ESMPs' requirements shall be provided by the contractors to the MEPIU, and then to the Bank by MEPIU in form of their semi-annual report. Environmental and social monitoring of Component 1 activities ESMP implementation and implementation of ESMP Checklists for Component 2 subprojects to be prepared, should provide information about key environmental and social aspects of the sub-projects, particularly their environmental impacts, social consequences of impacts and the effectiveness of taken mitigation measures. Such information enables the MEPIU to evaluate the success of mitigation measures as part of project supervision and allows corrective action(s) to be implemented in a timely manner, when needed.

Integration of the ESMPs into project documents. The ESIA&ESMF document requires that the ESMP provisions will form part of the design documents for the project and will be included in contracts for Component 1 activities and construction contracts for selected subprojects under Component 2, both into specifications and bills of quantities. Respectively, the Contractors will be required to include the cost of ESMP requirements in their financial bids and required to comply with them while implementing the project activities. The bidding documents for selecting the contractors will include specifications that would ensure effective implementation of environmental, health and safety performance criteria by the winning bidder.

ESIA&ESMF implementing arrangements. The main project implementing agency is Termoelectrica SA, which will be closely involved in all stages of project design and implementation: procurement design, preparation of bidding documents (especially technical specifications), evaluation of bids and selection of contractors, engineering design, construction, installation, testing, commissioning, and quality control. Termoelectrica is under process of establishing and implementing both ISO 14001 (Environmental Management) and ISO 45001 (Operational Health and Safety Management System) and has in its structure three subdivisions responsible for the issues related to environmental safeguards (EHS Service, in charge of all environmental issues; Safety and Occupational Hazards division; and Technical Supervision division, which is responsible for ensuring all civil works financed by the company are done in compliance with the design documents and existing norms and standards). The daily project implementation duties will be delegated by the MoEI to its project implementation unit (MEPIU), established under the Government's Decree #1276 of December 21, 2000, as an autonomous legal entity, responsible for the day-to-day management of International Financial Institutions (IFIs) - funded projects. MEPIU will take on the reporting functions on behalf of the Government and will carry out the fiduciary responsibilities (disbursement, financial management, procurement, and monitoring & evaluation) under the Project in compliance with the requirements of the World Bank Environmental and Social Standards (ESSs), to be outlined in the Financing Agreement and Project Operational Manual. The unit is staffed with highly qualified and experienced professionals, both in technical, as well as environment and social aspects and will ensure project implementation in accordance with project ESF documents. Although MoEI, as well as MEPIU and Termoelectrica SA have good experience in successfully implementing safeguards issues within several World Bank projects (Energy II; District Heating; and Competitiveness Enhancement I and II Projects), - their safeguards performance last years had been always rated satisfactory, - they do not have experience in preparing and implementing projects under the Banks' new ESF, - in particular all specified institutions are not familiar with the requirements of WB ESSs with regard to labor and working conditions, labor safety issues, and, community health and safety. In this regard, the prepared by Borrower ESIA&ESMF document contains a special section which specifies the capacity building in these areas to be financed under the Project.

World Bank assistance in complying with the ESSs. The Bank's environmental and social specialists will provide support to MEPIU to ensure smooth implementation of the project activities in consistency with the applicable WB ESSs. Regular site visits will be carried out to monitor the compliance of the contractors with good construction practices and other requirements to be specified in site-specific ESMPs. The Bank task team will provide guidance in, and review, key environmental and social monitoring documents, such as ESMPs, and semi-annual progress reports and support MEPIU in meeting its commitments set out in ESCP.

Stakeholders engagement. Based on ESS 10 Requirements, the Client has developed a *Stakeholder Engagement Plan* (SEP). The developed SEP describes the timing and methods of engagement with stakeholders throughout the life cycle of the DHEIP, distinguishing between project-affected parties and other interested parties. The SEP also describes the range and timing of information to be communicated to project-affected parties and other interested parties, as well as the type of information to be sought from them.

It provides a systematic approach to stakeholder engagement that will help the implementing entity identify key stakeholders – project affected parties and other interested parties – and build and maintain constructive relationships with them during preparation and implementation of the DHEIP2.

The developed SEP provides a stakeholder analysis (their role and interest in the project preparation and implementation) and their classification into defined groups. Moreover, the SEP specifies the frequency, type of communications and methods/tools for disseminating appropriate information for each stakeholder group throughout the life cycle of the DHEIP2.

In the SEP are proposed the information and engagement activities which have the role of limiting, as much as possible, any barriers to two-way communication process with project stakeholders, including disadvantaged or vulnerable groups.

Labour Management Procedures. The Client has also developed a *Labour Management Procedure* (LMP) according to ESS2 requirements. It LMP provide an overview of the requirements and characteristics of Project Workers to be engaged under the Project, identifies the main labour requirements and risks associated with the project and help the Client to determine the resources necessary to address labour issues.

Based on available information, the project is expected to involve a limited number of direct and contracted workers. No community workers and primary supply workers will be involved in the project's works. The exact numbers and source of the workforce will be confirmed during project due diligence activities. Necessary procedures will be in place and operating before the engagement of the first workers.

Grievance Redress Mechanism. The Client will respond to concerns and grievances of project-affected parties related to the environmental and social performance of the project in a timely manner. For this purpose, the Client has developed a *Grievance Redress Mechanism* (GRM) at project level to receive and facilitate resolution of such concerns and grievances.

The developed grievance mechanism is proportionate to the potential risks and impacts of the project, is accessible and inclusive.

The grievance mechanism is expected to address concerns promptly and effectively, in a transparent manner that is culturally appropriate and readily accessible to all project-affected parties, at no cost and without retribution.

During the project implementation, the Client will inform the project-affected parties about the grievance process in the planned community engagement activities, and will make publicly available a record documenting the responses to all grievances received. The mechanism will also allow for anonymous complaints to be raised and addressed.

Further details on grievance mechanisms are set out in SEP.

ESIA and ESMF public consultations and information disclosure. The ESIA and ESMF will be disclosed for public consultation on the Beneficiary's and MEPIU's web sites. After public consultation will be developed a Public Consultation Report, including timing, means of disclosure and received comments and how they have been addressed. The Public Consultation Report will be attached to the present document.

1. Project Information

1.1 Project background

The DH system in the Moldovan capital consists of four main production plants supplying heat to the DH network in Chisinau: CHP Source-1 and CHP Source-2 producing heat and electricity in combined cycle mode, and HOB West and HOB South producing heat with direct gas firing. CHP Source-1 is the largest and the main source of district heating for the city of Chisinau that produces the base load during the heating season. The minimum boiler output of one unit is 200 t/h steam leading to around 70-80 Gcal/h district heat production capacity, while typical summer load is around 30-40 Gcal/h. Therefore, in summer CHP Source-1 should be operated in condensing mode (i.e. part of the heat produced must be evacuated in the cooling towers and therefore lost in open air), which is uneconomic and could generate about US$1 million of losses annually. For this reason, CHP Source-2 has been kept operational[1] and is being operated in summer to produce district heat for domestic hot water heating. During heating seasons the areas of HOB West and HOB South are isolated and the plants produce all the heat to their areas, whereas in summer the shut-off valves are opened, HOB West and HOB South shut down and heat for domestic hot water purposes is produced with CHP Source-2 and/or CHP Source-1. In the beginning of the heating season in autumn a small portion of heat can be delivered to HOB West area from the CHP Source-1/CHP Source-2 area and HOB West can be operated in parallel.

The *Optimization Study*[2] revealed the need for a major overhaul/retrofit of Units 2 and 3 over the next few years. These are critical investments necessary to maintain normal operation of Chisinau DHS. The CHP Source-1 consists of three cogeneration units and two operational peak/reserve hot-water-boilers. The steam turbines at CHP Source-1 are approaching the end of their prescribed operation lifetime (220 000 hours) with turbine 1 stopped in April 2019, turbines 2 and 3 expected to approach the end of their operation lifetime in 2021 and 2023 respectively. The *Study* identified the need for a major overhaul for the steam boilers (including replacement of worn out heat transfer surfaces, burners) and associated equipment. The turbine 1 also requires retrofitting, however, TE is currently financing retrofitting works out of its own funds. CHP Source-2 was built in the 1950's, is approaching the end of its operational lifetime and is scheduled for closure. Source-2 offers very low power generation efficiency but is still being operated during summer months to cover a level of heat demand which is too low to justify running one of the Source-1 unit (at the

[1] It was agreed in the DHEIP, that CHP Source-2 (formerly CHP-1) will be shut down at the end of 2016 heating season, which was formally executed on March 30, 2016.

[2] In 2018 the Bank responded to a request from the Government of Moldova and launched a study on the optimization of Chisinau DH system and fuel supply options. The Study on Optimization of Chisinau DH System and Fuel Supply Options (hereinafter the *DH Optimization Study*) was supported by a grant from the Swedish International Development Cooperation Agency (SIDA) in the amount of US$235,000 provided through ESMAP. The Study's objective was to help TE and the GoM to identify the optimal energy model for short- to longer-term development of Chisinau DH and a supporting investment plan, to further improve TE's operational efficiency and financial viability. The study recommended the optimal development strategy for the Chisinau DH sector, supported by an energy model, as well as a technical-economic model, which served as basis for a short- mid-, and long-term investment plan until the year 2035. The findings were received well by TE and GoM, as well as by the development partners and served as a basis for TE to identify a new DH investment program to increase the efficiency and reliability of DH generation facilities.

minimum level of power generation of a Source-1 unit, most of the heat produced would be in excess of DH summer demand), or occasionally as backup during winter. The *Study* pointed out to the opportunities for installation of new high efficiency cogeneration units at HOB West and HOB South. This would allow to partially replace heat-only operation during winter and to cover the summer heat load with efficient cogeneration units. In line with the conclusions of the DH *Study*, this Project focuses on investments in electricity and heat production with high return on investments which would improve the efficiency of heat and electricity production and give sufficient time to prepare for larger investments such as construction of a new modern CHP (replacing CHP Source-1) which would need to be commissioned 8 to 10 years from now.

Improving energy efficiency and ensuring energy supply security are critical factors in enhancing Moldova's economic competitiveness and key elements in fighting poverty according to the National Development Strategy. The average temperature in Moldova's capital, Chisinau, is minus 5 degrees Celsius in January and February. According to a World Bank analysis, on a typical winter, during the January-March period, the median Moldovan household devotes a fifth of its expenditures to energy services and products, mostly to stay warm. This share is higher for poorer households: the poorest quintile of Moldovan households spends over 20% of their income on energy on an annual basis. Inefficient energy use in Moldova is leading to higher energy costs for industries and residents, with a negative impact on growth and competitiveness. Even though energy intensity was almost halved since 1990 due to the decline of industry, Moldova remains one of the most energy intensive economies in the region.

Lack of investments led to rapid deterioration of DH services and sector's financial condition, resulting in massive loss of consumers. The inability of Termoelectrica SA to generate enough revenue for rehabilitation and capital investments has led to an absence of preventive maintenance and investments, leading to an inefficient and deteriorating heating system. The poor quality of DH services led to significant disconnections from the centralized DH system[3] by the wealthier residents of Chisinau, who could afford installation of individual gas boilers in their own apartments. The rate of disconnections was so high that the viability of DH services was under threat. Such a perspective was however not acceptable, since about 40% of consumers of DH services, or about 160,000 residents could have been left with no alternative for heating which averages a low temperature of – 6 degrees Celsius, leaving the vulnerable to depend on rapidly deteriorating DH system and higher costs of service due to shrinking consumers' base. Consequently, the cost and quality of the centralized DH system impacts the poor and vulnerable population in Chisinau disproportionally more than any other segment of the population. Letting the DH system in Chisinau collapse would have had a strong negative impact on the welfare of the vulnerable population in in the capital, but also threatened the only significant source of power generation on the Right Bank with significant implications for the country's energy security. Many businesses and public institutions also disconnected because of deteriorating service installing own gas fired boilers.

Since 2009 with the assistance from the World Bank (WB) and the Government of Sweden, Moldova has embarked on a comprehensive institutional, corporate and financial restructuring of the DH sector in Chisinau. In November 2008, Moldovagaz SA halted gas supply to Moldova due to the inability of Termoelectrica SA to pay for the natural gas supplied, which initiated energy sector reform and actions to stop further accumulation of arrears. The disruption in the gas supply cut had a large negative impact on the welfare of residents in Chisinau, and clearly indicated the vulnerability of Moldova to the energy supply risk. Recognizing the scale of the debt stock accumulated which goes well beyond what can be managed at the municipal level, the Government took the decision to take on the responsibility of the DH sector reform as well as debt restructuring with Moldovagaz SA. The *Corporate Restructuring Plan*, approved by the Cabinet on November

[3] The trend was reversed in 2014 due to concerted DH sector reform efforts by the Bank and GoM.

13, 2013, initially envisioned a merger of Termoelectrica SA (TE), CHP-1 and CHP-2 into a new corporate entity based on the asset valuation of each company. After the bankruptcy procedure legally ended in 2013, Termocom SA (TC) entered the liquidation procedure in March 2014. In 2015 TC was declared bankrupt and the GoM established a new company – Termoelectrica SA, which replaced Termocom SA as the main operator of DH assets and provider of DH services in the city of Chisinau. TE was created through a merger of CHP-1 and CHP-2 (heat and electricity generators), and subsequent purchase of TC's functional assets.

DH reform resulted in important investments and improvements in TE's operational and financial efficiency. In 2014 the Bank approved *District Heating Efficiency Improvement Project* (DHEIP) (P132443) in the amount of US$40.5 million with the objective of contributing to improved operational efficiency and financial viability of the new district heating company and improving quality and reliability of heating services delivered to the population in Chisinau. The DHEIP became effective on August 14, 2015 and since has been supporting "no regret" emergency investments, largely, on the demand side. While still ongoing, DHEIP already achieved remarkable progress. In particular, the Project allowed to halt and reverse a downward spiral for DH services in Chisinau and is providing sufficient funds for maintenance and investments, the lack of which was causing poor quality of service. In the context of a very effective restructuring of DH services in Chisinau under the leadership of the management of the newly created TE, DHEIP's implementation started rapidly and showed quick results. More than 80% of project funds were disbursed during the first three years of implementation. A new pumping station and main pipeline were constructed and other three major pumping stations (out of 17 in total) were rehabilitated up to the best modern standards allowing TE to optimize the heat supply to its consumers. Important segments of the main network were rehabilitated, and about 400 Individual Heat Substations were or are to be installed improving the heat and domestic hot water supply to end users. Success achieved in recovery process also includes completed corporate restructuring and optimization (with creation of single operator TE), major staff downsizing, reduction of thermal losses and electricity consumption (with DHEIP-financed investments), improvements in service and client-orientation (resulting in reconnections and increase in volumes of sales), return to operating profitability (thanks to overhaul of tariff methodology but with need for tariff increase moderated by increase in volume). Currently, with half a year to the Project's Closing Date, all priority investments have been completed and disbursement have reached 98%. At the same time, the Project has also revealed a significant need in investments on the supply side infrastructure (production capacities), which is approaching the end of its operational life and may pose a threat to uninterrupted heat supply in Chisinau.

1.2 Project objective, components and activities

Proposed Project Development Objective. The Development Objective of the Project is to increase the efficiency of heat and electricity production and improve the quality of heating services in the Chisinau District Heating System (DHS).

Project components and activities. The Project has three components:

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(ii) Major overhaul of turbine and replacement of boiler heat surface at Unit 3, which will include major overhaul of the steam turbine to extend its operational lifetime and replacement of steam boiler' economizer.

1.2. *Increasing Efficient Cogeneration*, including:

(i) Installation of efficient cogeneration units based on Gas Engines at HOB West and CHP Source-3, which will include construction of new facilities to accommodate the gas engines and associated equipment, and their installation – at HOB West and at CHP Source-3 [*a new dedicated facility within the territory of existing CHP Source-2*];
(ii) Installation of power transformers and 110 kV power facilities/switchgear, which will include installation of power transformers and 110 kV switchgear (new power facility ID-110 kV) for connection to the grid at HOB West, and installation of 110 kV switchgear (modernization of existing power facility ID-110 kV) at CHP Source-3.

1.3. *Implementation of a modern comprehensive Management Information System*. Development and installation of a modern comprehensive Management Information System for Termoelectrica to improve its operational planning and control capabilities.

1.4. *Implementation of a modern interactive Hydraulic System.* Development and installation of a modern interactive Hydraulic System for Termoelectrica.

1.5. *Technical Supervision for sub-component 1.2*. Technical Supervision for sub-component 1.2 (for the installation of cogeneration units based on Gas Engines and high-voltage power facilities at CHP Source-3 and HOB West).

Component 2. Pilot Energy Efficiency Investments. This component will finance pilot energy efficiency investments in residential buildings, including:

(i) Installation of circa 140 Individual Heat Substations (IHSs), including associated pipes, in residential buildings (eventually also in some public buildings, e.g. schools, kindergartens), where there are deficiencies with the quality/operation of internal heating systems and/or which do not have centralized domestic hot water (DHW) supply.
(ii) Reconstruction of the internal heating and DHW distribution systems in circa 40 residential buildings, which already have IHSs or where IHSs will be installed within the Project, providing heat consumption control and metering at apartment level by changing from vertical to horizontal distribution;
(iii) Thermal rehabilitation of circa 7 residential buildings, which already have IHSs and horizontal distribution systems or where they will be installed within the Project.

Component 3. Project Management. This component will finance consultancy support for project implementation and supervision, including fiduciary, safeguards, and project monitoring and

reporting through the existing Moldova Energy Project Implementation Unit (MEPIU), as well as audits of Termoelectrica and Project accounts.

1.3 Scope and objectives of Environmental and Social Impact Assessment

As the proposed activities will generate a series of adverse environmental and social impacts, as per WB Environmental and Social Standards (ESS) as well as per national legislation it is required to conduct project Environmental and Social Assessment. To address these impacts and risks, TE conducted an *Environmental and Social Impact Assessment (ESIA)* and prepared the site specific *Environmental and Social Management Plan (ESMP)* for Component 1and prepared an *Environmental and Social Management Framework (ESMF)* for Component 2. The unified ESIA&ESMP and ESMF report includes the requirements of the World Bank's ESSs relevant to the Project, along with the description of the policies, legal, and administrative framework regarding environmental and social assessment and management, and the district heating sector in Moldova. The document includes also the following other aspects:

a) baseline analysis (for the Chisinau as well as for concrete project sites for the proposed under Component 1 activities – TE CHP Source-1 and Source-3; and HOB West);
b) location and technical alternatives for Component 1 activities;
c) site specific potential environmental impacts and necessary activities targeted at mitigating them for Component 1, along with the potential risks impacts and well-known generic mitigation measures, to be used for preparing ESMP Checklists (for Component 2);
d) site specific ESMP for Component 1 and the description of structure of the ESMP Checklist to be applied for energy conservation and efficiency of public buildings for Component 2;
e) specific monitoring plan for ESMP implementation for Component 1 and description and requirements for monitoring plan under Component 2;
f) concrete ESMP's implementing arrangements for Component 1, as well as analysis of TE as regards the capacity for carrying on E&S requirements and proposed implementing arrangements for Component 2.

Additionally, the document includes the results of TE environmental express auditing. Per WB requirements, the ESIA&ESMF document has been disclosed and consulted with all interested parties.

1.4 Overview of district heating in Chisinau city

The District Heating System (DHS) is the main heating source for the housing sector in Chisinau municipality, where about 500,000 inhabitants rely on this source in providing themselves with living conditions. After several years of poor investments in the system, many parts of the system need be replaced and/or modernized to reduce heat supply costs. There are four main heat and hot water production plants in Chisinau municipality: Source-1/CHPP-2, Source-2/CHPP-1, West TPP, South TPP. The heat networks in Chisinau municipality are shown in *Figure 1*.

Source-1 is located in the eastern part of Chisinau municipality and is the main source of heat production during the heating season. Source-2/CHPP-1 is an old cogeneration plant located to the west from Source-1 that currently operates only in the summer season ensuring the heating of domestic hot water. Equipment at West TPP and South TPP is operated independently during the heating season, providing heat to the districts in the areas. During summer, the heat is also supplied from Source-1 or Source-2 to the areas covered by the West and South thermal power plants.

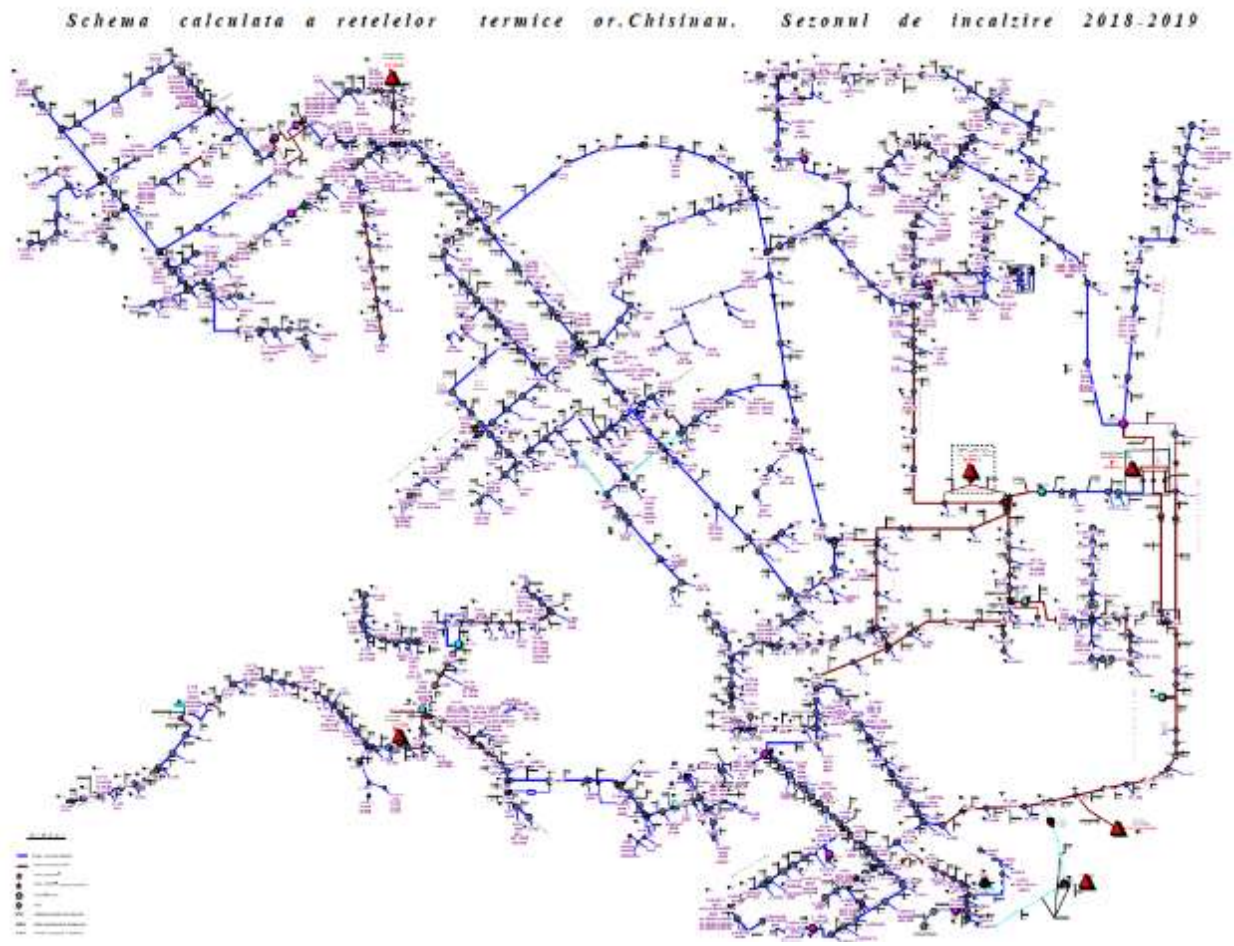


Figure 1. Calculated scheme of heat networks in Chisinau city. Heating season 2018-2019.

The joint-venture company Termoelectrica SA (TE) is currently the main producer of domestic electricity in cogeneration mode and the single DH producer, supplier and distributor of heat in Chisinau and its suburbs. TE covers about 20% of electricity demand on the Right Bank. In Chisinau. It provides DH to about 5700 registered consumers (connections), constituting circa 600 public buildings, 800 businesses, 300 single-family (individual) houses, and over 3,900 apartment buildings (including hostels) including more than 210,000 apartments (housing units) TE also serves hot water to 4461 apartment buildings, 208 budgetary units and 302 commercial enterprises. CHP Source-1 (formerly CHP-2) remains TE's main source of DH and power production providing heat to the largest part of the city. CHP Source-2 (formerly CHP-1) is under scheduled closure (per DHEIP conditionality) and is operated only in summer load for DHW production due to economic reason (please refer to more details in next sections). TE operates also two heat-only boiler (HOB) plants: HOB West and HOB South and 19 small HOBs located in the suburbs. Both CHPs fall short of modern efficiency standards, especially CHP Source-2 which was commissioned in the 1950's at 62.3% average heat efficiency. The CHP Source-1, which was built in the mid-1970s, operates at higher efficiency of 71% yet remaining well below modern efficiency standards[4]. Operating without substantial rehabilitation or retrofit since their construction, the two CHPs have suffered from a gradual decline in efficiency, maximum output and reliability.

[4] A modern combined cycle gas turbine CHP plant would have a thermal efficiency of the order of 88%.

2. Environmental and Social Assessment Policy and Regulatory Framework

2.1 National legal and regulatory framework

2.1.1 National environmental assessment legal framework

The *Association Agreement between the European Union and the European Atomic Energy Community and their Member States and the Republic of Moldova* was signed on June 27, 2014. The Agreement was ratified by the Parliament of the Republic of Moldova on July 2, 2014 and by the European Parliament on November 13, 2014. Following the signature of the Agreement, the country committed to implement the relevant environmental legislation of the European Union into its national legal system by adopting or changing national legislation, regulations and procedures aiming at political association and economic integration with the EU. This Agreement includes binding provisions, regulatory norms and broader cooperation arrangements in all sectors of interest. Therefore, the EU directives have become directly relevant to all aspects of green city development and are discussed separately per sector and key issue. The achievement of commitments started with the adoption of the *National Implementation Plan of the EU-Moldova Association Agreement for 2014-2016* by Government Decision 808/2014.

2.1.2 Overview of key national environmental legal provisions

The Republic of Moldova is characterized by a new legislative base, that most of it was harmonized with EU *Acquis Communautaire* according to Association Agreement. Some of the main laws related to the project proposal and activities that will be implemented are indicated below in *Box 1*.

Box 1. Key national legal acts relevant to the Project

- Land Code #828-XII of Dec 25, 1991
- Law on the Environmental Protection #1515-XII of June 16, 1993
- Law on Ecological Expertise #851-XIII of May 29, 1996
- Law on Environmental Impact Assessment #86 of May 29, 2014
- Law on Air Protection #1422-XIII of Dec 17, 1997
- Law on State Supervision of Public Health #10-XVI of February 03, 2009
- Law on the Fund of Natural Areas Protected by the State #1538-XIII of February 25, 1998
- Law on chemicals #277 of Nov 29, 2018
- Law on access to information #982-XIV of May 11, 2000
- Law on Wastes #209 of July 29, 2016
- Law on Quality in Construction #721 of February 02, 1996
- Law on Town-planning and Territorial Development #835 of 1996
- Law on accreditation and conformity assessment activities #235 of Dec 01, 2011
- Law on Construction Works authorizations #163 of July 09, 2010
- Law on Green Spaces of the Urban and Rural Localities #591 of 1999
- Law on occupational safety and health #186-XVI of July 10, 2008
- Governmental Decision on Standard provisions on use of water supply and communal sewerage systems (2002)

- Governmental Decision on increasing of exploitation safety of buildings and constructions, installations and pipelines which are sources of a heightened risks (1996)
- Governmental Decision #80 of Feb 09, 2012 on the minimum safety and health requirements for temporary or mobile construction sites
- Governmental Decision #1000 of Oct 02, 2000 on the establishment of state-owned enterprises in the electricity sector
- Sanitary Rules on atmospheric air pollution prevention in localities (1998)
- Construction Norms and Regulations SNiP 2.04.01-04-85

The general evaluation of the main legal Environmental and ESA acts and their relevancy to the Project are provided in *Table 1* below.

Table 1. Main ESA national legal acts relevant to the Project

Legal act	General overview	Relevancy with the Project
Law on the Environmental Protection #1515-XII of June 16, 1993	Establishes the basic legal framework for drafting special normative acts and instructions issues of environmental protection	Provides basic rules regarding air quality conditions, rights and duties of each actor with activities with potential impact to environment, - to be used while conducting ESA for project activities
Law on State Ecological Expertise #851-XIII of May 29, 1996	Determines goals, objectives and principles of State Ecological Expertise (SEE), as well as basics of procedure	Provides the list and ESA procedure for the small economical activities that are subject of Ecological Expertise – necessary for ESIA and implementation of Component 1 and Component 2
Law on Environmental Impact Assessment #86 of May 29, 2014	Establishes the goal of preparing documentation on the Environmental Impact Assessment (EIA), its procedure, coordination and approval, and includes the List of objects and types of activities for which an EIA is compulsory prior to their design	This law is not relevant for proposed activities under the Component 1 and Component 2
Law on Green Spaces of the Urban and Rural Localities #591 of 1999	Regulates relations in the field of development and protection of green spaces in urban and rural localities in order to ensure the right of everyone to a healthy and aesthetic environment	Regulates the identification and delineation of the green areas within the settlements' areas
The Water Law #272 of Dec 23, 2012	Establishes the legal framework necessary for the water management, protection and use	It is relevant as it specifies the procedures for obtaining water authorizations
Land Code #828-XII of Dec 25, 1991	Establishes the relations and rights of land ownership and the basic requirements of land use and protection	It is or establishing the procedures, duties and obligations under administration of the land
Law on State Supervision of Public Health #10-XVI of February 03, 2009	This law regulates the organization of the state supervision of public health, establishing general requirements to public health, the rights and obligations of physical persons and legal entities, procedure for the organization of system of the state supervision of public health. The Purpose of this law is providing optimum conditions for the maximum realization of potential of health of everyone throughout all life by means of organized efforts of society on the prevention of diseases, protection and promotion of health of the population, improvement of quality of life	It is relevant for the project and its stipulations need to be reflected in the ESA documents
Law on Quality in Construction #721 of February 02, 1996	The provisions of this law are applied to construction and related facilities, hereinafter referred to as the building industry, in the design, construction and building, as well as	The law provisions are relevant to proposed activities and should be reflected ESA

Legal act	General overview	Relevancy with the Project
	in the stages of exploitation and interventions to existing buildings and post-utilization them, regardless of their form of ownership, destination, category and class or source of funding, in order to protect people's lives their goods, society and the environment	documents for all proposed civil work
Law on authorization of the executing the construction works #163 of July 09, 2010	The purpose of this law is to legalize the way of authorizing, approving and verifying the design work, execution or demolition of the buildings and approximate area according to urbanism planning and spatial planning documentation, by applying the system of normative documents in construction and in order to ensure transparency and visibility when issuing administrative acts and creating favourable conditions for the business environment. The provisions of the law are mandatory for authorizing the execution of constructions of any kind, category, destination and type of property, except for objects of a military or secret character, which are specifically authorized	Similarly – this law is relevant, and its requirements are applied for all civil works
Law on access to information #982-XIV of May 11, 2000	This law shall govern the rights of access to information of public importance held by public authorities, with a view to exercising and protecting the public interest to know and attaining a free democratic order and an open society	This is relevant for ensuring disseminating information about implementation of the project and about potential environmental and social impacts
Law on Wastes #209 of July 29, 2016	The law sees that waste management methods will not endanger the environment, peoples' health and other living organisms. Authorities in charge are authorizing waste collecting, transportation, exploitation and disposal activities, avoiding water, soil, flora, fauna, phonic and air pollution. New methods must not endanger landscapes or protected areas	This is relevant for ensuring the waste management at the level of each institution for the solid waste management, including hazardous ones (in particular, asbestos)
Law on Air Protection #1422-XIII of Dec 17, 1997	The law has the objective to maintaining the air quality and improving the air quality - component of the environment, preventing and reducing the adverse effects of physical, chemical, biological, radioactive and other factors on the atmosphere, with adverse consequences for the population and/or the environment, and regulates the activity of individuals and legal entities, irrespective of type of ownership and legal form of organization, when he/she directly or indirectly affects or may affect the air quality.	The law is relevant and requires measures for ensuring the air quality for the activities related to energy sector as well as to small civil work and also for ensuring the legal requirements for noise during small civil works.
Law on occupational safety and health #186-XVI of July 10, 2008	The present Law (1) regulates the legal reports regarding the establishment of measures regarding the safety and health of the workers in the workplace; (2) establishes the general principles regarding the prevention of occupational risks, the protection of workers at workplace, the elimination of risk and accident factors, the information, the consultation, the balanced participation, the training of the workers and their representatives.	The law is relevant and is mandatory to be followed in the case of both Components activities, ensuring OHS issues.

2.1.3 Overview of key national social legal acts

In respect of the provisions of Constitution and for stronger implementation Parliament adopted few laws relevant for the social component, as: *Law on Social Inclusion of Persons with Disabilities* #60 of Mar 30, 2012 - regulates the rights of persons with disabilities for their social inclusion, guaranteeing the possibility of their participation in all areas of life without discrimination, at a level identical to the other members of the society, having as a basis the respect of fundamental human rights and freedoms; *Law regarding the promotion of employment and unemployment insurance* #105 from Jun 14, 2018 - the purpose of this law is to prevent and reduce

unemployment and its social effects, reduce the risk of unemployment and ensure a high level of employment and adapting to the demands of the labor market; *Law on Social Services #123 of Jun 18, 2010* - establishes the general framework for the creation and functioning of the integrated system of social services, with the determination of the tasks and responsibilities of the central and local public administration authorities, of other legal and natural persons empowered to provide and provide social services, as well as the protection of the rights of the beneficiaries of social services; *Law on ensuring equal opportunities between women and men* #5-XVI from Feb 09, 2006 - the purpose of this Law is to ensure the exercise of their equal rights by women and men in the political, economic, social, cultural, other spheres of life, rights guaranteed by the Constitution of the Republic of Moldova, in order to prevent and eliminate all forms of discrimination according to the criteria of sex. The Law also introduces the notion of affirmative actions; *Law #982/2000 on Access to Information*, as amended in 2003-2011-2015 – regulates the interaction between the providers of information and individuals and/or legal entities during the exercise of their constitutional right to access information, the rights of applicants for obtaining the information, the obligations of information providers to ensure access to official information, methods of safeguarding the right to information; *Law #64/2010 on Freedom of Expression*, as amended in 2012-2013-2015 - this Law guarantees right to freedom of expression and regulates the balance between right to freedom of expression and defense of private and family life; *Law #239/2008 on Transparency in Decision Making* - the law refers to the transparency of information linked with the decision-making process and to the consultation of stakeholders when drafting decisions, *Law #190-XIII 190/1994 on submission of petitions* (as amended on Jul 31, 2015) – establishes procedure for consideration of petitions of the RM citizens addressed to the relevant authorities/bodies for the purpose of ensuring protection of petitioners rights and legitimate interests.

2.1.4 Environmental assessment institutional framework

In the last years, environmental policies and management practices in Moldova have been under continuous changes. Even though these changes were more on institutional level their impact on the state of environment have been essential. One of the important instruments that influenced on the development of the environmental management in country constitutes the Association Agreement signed with European Union (EU). By this, Moldova must implement a reform agenda based around a comprehensive program of Moldova's approximation of its environmental (and not only) legislation to EU norms. Thus, in order to carry out the institutional reform and the capacity building in the environmental sector, have been created the *Environmental Agency* and *Inspectorate for Environmental Protection,* both institutions being functional. According to recent Governmental Reform, undertaken in July-September 2017, at central level the *Ministry of Agriculture, Regional Development and Environment* (MARDE) has been formed[5], it elaborates efficient public policies in the areas of competence (agriculture, food production; food safety; regional and rural development; spatial planning; environmental protection and climate change; natural resources), to monitor the quality of policies and normative acts and to propose justified interventions of the state that will offer effective solutions in the areas of competence, ensuring the best ratio between the expected results and the costs.

Environmental Agency **(EA)** is an administrative authority[6] subordinated to MARDE responsible for the implementation of state policy in the following areas of activity: (a) prevention of environmental pollution; (b) protection of atmospheric air and climate change; (c) protection and regulation of the use of water resources; (d) the protection and regulation of the use of the animal and plant kingdom, of the aquatic biological resources; (e) conservation of biodiversity and

[5] GD #695/2017 on MARDE regulation (Ref.: http://lex.justice.md/md/371190/)
[6] GD #549 of June 13, 2018 on Environmental Agency Regulation (Ref.: http://lex.justice.md/md/375961/)

management of natural areas protected by the state; (f) waste management; and (g) biosecurity. Among the *key functions* of the EA are:

- ensuring the implementation of public policy documents and environmental protection legislation both at national and local level;
- granting the technical support to the Ministry to substantiate the projects of public policy documents and normative acts in the field of environmental protection;
- regulating and authorizing activities with an impact on the quality of the environment, issuing permissive acts to the natural and legal persons for the activities of entrepreneur with environmental impact (authorizations, environmental agreements, permits, certificates, notifications, opinions and coordination), provided in the Nomenclature of permissive documents, approved by Law #160 of July 22, 2011 regarding the regulation by authorization of the entrepreneur activity;
- carrying out the monitoring of the quality of the environmental factors (monitoring of the quality of water, air, soil, forestry monitoring and of the natural areas protected by the state, monitoring of the status and use of water and soil resources, monitoring of the plant and animal kingdom, monitoring of fishing, monitoring of the state basement, air pollution monitoring, geological monitoring, environmental pollution monitoring) in order to provide natural and legal persons with information on environmental quality, developing the system of statistical indicators in the field of environmental protection, as well as for the elaboration and publication of the national report on the environmental status in the Republic of Moldova;
- creation and administration of cadastre and special registers, administration of the information and data system for its fields of activity and ensuring public access to environmental information.

Inspectorate for Environmental Protection – is organized and functions as an administrative authority under MARDE, empowered to carry out *the state supervision and control* in the field of environmental protection and use of natural resources[7].

2.1.5 Social and administrative/institutional framework

This framework is composed by the following state bodies:

Ministry of Health, Labor and Social Protection has the mission to analyze the situation and the problems in the areas of health, work, social protection and demographics, to elaborate efficient public policies in the fields, to monitor the quality of the policies and normative acts and to propose justified interventions of the state that will offer effective solutions in the areas of competence, ensuring the best ratio between the expected results and the expected costs.

The Ministry has under its subordination a range of agencies and institutions, that has as aim to implement the policy promoted by the Ministry. The institutions related to the social field, can be mentioned:

National Agency for Public Health is the administrative authority subordinated to the Ministry of Health, Labor and Social Protection, empowered to ensure the implementation of the policy in the field of national public health.

[7] GD #548 of June 13, 2018 on Environmental Protection Inspectorate Regulation (Ref.: http://lex.justice.md/md/375960/)

National Agency for Employment is the administrative authority subordinated to the Ministry of Health, Labor and Social Protection, empowered to ensure the implementation of the policy in the field of promoting employment, labor migration and unemployment insurance. Agency's mission is to increase the employment opportunities of people looking for a job and supports employers in identifying the skilled workforce and creating new jobs. The Agency carries out its tasks in the following fields: (i) the implementation of the employment promotion policy; (ii) labor force migration; and (iii) unemployment insurance.

State Labor Inspectorate is an administrative authority, which is empowered with the right to exercise state control over compliance with legislative acts and other normative acts in the field of work, safety and health at work. Social Inspection has the mission of inspecting the correct and unitary application of the laws and other normative acts that regulate the granting of the social aid, the aid for the cold period of the year and the social services. Thus, some of the actions of the inspection are: (a) ensuring the exercise of the inspection on the implementation of the provisions of the normative acts regarding the granting of the social aid, the aid for the cold period of the year and of the social services provided by the social service providers, regardless of the type of property and the legal form of organization; and (b) detecting and detecting violations of legal provisions in the field subject to inspection and informs the competent bodies.

The National Social Assistance Agency is an administrative authority subordinated to the Ministry of Health, Labor and Social Protection. The Agency's mission is to increase the quality of the social assistance granted to the population by implementing the state policy in the field of social assistance.

In its activity, the Agency exercises the following basic functions: (a) elaboration of the methodological framework for the unitary implementation of the legislation in the field of social assistance; (b) management of the activity of public institutions in which the Ministry of Health, Labor and Social Protection exercises the status of founder; (c) facilitating the process of consolidating the professional capacities of the personnel from the social assistance system; and (d) management of the financial means for financing the programs with special purpose in the field of social assistance and the minimum social services package.

The National Council for Accreditation of Social Service Providers is an administrative authority with the Ministry of Health, Labor and Social Protection, which has the mission to certify the capacity of social service providers, regardless of the type of property, the legal form of organization and administrative subordination and to provide qualitative social services.

The National Council for the Determination of Disability and Capacity of Work has the mission to ensure the fulfilment of the provisions of the normative acts in force regarding the determination of the disability and the capacity of work, having as final objectives the social inclusion of the persons with disabilities.

Temporary Placement Centers for elderly, children and people with disabilities (from few localities), as well Center for Assistance and Protection of victims and potential victims of trafficking in human beings, that represents institution of social assistance and rehabilitation/recovery from the management of the *National Agency for Social Assistance*.

2.2 National Environmental and Social Assessment requirements applicable for proposed project activities

The proposed activities under Component 1 for the "Optimization of Heat and Electricity Production" and under Component 2 for the "Pilot Investments in Energy Efficiency Measures" have been analyzed by EA, considering specified in Annex 1 and Annex 2 of Law on the EIA activities #86 of May 29, 2014. Based on that, the Agency decides whether the planned activity is subject to the EIA or the EIA is not necessary. It was decided the proposed activities under both Components ***are not part*** of the activities, included in Annex 1 and Annex 2 of the Law #86/2014. Respectively, if the planned activity is not found among the activities described in those lists, then a full EIA is not required for the planned activity. The details and used arguments for this decision are given in *Table 2* below.

In the same time, according to Law #851/1996, the State Ecological Expertise is carried out for the facilities and planned economic activities that have not been subjected to the EIA, and can influence the environment and/or envisage the use of natural resources, regardless of the purpose, location, type of ownership and subordination of these facilities, the amount of capital investments, the source of funding and the manner of execution of construction works. The project documentation for the *areas and activities of the energy industry* set out in Annex 1 of the Law #851/1996, are the subject of the State Ecological Expertise (see *Table 3*):

a) ***Industrial electricity***, steam and ***hot water production installations with a power from 1000 kilowatts to 100 megawatts***;
b) ***Industrial*** gas, steam and ***hot water transport installations***; installations for transmission of electricity by air cables (up to 500 cubic meters per day).

According to Article 19 on the examination of project documentation of Law #851/1996, the project and planning documentation submitted for the SEE, is subject to a comprehensive examination, during which the environmental, economic and social factors are analyzed, the variants of technical solutions designed to ensure the fulfilment of the environmental requirements, taking into account the regional peculiarities, maintenance of the stability of natural ecosystems in the context of an eventual impact, throughout the period of the expected economic activity, including the construction of the facility, its operation, demolition or liquidation, are thoroughly studied. Respectively, the ESA documents for the proposed project (Component 1) should comply with this law and are the subject to State Ecological Expertise.

Table 2. Evaluation of compliance with the provisions of Law on the EIA #86/2014 for each project component

Component title	Technical specifications	Conformity with the Law #86/2014	
		Annex 1	**Annex 2**
Component 1. Optimization of Heat and Electricity Production			
1.1 Modernization of the production installations of CHPP Source-1 allocated for the following subcomponents			
RECONSTRUCTION of the Generation Unit (GU) #2	Reconstruction of the GU #2	**2. TPP and other combustion plants with a thermal power of at least 300 MW**, including dismantling or disassembly of these plants or reactors, whose maximum power does not exceed 1 kilowatt of continuous thermal load.	**3. Energy industry** a) Industrial electricity, steam and hot water production installations (not included in Annex 1, with a power **from 100 up to 300 MW)** b) Industrial gas, steam and hot water transport installations; installations for transmission of electricity by air cables (not included in Annex 1, but located on the territories of the state protected natural areas)
OVERHAUL of the steam turbine and replacement of the heat exchange surfaces at the Generation Unit #3	Overhaul of the GU #3		
1.2 Installation of internal combustion gas engines (ICGE) and of electric connections allocated for the following sub-components			
Installation of internal combustion gas engines at West TPP and CHPP Source-3	Installation of 5 engines with a power of 11 megawatts each (**in total 55 MW)**: West TPP – 3 engines, CHPP Source-3 – 2 engines	**2. Combined heat and power plants and other combustion plants with a thermal power of at least 300 MW**, including the dismantling or disassembly of these plants or reactors whose maximum power does not exceed 1 kilowatt of continuous thermal load.	**3. Energy industry** a) Industrial electricity, steam and hot water production installations (not included in Annex 1, with a power **from 100 up to 300 MW**) b) Industrial gas, steam and hot water transport installations; installations for transmission of electricity by air cables (not included in Annex 1, but **located on the territories of the state protected natural areas**)
INSTALLATION of power transformers and electricity distribution infrastructure at West TPP and CHPP Source-3	Power transformers and electrical infrastructure		
Component 2. Pilot Investments in Energy Efficiency Measures			
Installation of 140 ITPs and of related heat networks in residential buildings	Installation of 140 Individual Thermal Points (ITPs)	**2. Combined heat and power plants and other combustion plants with a thermal power of at least 300 MW**, including the dismantling or disassembly of these plants or reactors whose maximum power does not exceed 1 kilowatt of continuous thermal load.	**3. Energy industry** a) Industrial electricity, steam and hot water production installations (not included in Annex 1, with a power **from 100 up to 300 MW)** b) Industrial gas, steam and hot water transport installations; installations for transmission of electricity by air cables (not included in Annex 1, but **located on the territories of the state protected natural areas)**
Reconstruction in 40 buildings of the internal heat distribution network and of the DHW	Reconstruction of the internal heat distribution network		
Thermal rehabilitation of 7 residential buildings	Thermal rehabilitation		

Table 3. Compliance with the requirements of Law #851/1996

No.	Name	Amount, pcs	Conformity with the Law #851/1996
1	Reconstruction of the GU #2	1	Art. 6(1) The SEE is carried out for the facilities and expected economic activities that have not been subjected to the EIA, and influence the environment and/or envisage the use of natural resources, regardless of the purpose, location, type of ownership and subordination of these facilities, the amount of capital investments, the source of funding and the manner of performance of the construction works.
2	Overhaul of the GU #3	1	
3	Internal combustion gas engines	5x11=55 MW	Annex 1: Engines with a power of <100 MW
4	Power transformers	2	Art. 6(1) The SEE is carried out for the facilities and expected economic activities that have not been subjected to the EIA, and influence the environment and/or envisage the use of natural resources, regardless of the purpose, location, type of ownership and subordination of these facilities, the amount of capital investments, the source of funding and the manner of performance of the construction works.
5	Installation of ITPs	140	Annex 1: Industrial installations for hot water transport of up to 500 m3/day
6	Internal networks	40 buildings	Art. 6(1) The SEE is carried out for the facilities and expected economic activities that have not been subjected to the EIA, and influence the environment and/or envisage the use of natural resources, regardless of the purpose, location, type of ownership and subordination of these facilities, the amount of capital investments, the source of funding and the manner of performance of the construction works.
7	Thermal rehabilitation	7 residential buildings	Art. 6(1) The SEE is carried out for the facilities and expected economic activities that have not been subjected to the EIA, and influence the environment and/or envisage the use of natural resources, regardless of the purpose, location, type of ownership and subordination of these facilities, the amount of capital investments, the source of funding and the manner of performance of the construction works.

Also, the proposed project activities should be complying and be carried out in accordance with the requirements of Law #163/2010 on the authorization of performance of construction works, Art. 12 on the conditions for issuing the building permit to which the following documents shall be attached:

a) the Certificate of Urbanism for Detail Design (DD)
b) Company' Registration Certificate;
c) the extract from the project documentation including: explanatory note, general layout (site plan, layout plan), facades, colour solutions, construction work arrangement project;
d) the project documentation verification opinion (the sections: general layout, architecture, resistance) or unique project documentation verification report;
e) the identity card (of the natural person) or the registration certificate (of the legal entity);
f) the designer supervision contract, signed by the applicant (customer) and designer;
g) the extract from the minutes of the meeting of the National Council of Historical Monuments of the Ministry of Education, Culture and Research regarding the endorsement of the execution project, in case of designing interventions for historical, art and architectural monuments or in-built areas entered into the Register of Monuments of the Republic of Moldova protected by the State;
h) the Archaeological Discharge Certificate, in the cases provided for in Art. 6(2) and (3) of the Law #218 of September 17, 2010 on the design of the archaeological heritage;

i) the Environmental Agreement, the EIA is needed and if the features of the planned building show that activities provided by Law #86/2014 regarding the EIA will be carried out (Decision of the Environmental Agency).

ESIA requirements under national legal framework applicable for Component 2 activities. According to provisions of Art. 22 of the *Law on Environmental Impact Assessment #86/2014*, all activities that plan the construction of new objectives and/or installations, the extension or modification/modernization of the existing ones with potential impact on the environment, including the decommissioning projects, are classified according to the degree of impact on the environment, as follows:

i) *activities with low impact* which no need Certificate of Urbanism for DD and Construction Authorization (CA) in conformity with Law #163/2010 for authorization of construction works;
ii) *activities with moderate impact* – are considered activities described in the Annex #1 of Law #851/1996 on ecological expertise which involves the use of natural resources, modification of landscape, generation of wastes, emission and discharge of pollutants and which can cause the change of the environment and the components of the nature and according to applicable laws it is necessary Ecological Expertise of the DD and CA;
iii) *activities with significant impact at national level* – the activities indicated in the Annex 2 to the Law #86/2014 for which the Environmental Impact Assessment is necessary to determine, as well as those mentioned in sbp. (2) that, after carrying out the preliminary assessment stage, the necessity of carrying out the EIA procedure is established, and the *Environmental Agreement* is issued or refused.
iv) *activities with significant impact* at national level and on cross border context– the activities indicated in the Annex 1 to the Law #86/2014 for which the Environmental Impact Assessment is mandatory, as well as those mentioned in sbp. (2) that, after carrying out the preliminary assessment stage, the necessity of carrying out the EIA procedure is established, and the *Environmental Agreement* is issued or refused. The documentation submitted for obtaining the *Environmental Agreement* will be the basis for issuing the permissive act for the realization and development of the project, before beginning the construction works and putting into operation the objective.

Considering specified provisions, the proposed project investments for both components ***are the subject*** of the State Ecological Expertise and of Construction Authorization.

2.3 Relevant World Bank Environmental and Social Framework and Standards

The World Bank Environmental and Social Framework (ESF) sets out the World Bank's commitment to sustainable development, through a Bank Policy and a set of Environmental and Social Standards that are designed to support Borrowers' projects, with the aim of ending extreme poverty and promoting shared prosperity.

The Environmental and Social Standards (ESSs) set out the requirements for Borrowers relating to the identification and assessment of environmental and social risks and impacts associated with projects supported by the Bank through Investment Project Financing. The Bank believes that the application of these standards, by focusing on the identification and management of environmental and social risks, will support Borrowers in their goal to reduce poverty and

increase prosperity in a sustainable manner for the benefit of the environment and their citizens. The standards will:

a) support Borrowers/Clients in achieving good international practices relating to environmental and social sustainability;
b) assist Borrowers/Clients in fulfilling their national and international environmental and social obligations;
c) enhance non-discrimination, transparency, participation, accountability and governance;
d) enhance the sustainable development outcomes of projects through ongoing stakeholder engagement.

The ten *Environmental and Social Standards* (ESS) establish the standards that the Borrower and the Project will meet through the project life cycle, as follows in *Table 4* below.

Project risks assessment. As part of the environmental and social procedures, The Bank classifies all projects into one of four classifications: *High Risk*, *Substantial Risk*, *Moderate Risk* or *Low Risk*. In determining the appropriate risk classification, the Bank takes into account relevant issues, such as the type, location, sensitivity, and scale of the project; the nature and magnitude of the potential environmental and social risks and impacts; and the capacity and commitment of the Client to manage the environmental and social risks and impacts in a manner consistent with the Environmental and Social Standards[8].

Project environmental and social risk rating. The proposed under Component 1 "Optimization of Heat and Electricity Generation" activities may generate a series of ***moderate risks and impacts***, while energy conservation and efficiency activities under Component 2 – ***minor environmental impacts***. The Social Risk Rating is also ***overall moderate***.

The reconstruction and upgrading of energy infrastructures under components 1 and 2 such as installation of gas engines, including electrical connections, replacement of boiler heating units, installation of IHSs and rehabilitation of internal heat distribution network in the public and residential buildings take place in existing premises and its vicinity belong to the TE and there will be no physical or resettlement expected under the project. No additional or private land acquisition envisaged, and all the civil works confined to the existing lands of the TE. However, there might be construction induced social impacts to the residences and business premises during the construction period, such as temporary interruption of heating service, access restrictions etc.

[8] Only those ESS which are relevant for the Project are covered.

Table 4. WB Environmental and Social Standards and their relevance to the current Project

Environmental and Social Standards (ESS)	Relevant to Project (Yes/No)	Main requirements and conducted activities to meet them	ESMF provisions in terms of addressing ESSs requirements
ESS1 – Assessment and Management of Environmental and Social Risks and Impacts	Yes	ESS1 sets out the Client's responsibilities for assessing, managing and monitoring environmental and social risks and impacts associated with each stage of a project supported by the Bank through Investment Project Financing, in order to achieve environmental and social outcomes consistent with the Environmental and Social Standards (ESSs). As required by this standard, the ESIA should be conducted based on current information, including a description and delineation of the project and any associated aspects, and environmental and social baseline data at an appropriate level of detail sufficient to inform characterization and identification of risks and impacts and mitigation measures. The assessment evaluates the project's potential environmental and social risks and impacts, with a particular attention to those that may fall disproportionally on disadvantaged and/or vulnerable social groups; examine project alternatives; identify ways of improving project selection, siting, planning, design and implementation in order to apply the mitigation hierarchy for adverse environmental and social impacts and seek opportunities to enhance the positive impacts of the project.	The project environment and social risks are rated as *moderate*. To address specified adverse environmental and social impacts and risks, the Borrower conducted an *Environmental and Social Impact Assessment* (ESIA) and prepared the site specific *Environmental and Social Management Plan* (ESMP) for Component 1, and prepared an *Environmental and Social Management Framework* (ESMF) for Component 2. The unified ESIA&ESMP and ESMF report includes the requirements of the World Bank's ESSs relevant to the project, along with the description of the policies, legal, and administrative framework regarding environmental and social assessment and management, and the district heating sector in Moldova. The document includes also the following other aspects: (a) baseline analysis (for the Chisinau city as well as for concrete project sites for the proposed under Component 1 activities – TE CHP Source-1 and Source-3; and HOB West); (b) project location and technical alternatives for Component 1 activities ; (c) site specific potential environmental impacts and necessary activities targeted at mitigating them for Component 1, along with the potential risks impacts and well known generic mitigation measures, to be used for preparing ESMP Checklists (for Component 2); (d) site specific ESMP for Component 1 and the description of structure of the ESMP Checklist to be applied for energy conservation and efficiency of public buildings for Component 2; (e) specific monitoring plan for ESMP implementation for Component 1 and description and requirements for monitoring plan under Component 2; (f) concrete ESMP's implementing arrangements for Component 1, as well as analysis of Termoelectrica company as regards the capacity for carrying on E&S requirements, and proposed implementing arrangements for Component 2. The ESIA&ESMF also specifies the site-specific ESMP documents will be included in the contractors' bid documents along with Environmental Codes of Practice for Construction (ECPs).

Environmental and Social Standards (ESS)	Relevant to Project (Yes/No)	Main requirements and conducted activities to meet them	ESMF provisions in terms of addressing ESSs requirements
			Lastly, the ESIA&ESMP section of the document for Component 1 includes the results of *Termoelectrica Express Environmental Audit*, based on the current environmental performances of the company (see *Annex 9*).
ESS2 – Labor and Working Conditions	Yes	ESS2 recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker- management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions. ESS2 applies to project workers including fulltime, part-time, temporary, seasonal and migrant workers. Considering specified requirements, the Borrower must develop and implement written labor management procedures applicable to the project. These procedures should set out the way in which project workers will be managed, in accordance with the requirements of national law and this ESS. The procedures should address the way in which this ESS will apply to different categories of project workers including direct workers, and the way in which the Borrower will require third parties to manage their workers in accordance with ESS2.	Based on the ESS2 requirements the client prepared the LMP, specifying direct workers contractors and subcontractors. Based on available information, the Project is expected to involve a limited number of direct and contracted workers. Community workers are not expected to be hired and no primary supply workers involved. The exact numbers and source of the workforce will be confirmed during project due diligence activities. *Labor management procedures* (LMP) have been developed. Necessary procedures will be in place and operating before the engagement of the first workers. LMP and GRM has been developed as part of the ESMP for Component 1 along with the guidance for such instrument to be prepared for Component 2 activities, and adherence to these documents will be mandated through incorporation into the ESCP. The OHS-related impacts and mitigation measures also have been incorporated into the ESMP for Component 1 activities and will be required to be included in all site specific ESMPs to be prepared under Component 2, as relevant. Furthermore, the project ESIA&ESMP document for Component 1 sets up the procedure for identification, removal, storage, transportation and hazardous materials, along with the requirements for protection and training of operating workers on site and notification of risks for any community members who might be exposed to such risks. These requirements are clearly specified in the ESMF for Component 2 and will included in site specific ESMPs to be prepared for Component 2 activities. As during the operation stage, at the TE subdivisions the heat and noise exposure and related injuries could affect operations workers, the ESMP for Component 1 contains adequate measure to ensure their safety. Under the ESIA&ESMP section as well as in the ESMF sections of the document, the construction contractor(s) are also required to put in place and operate GRM for their personnel.
ESS3 – Recourse and Efficiency, Pollution	Yes	ESS3 recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, ecosystem services	Project activities will contribute to improved city's heating infrastructure and assets, strengthen market linkages and enhance TE institutional capacity which would contribute to better resource efficiency.

Environmental and Social Standards (ESS)	Relevant to Project (Yes/No)	Main requirements and conducted activities to meet them	ESMF provisions in terms of addressing ESSs requirements
Prevention and Management		and the environment at the local, regional, and global levels. The current and projected atmospheric concentration of greenhouse gases (GHG) threatens the welfare of current and future generations. At the same time, more efficient and effective resource use, pollution prevention and GHG emission avoidance, and mitigation technologies and practices have become more accessible and achievable. This ESS sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life cycle consistent with GIIP.	The ESIA/ESMP&ESMF document includes sections on pollution prevention and management: under Component 1 with a focus on those issues which might MEPIU while conducting replacement of energy equipment and civil works for facilities' construction and rehabilitation, and under Component 2 – on civil works for energy efficiency and energy conservation measures. Overall the assessment of risks associated with civil works and impacts and proposed mitigation measures related to relevant requirements of ESS3, including raw materials, water use, air pollution, hazardous materials, and hazardous waste have been clearly specified in the project ESIA&ESMP section for Component 1 of the document and will be required to be included in all ESMPs to be prepared under Component 2, as relevant. Following these requirements, the contractors will avoid or minimize the release of pollutants like asbestos, lubricants, paints, etc., during project implementation.
ESS4 – Community Health and Safety	Yes	ESS4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration or intensification of impacts due to project activities. ESS4 addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable.	To address environmental risks and impacts that might affect community health and safety, the ESIA&ESMF document includes assessment of potential traffic safety issues during construction works; livelihood of excessive noise and dust; need to impose access restrictions and make communities aware of planned/ongoing works. While the project's civil works under Component 1 will be undertaken on the well delimitated and fenced territories of TE units, these works under Component 2 will be implemented within different residential and administrative areas of city of Chisinau. Respectively, maintaining the health and safety of local population and nearby communities throughout the construction/rehabilitation phase is critical. The movement of heavy goods vehicles can lead to accidents. Energy conservation and efficiency activities in residential buildings could also create the temporary inconvenience during construction activities through dust emission, noise, increased generation of solid waste, etc., but not affect some economic and social activities. Potential threats to people and communities may be posed by uncovered or non-barricaded or not signposted excavated sites, trenches, open holes, open electric cables, etc. Considering all these, the proposed in the ESIA&ESMP and in the ESMF sections mitigation measures will be required to be strictly followed during civil works,

Environmental and Social Standards (ESS)	Relevant to Project (Yes/No)	Main requirements and conducted activities to meet them	ESMF provisions in terms of addressing ESSs requirements
			ensuring health and safety of communities residing in and around sites of the project intervention will be made mandatory for adherence by works' contractors. As specified in the ESMF, the Project involves civil works, which require labor force to be supplied mostly locally. It is anticipated that due to the nature and scope of rehabilitation activities the level of labor influx will be insignificant so the associated risks will be low and manageable.
ESS5 – Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement	Not relevant	ESS5 recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons. Project-related land acquisition or restrictions on land use may cause physical displacement (relocation, loss of residential land or loss of shelter), economic displacement (loss of land, assets or access to assets, leading to loss of income sources or other means of livelihood), or both. The term "involuntary resettlement" refers to these impacts.	The Project activities under Component 1 will take place in lands belonging to TE and the Government. Component 2 will include rehabilitation of the existing internal district heating supply systems of residential buildings. No activities will be funded under the project that may cause economic or physical displacement.
ESS6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources	Not relevant	ESS6 recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development. Impacts on biodiversity can therefore often adversely affect the delivery of ecosystem services. ESS6 recognizes the importance of maintaining core ecological functions of habitats, including forests, and the biodiversity they support. This standard aims to safeguard natural habitats and their biodiversity; avoid significant conversion or degradation of critical natural habitats, and to ensure sustainability of services and products which natural habitats provide to human society.	All proposed activities will be implemented within the existing Termoelectrica premises as well as in residential buildings, and there will be no impacts to the biodiversity and living organisms.
ESS7 - Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not relevant	This ESS contributes to poverty reduction and sustainable development by ensuring that projects supported by the Bank enhance opportunities for Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities to participate in, and benefit from, the development process in ways that do not threaten their unique cultural identities and well-being.	No such social groups in the project area.
ESS8 – Cultural Heritage	Not relevant	ESS8 recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present and future. The Borrower will implement globally recognized	This ESS is not relevant, but as a precautionary measure, chance find procedure will be included in the unified ESIA&ESMF report and site specific ESMPs for Component 2 to be prepared, as relevant.

Environmental and Social Standards (ESS)	Relevant to Project (Yes/No)	Main requirements and conducted activities to meet them	ESMF provisions in terms of addressing ESSs requirements
		practices for field-based study, documentation and protection of cultural heritage in connection with the project, including by contractors and other third parties. A chance finds procedure is a project-specific procedure which will be followed if previously unknown cultural heritage is encountered during project activities. It will be included in all contracts relating to construction of the project, including excavations, demolition, movement of earth, flooding or other changes in the physical environment.	
ESS9 – Financial Intermediaries	Not relevant	FIs are required to monitor and manage the environmental and social risks and impacts of their portfolio and FI subprojects, and monitor portfolio risk, as appropriate to the nature of intermediated financing, as well as to develop and maintain, in the form of an Environmental and Social Management System (ESMS), effective environmental and social systems, procedures and capacity for assessing, managing, and monitoring risks and impacts of subprojects, as well as managing overall portfolio risk in a responsible manner.	The project will not use Financial Intermediary bodies.
ESS10 – Stakeholder Engagement and Information Disclosure	Yes	This ESS recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation. The client will engage with stakeholders throughout the project life cycle, commencing such engagement as early as possible in the project development process and in a timeframe that enables meaningful consultations with stakeholders on project design. The nature, scope and frequency of stakeholder engagement will be proportionate to the nature and scale of the project and its potential risks and impacts. In consultation with the Bank, the Borrower will develop and implement a Stakeholder Engagement Plan (SEP) proportionate to the nature and scale of the project and its potential risks and impacts.	A Project *Stakeholder Engagement Plan* (SEP) has been prepared. The SEP has done an extensive mapping the stakeholders. Individuals and groups likely to be affected (direct beneficiaries) and other project interested parties have been identified. The engagement methods during the project implementation phases (pre-construction, construction and operation) are proposed in the SEP, including a *Grievance Redress Mechanism* (GRM) at project level to enable stakeholders air their concerns/comments/suggestions, if any.

3. Environmental and Social Baseline Analysis

This section provides the description of baseline conditions of the Chisinau municipality. Furthermore, as the location of project activities under Component 1 are known, this analysis contains also their peculiarities of the baseline, which have importance for them.

City's urban planning and documents. The development of Chisinau municipality in terms of urban planning is regulated by the *General Urban Plan*, approved by the Chisinau Municipal Council (see *Annex 1* on City Master Plan). In 1974-1991, it was planned to relocate 180 enterprises from the central part of the municipality. Only 38% of the enterprises were relocated. The standard area of the riparian protection strip of the Bic River in Chisinau municipality is 270 ha. 45 industrial and utility enterprises work on this land plot, covering 15 percent of the total area of the riparian protection strip.

The territory of Chisinau municipality is part of the area of active development of natural processes that damage the relief and limit the possibilities of urban development. For this reason, the territory of the municipality is exposed to the hazard of landslide, floods, different types of erosions and seismic impact. Due to the man-caused influence, the constructions in the municipality cause changes in the natural geological environment and in the activation of natural processes. On the other hand, because of the deteriorated geological environment, special technical measures are needed to protect the already built territory.

The *industrial areas* (*Figures 2-3*), in most cases will keep their current functional purpose, being strengthened, modernized, refurbished in terms of the basic activities, provision with means of transport, urban infrastructure and communications. The impact of the location of the industrial enterprises in the central area and the territories inhabited in the Bic River meadow will be reduced by a series of technical and organizational measures, including the liquidation or re-profiling, as the case may be, of the economic operators in the central area, whose operation creates harmful effects exceeding the allowable limits; the relocation of the industrial enterprises from the Bic River area at the I-st stage between the streets Mihai Viteazul, Petricani, Calea Mosilor, Calea Basarabiei, Ismail, Albisoara; vacation of the territories adjacent to the Railway Station by dissolving "Calea Ferata din Moldova" companies and relocating them, as the case may be, on the vacant lands near the Revaca Power Plant; creation of sanitation protection strips conforming to the rules in force by greening and arranging their territories accordingly.

Geomorphological and hydro-morphological structures. The geomorphological system, within which Chisinau municipality develops, is limited in the South-West by the watershed of the Bic and Isnovat rivers, and in the North by the watershed of the Raut River. The spatial axis of this system is the wide hill of the Bic River, which crosses the territory of the municipality from the North-West to the South-East. The territory of the municipality is made up almost entirely of clay-sandy rocks dating from the Miocene and Quaternary periods, with different genesis. Due to the large surface area, the fragmented relief, the specific geological structure (as the municipality is in the development area of the massive reefs of the Middle Sarmat), the abundance of soils with very different genesis and physical and mechanical properties, the geological and engineering conditions of the territory of Chisinau municipality are complicated and various (see *Annex 1.1*).

Figure 2. West TPP located in the industrial area (grey colour)

Figure 3. CHPP-1 located in the industrial area (grey colour)

As for surface deposits, the following genetic types of rocks are developed on the territory of the municipality: the modern alluvium of the terraces of the valleys of the Bic and Durlesti rivers (mud, sands, clays, sandy clays, sandy clay soils); modern alluvium on the bottom of the valleys (sandy clay soils, clays, sands); alluvial deposits on the terraces above the meadows; residual soils and residual soils-eluviation; flowing accumulations; eolian-eluvial loessoid rocks (sandy clay soils and sandy clays). The geomorphological conditions of Chisinau municipality are compound (see *Annex 1.1*). Due to the inhomogeneous relief, specific microclimatic zones are created, in which the weather conditions determine the different degree of air pollution in the districts of the city.

The land plot, with the cadastral number 01004240045 (Source-2/CHPP-1) Source-3, according to the hydrotechnical and morphological evaluation (*Annex 1.1*), is located in zone A, which is favorable for geomorphological constructions, coincides with the soil surfaces of the watersheds and with the lands with a slight slope of less than 6 Degree.

The land plot, with the cadastral number 0100518083 (West TPP), according to the hydrotechnical and morphological evaluation (*Annex 1.1*), is located in zone D, which is conditionally favorable for constructions due to the shallow stratification of the groundwater level from the soil surface (2-5 m), the existence in the upper part of the cross-section of the alluvial soils slightly saturated with organic-rich waters and high seismicity (8 degrees). Geomorphologically it coincides with the upper terrace 1 of the floodplain of the Bic River and of its side tributaries. When designing new buildings in this zone, the factors listed above should be considered to reduce the negative influence of these factors on the planned activity.

Geological processes/landslides. The slopes of Chisinau city are steep and subject to landslide process. Areas affected by active landslides are noticed on the territory of the municipality and in suburban localities (see *Annex 1.2*).

Overall, both the land plots (for Source-2/CHPP-1) Source-3, as well as for West TPP are not located in the area at high risk of landslides (*Annex 1.2*).

Flooding. The floods of Bic river affect from time to time 4 city's areas totaling 22.9 km2.

Floods are caused by torrential rains and the melting of snow, which lead to increased water level and water overflow. Conducted analysis show that both Component 1 project sites are not located in the area at high risk of flooding.

Earthquakes. The whole territory of Chisinau city experiences earthquakes of 7-8 intensity degrees with a frequency of 30-40 years.

Based on conducted analysis it is possible to conclude that both project sites according to the seismic conditions (see *Annex 1.4*) are located within areas with seismic risk of 8 degrees.

Climate conditions. The climate is continental moderate with short winter and long warm summer. It is characterized by warm summers and cool, windy winters. Winter minimum temperatures are often below 0 °C, although they rarely drop below −10 °C. In summer, the average maximum temperature is approximately 25 °C, however, temperatures occasionally reach 35 to 40 °C in mid-summer in downtown. Although average precipitation and humidity during summer is relatively low, there are infrequent yet heavy storms. Spring and autumn temperatures vary between 16 to 24 °C, and precipitation during this time tends to be lower than in summer but with more frequent yet milder periods of rain.

Protected natural areas. There are 4 natural areas protected by the State on the territory of Chisinau municipality: (a) Botanical Garden; (b) Dendrological Garden; (c) Garden of the National Museum of Ethnography and Natural History; and (d) Zoological Garden, which covers 180 ha.

At the same time, the environmental protection complex includes the *green areas* of the city with various destinations: preservation of the animal and plant genetic background, preservation and development of landscape architecture, recreation of the population. There are 5 types of green areas in the city (see *Annex 1.5*), and about 31.5 m^2 of green land per inhabitant, which conforms to the general norm of 20-50 m^2/inhabitant. Compact intra-urban green areas are mainly located in the north and west parts of the city, and the squares are scattered in all districts of the city - more in Ciocana (17.6 ha) and Rascani (11.5 ha), and less in Buiucani (3.3 ha), Centru (6.2 ha), and Botanica (6.8 ha).

The recreational green areas in the city can be reached in 10 minutes of walking (squares, parks, forest park) from dwellings. They create the image of a green locality and serve as a physical support for the location of many leisure, sports, catering and tourist accommodation units. However, the green areas, especially in the Bac river area, which shall complete the green frame of the capital, shall be extended.

Both project sites ***are not located*** in compact green areas or other green places with special protection regime.

Protected Built Heritage. Chisinau municipality hosts the largest collection of architectural objects of the Republic of Moldova. According to the Decision #104/6366 of Aug 18, 1994 of the Chisinau Mayor's Office, 977 monuments located in the urban built area are protected. 236 of these objects and complexes are protected as monuments of national importance, and 741 as objects of local heritage. 857 buildings are in the old city and in the historical area and 90% of them are residential houses and urban villas. 24% of approx. 4 thousand houses built in different periods in the perimeter of 65 streets are heritage objects of national or local importance, protected by the State. 23 of the architectural monuments are located outside the historical area of the city. There are 19 churches, 38 administrative buildings or schools here, and the value of an important tourist location is exploited by 16 hotels, 70 restaurants and cafes, as well as most of the Chisinau travel agencies, which have established their offices in the city center.

For the most part, the heritage objects are located along the main historical streets of the capital and preserve the facades of buildings built in various architectural styles in proportion of 5-65% of the total number of houses. Thus, the streets have maintained a distinct individuality. The value of the heritage objects is accentuated due to the specific planimetry of a medieval city (in the old city area), as well as the structure of closed districts (in the historical area), which, due to the intervention regulations, shall be preserved in the case of new constructions.

At the same time, the other buildings in the historical area, which are not architectural objects, are not maintained to highlight the surrounding heritage pieces; they are not equipped with modern infrastructure elements. In the absence of any plans of street improvement and integration in the architectural ensemble, most of the neighbourhoods have preserved some facades of the historical buildings, and buildings have been placed inside the neighbourhoods that often do not harmonize with the urban landscape or are underused areas. For the most part, the old city and the historical area of Chisinau do not have green areas (except for the Public Garden and the Cathedral Park).

Conducted analysis show the proposed Component 1 project sites ***are not located*** in areas with pieces of cultural heritage, historical monuments located in the urban built area or other objects of national or local importance (see *Annex 1.6*).

Transport, road network and parking lots. The length of the public transport network on fixed routes makes up 3,036.4 km (see *Annex 1.7*). "RTEC" operates 26 routes, of which 25 cross the central part of the municipality, and a fragmented network of contact lines, the length of which makes up 523.6 km, or 17.2% of the network of roads and streets. Three trolleybus fleets consist of 328 units with a total capacity of 27,400 seats, of which 280 units are on the route daily.

This is due to the degraded state of the street network, which was designed for a lower traffic than the existing one, the management of the transport system not adjusted to the development of the municipal public transport market and the shortage of allocated funds necessary for the development of the infrastructure.

There are 690 streets in Chisinau with a total length of 676.7 km and an area of approx. 8.65 mln m2. The length of the streets and roads on the improved land plots makes up 481.3 km, of which 225.3 km (46.8%) are major highways of urban and district importance. The linear density of the streets, given the used territory, makes up 4.3 km/km2, and of the major highways – 1.99 km/km2. The streets and roads cover 12% of the used area of the city, which is below the optimal one. There are 236 urban transport stations and 20 pedestrian crossings.

The average diagonal of the city makes up approx. 15 km. About 91% of the streets and all the major highways have rigid pavement made mainly of asphalt concrete and concrete. However, their quality cannot be considered satisfactory, because every year, after the winter and summer season, a considerable part of the road surface deteriorates, which, coupled with the lack of markings, seriously affect the fluidity of the traffic. The deplorable state of the communication paths requires reconstruction and major repairs, construction of new streets. The shortage of funds allocated for the maintenance and improvement of the communication paths impede the comprehensive study of the technical state of the streets and artificial construction, the technical records and passporting of the road infrastructure facilities, and the use of new technologies.

Currently, 207 *car parking lots* are officially registered in the city, with a total area of 53.2 ha and 10,965 parking places, of which 45 are non-stop parking lots for 2,575 cars. In the central part there are 18 car parking lots with a total area of 3,075 ha and 1,181 parking places, and a car parking lot working 24/24, located on Cantemir Avenue for 100 cars.

Conducted analysis who the land plot for Source-2/CHPP-1 and Source-3, has access to the existing streets in Rascani District. The territory of the enterprise has enough space for car parking lots. The land plot proposed for West TPP has access to the existing streets in Buiucani District and this territory also has enough space for car parking lots.

Drinking Water Distribution System[9]. The water supply system in Chisinau municipality also covers the towns of Vadul lui Voda, Stauceni, Colonita, Durlesti, Sanguera, Ialoveni, Vatra, Ghidighici, Codru, Bubuieci and Tohatin (see *Annex 1.8*). The total length of the main pipes (aqueducts) and of the distribution networks is 1,570 km. There are about 80 wells. The water supply system is based on the use of surface water and groundwater; the capacity of all water intakes is about 435 thousand m3/day, including from the Nistru River – 400 thousand m3/day and underground sources – 35 thousand m3/day. Water is supplied from the intake of the Nistru River located in Cosernita Village and from the underground intakes (Ialoveni, Ghidighici, Petricani).

Based on conducted baseline analysis it is possible to conclude both project sites are connected to the municipal drinking water supply system under a contract with the Apa-Canal Chisinau SA.

Sewerage System. Chisinau municipality has a central sewerage system for domestic sewage and partially a dividing system arranged in four areas (see *Annex 1.9*). The sewerage systems and installations are serviced by Apa-Canal Chisinau SA. The sewerage system covers 95% of the housing stock, and the discharge of industrial water from the municipality is characterized by the indicators given in the *Table 5* below.

Table 5. Length of the sewerage systems in Chisinau municipality

1	**Length of the sewerage systems, including:**	**911,80**
2	main collectors	71,00
3	street network	368,50
4	district network	472,30

Because of the existing relief, waste water from some residential and industrial areas of the city needs to be pumped under pressure. The pumping of waste water in the sewerage systems and wastewater treatment plants of the city is carried out from 24 pumping stations, including four inter-district stations. The domestic waste water is collected in two main collectors located along the Bic River (see *Annex 1.9*), on the right and left banks, with a diameter of Ø2000 mm and a rectangular of 2.5x2 m. The main volume of wastewater from Chisinau city reaches the sewerage system by free flow. The treatment plants in Chisinau city are located in the South-East of the city on an area of 90.0 ha, including the sludge areas (28.2 ha), and have a design capacity of the sewerage treatment plants for mechanical and biological cleaning of 466 thousand m3/day.

Similarly, as in the case of water supply network, both project sites are connected to the municipal sewerage system under a contract with the Apa-Canal Chisinau SA.

Thermal Energy. Chisinau municipality is supplied with thermal energy through the district heating system, as well as through the local systems (see *Annex 1.10*). The share of autonomous heat networks increases and according to certain estimates, it makes up 5% of the total consumption, the other 95% accounts for the central supply.

[9] Chisinau Municipality Land Improvement Plan, Territorial Development Strategy 2007-2025

The district heating system is based on the sources of thermal energy Source-1 and Source-2, West TPP and South TPP. The district heating system has two-pipe networks, including main pipelines with a length of 252.4 km, hot water - 228.3 km, heating - 319,9 km and steam - 1,4 km. The district heating system includes 507 thermal points, 22 pumping stations, 3002 elevators and 568 steering nodes (*Annex 1.10*). The baseline analysis proved both project sites have all infrastructure required to transport the thermal energy in good operating conditions.

Natural Gas. The economy of Chisinau municipality is based on natural gas supply from only one source, the Ananiev-Cernauti-Bogorodceni main pipeline, through the Soldanesti-Rezina connection and through the Ribnita-Chisinau main pipeline.

The baseline analysis shows both project sites are connected to the natural gas supply networks under a contract with the Moldovagaz SA (see *Annex 1.11*).

Electricity. Chisinau municipality is supplied with electricity through the distribution networks (see *Annex 1.12*), that are owned by RE Chisinau SA, a company with foreign capital of the "Union Fenosa Moldova" group.

Similarly, both project sites are connected to the electricity supply networks under a contract with "Union Fenosa" JSC as well as to the fixed telephony system, which is good for all territorial administrative units.

Solid waste management. The solid waste management services consist of the collection, transport, processing and storage of domestic wastes. This service is provided for Chisinau city and Codru town by the municipal company "Regia Autosalubritate" with 68 trucks.

In the other localities, these unique functions are fulfilled by other companies employed by the respective mayor's offices. Cleaning of spaces adjacent to dwellings is the responsibility of the housing stock, and the public companies "Exdrupo" and "Spatii Verzi" are responsible for the cleaning of public roads and spaces. The coordination of the activities of the municipal enterprises, which ensure the sanitation of the municipality, is carried out by the General Directorate for Housing, Utilities and Land Improvement of the Mayor's Office. In the case of Chisinau city and Codru town, the collected waste is brought to the transfer station before disposal to the landfill near Tintareni Village. The landfill was opened in 1991 on a plot of 22.5 ha. The estimated period of operation is until 2015. So far, about 12.335 million m3 of waste has been disposed. The collected waste is not selected for recovery.

Domestic and industrial waste collection services in Chisinau city and Codru town have about 500 thousand registered customers, 21 thousand of whom live in individual dwellings and about 489 thousand in multi-storey residential buildings, and there are 5,600 contracts with economic operators and about 260 thousand contracts with natural persons.

Both project sites have signed contracts for the provision of solid waste disposal services with the ME "Autosalubritate" and other companies for the collection and disposal of solid waste.

Zoning and land use policies. The planned activities under Component 1 that will be carried out on the premises of the company are in line with the zoning and land use policies in accordance with the General Urban Plan of Chisinau municipality which do not include any areas historically, archaeologically and culturally important. Furthermore, the territory, where the planned activity is expected to be carried out, does not have any forest, wetland, coastal areas, national reserves and parks. After decommissioning and disposal of solid waste, the territory will regain its original state, and the vegetation on the territories of proposed activities. There are also no any protected

areas, state forest fund, areas for protection of sources of groundwater intake, protected areas with surface water bodies, etc. in the vicinity of the sites.

Air quality. The air pollution index in Chisinau is high, and the main pollutants are: nitrogen dioxide (0.92 of the maximum allowable concentration); dust (0.7 from MAC); and, carbon oxide (0.54 from MAC). The main sources of air pollution in Chisinau are: (i) means of transport; (ii) power facilities; and (iii) industrial enterprises (Tractor Factory, Leather Processing Factory, Leather Factory, Chisinau Meat Processing Plant, CHPP-1 and CHPP-2 (*Table 6*)), that, although, have low production schedules and volumes, are located in the central districts of the city and do not have sanitary protection areas. Intensive transport traffic is the main source of noise pollution.

Table 6. List and quantity of authorized pollutants emitted by Source-2/CHPP-1, West TPP and Source-1/CHPP-2*

Pollutants	Summary amount, t/an		
	Source-2/CHPP-1	**West TPP**	**Source-1/CHPP-2**
Benzo(a)pyrene	0.00003	1.81E-05	1.19E-4
Lead spray	0.0000028	9.58E-07	3.15E-5
Soot	0.000823	0.00002	4.7260
Vanadium pentoxide	0.081	-	5.5546
Abrasive powder	0.0074	0.0035	0.0180
Metallic powder	0.0141	0.0073	0.0410
Tin spray	0.0000003	-	-
Coal slag	0.075	-	0.060
Sodium hydroxide	0.000005	-	0.0065
Iron oxide	0.0138	0.0021	0.0563
Wood dust	0.008	-	0.1367
Rubber powder	0.006	-	-
Sodium chloride	0.041	0.0055	0.0202
Cement powder	0.069	-	-
Inorganic powder	0.234	-	-
Paint spray	0.033	0.0182	-
Total	**567.56494**	**140.8023**	**32.5489**
Gases and liquids	**-**	**-**	**-**
Diesel hydrocarbons	0.085039	-	-
Carbon oxide (CO)	-	-	**1028.4827**
Nitrogen dioxide	336.73684	56.5596	**1436.9261**
Sulphur dioxide	20.8090263	0.00007	940.8157
Acetaldehyde	0.011722	-	0.0018
Gasoline hydrocarbons	0.005709	-	0.0566
Aliphatic hydrocarbons	0.002	-	-
Sulfuric acid	0.001464	1.43E-08	0.0551
Mineral oil	0.00342	-	-
Emusol	0.000012	-	-
Hydrochloric acid	0.0007	-	0.0009
Ammonia	0.00118	-	0.00064
Acetic acid	0.0004	-	-
Gasoline	0.0118	0.0027	-
Diesel	-	0.0002	-
Carbon tetrachloride	0.001	-	-
Styrene	0.00023	-	-
Epichlorohydrin	0.00003	-	-
Amorphous selenium	0.000006	-	-
Ozone	0.000003	-	9.61E-06
Acetone	0.011	-	0.130
Tar	0.112	-	-
Freon R410A	-	0.0018	0.010

Pollutants	Summary amount, t/an		
	Source-2/CHPP-1	West TPP	Source-1/CHPP-2
Methane	0.002	14.4187	0.00032
Ethyl mercaptan	-	4.4E-06	7.68E-09
Toluene	0.047	-	0.0844
Butyl alcohol	0.015	-	-
Ethyl alcohol	0.013	-	0.070
Butyl acetate	0.009	-	0.0182
Ethyl cellulosolve	0.008	-	0.0146
White spirit	-	0.0408	0.6195
Total	**566.900988**	**140.7655**	**3411.6796**

* According to *Authorizations for emission of pollutants in the atmosphere from the fixed sources:*
Source-2 – IES #002244, valid Mar 23, 2021
West TPP – #P-0355/2020, valid Jan 20, 2025
Source-1 – IES #002278, valid Mar 07, 2023.

Due to the fact that Generation Units at CHPP-2 are very old (1977-1980) and the release of NO2, CO and GHG in air is very high and exceed approved MAC, the top management of Termoelectrica SA has decided to upgrade GU #2 and overhaul of the steam turbine and replacement of the heat exchange surfaces at the GU #3 in order to reduce the air pollutant emission and to prevent risks of technogenic accidents.

In this regard, at present, Termoelectrica SA pays for the exceeded emissions of pollutants additional fees, according to the provisions of Law on the environmental pollution fees #1540 of Feb 25, 1998.

Water quality. Bic River is a water body for fishing, in which the water quality upstream of the city is satisfactory, and downstream the pollution is high. The content of petroleum products, copper compounds, ammoniacal nitrogen, nitrates, nitrites and detergents several times exceeds the MAC index for water bodies for fishing. There are two large outdated industrial areas (Sculeni and Uzinelor) in the river meadow on the territory of the city, which are located along the railway. They pollute the central part of the city, located on the path of the priority wind rose, as well as the waters of the river. Approx. 40 industrial enterprises and warehouses are located in Bic protection area, into which all the waste water is discharged or results from production processes and precipitation flows. The water leaks from the distribution and sewerage networks have led to the phenomenon of underflooding manifested by the considerable increase in the level of groundwater in many areas of the city. Bic River is mainly polluted with ammonium nitrate compounds (from 1.6 to 54 of the MAC), nitrogen nitrite (from 1.8 to 10.2 of the MAC), copper compounds (from 4.8 to 5.3 of the MAC). The water pollution index in these sectors of the river exceeds 4-6 times the MAC, which means that the water quality matches class V of quality. The city's waterway is an open container that represents an outbreak of epidemics.

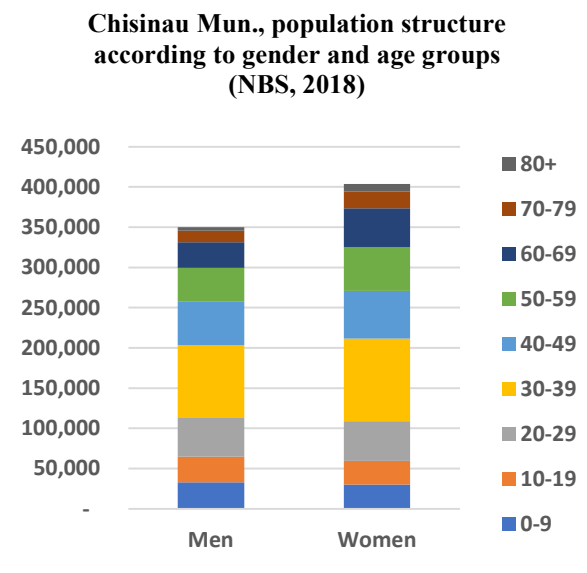
Population and social-economic conditions. The population density in the respective territory, where the planned activities are to be carried out, makes up between 0-50 inhabitants and 50-600 inhabitants (see *Annex 1.13*).

There are no educational and health care public institutions in the project areas (see *Annex 1.14*).

According to the data of *National Bureau of Statistics* (NBS), the number of Chisinau municipality population is stable, but with a slight insignificant reduction:

Chisinau Mun.	2015	2016	2017	2018	2019
Population	777,7	779	779,9	779,5	779,3

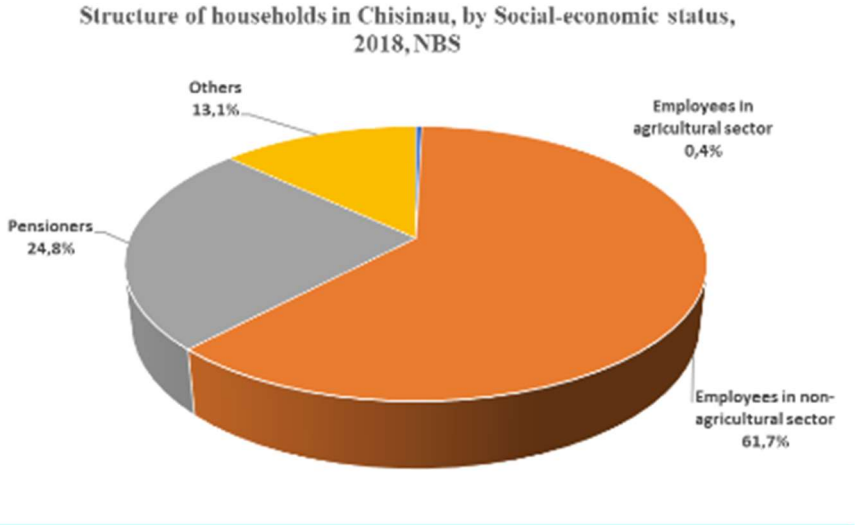
In the gender structure of the population, women slightly predominate. This situation is especially evident for the groups of population over 50 years (see the chat below):



According to the NBS data, in the municipality of Chisinau, there is a reduction in the share of pensioners in the structure of socio-economic groups of the city's population, one of the most vulnerable groups of the population due to low incomes and limited access to information (see statistical data on *structure of households* presented below).

Structure of households by Statistical regions, Social-economic status and Years (NBS):

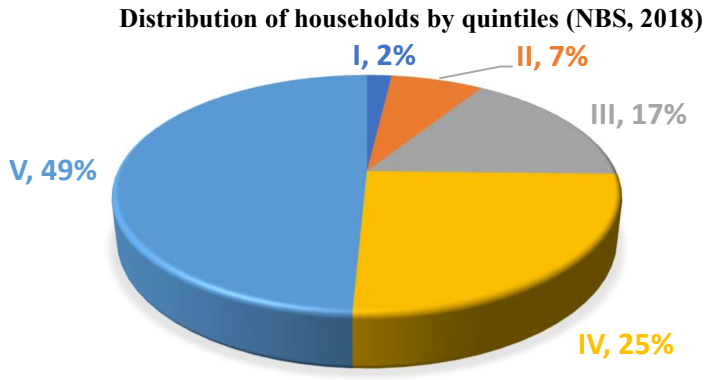
Chisinau Mun.	2014	2015	2016	2017	2018
Pensioners	21,5	27,2	26,7	27,4	24,8



In the structure of distribution of disposable income by quintiles of the Chisinau population, the households with the highest incomes predominate (Quintiles IV and V, together about 75%) (see the chat below).

Disposable incomes, average monthly per capita, per Quintiles (NBS, 2018):

Urban area,	I	II	III	IV	V
Disposable income – total, lei, average monthly per capita	1,394.3	1,734.8	2,197.4	2,737.5	4,125.1



In the same time, according the NBS, for 2018 the annual average minimum subsistence level in urban area in Moldova was about 2,107 lei (monthly average per capita), which surpasses to the incomes of the population of Quintiles I (2% of population) and II (7% of population), the poorest in the municipality of Chisinau. So about 9% of the population of the Chisinau municipality can be considered vulnerable according to the available income.

According to the results of the National census of houses carried out in 2014 by the National Bureau of Statistics, about 68% of the domestic are using the centralized heating system.

Type of heating used by households in the municipality of Chisinau:

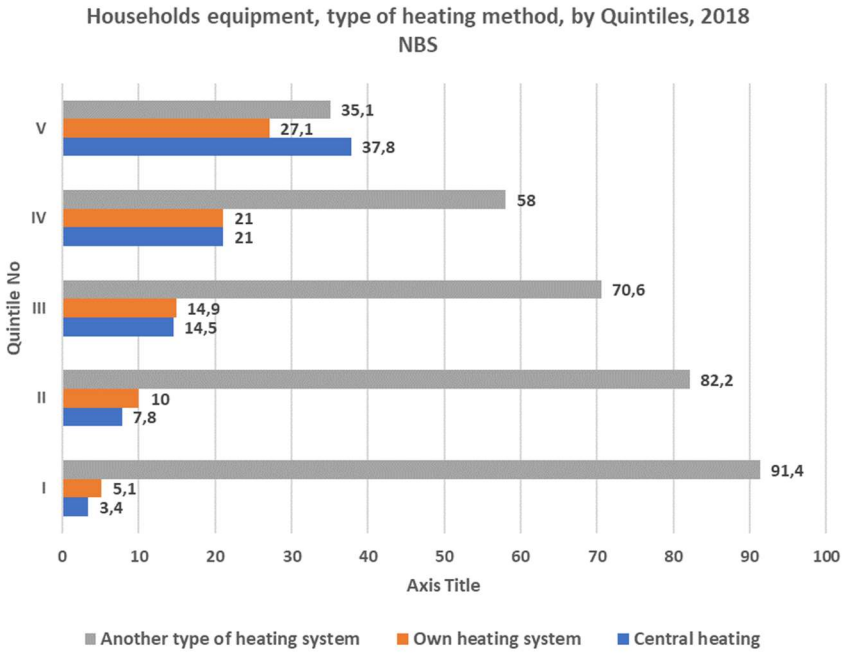
Locality / Type of heating	Central heating	Heating from own installation	Other type of heating	No heating
Chisinau Mun.	166.463	56.727	21.981	992

LOCALITY / TYPE OF HEATING	Central heating	Heating from own installation	Other type of heating	No heating
Sec. Botanica, Mun. Chişinău	37.436	5.870	482	4
Sec. Buiucani, Mun. Chişinău	28.195	7.578	451	9
Sec. Centru, Mun. Chişinău	18.907	8.775	847	27
Sec. Ciocana, Mun. Chişinău	31.452	6.945	429	1
Sec. Rîşcani, Mun. Chişinău	41.364	9.082	910	81
Suburbs	9.109	18.477	18.862	870

After 2014 there was a slight increase of the share of the population that prefers central heating, and stabilization at a value of about 70% of the population.

Households equipment by Statistical regions, Dwelling facilities and Years (NBS):

Chisinau Mun.	2014	2015	2016	2017	2018
Central heating, %	69.4	71.5	74.1	68.5	69.8
Own heating system, %	19,3	18.0	16,9	20,8	19,3



4. Environmental and Social Impact Assessment

4.1 Brief outline of proposed investments and their location

The *main objective* of the planned activity under Component 1 is the reconstruction and overhaul of the Generation Units #2 and #3 from Source-1/CHPP-2, and the installation of 5 engines with a power of 11 MW each at Source-2/CHPP-1, at Source-3 located on 6, Tudor Vladimirescu street, and at West TPP located on 24, Pruncului street.

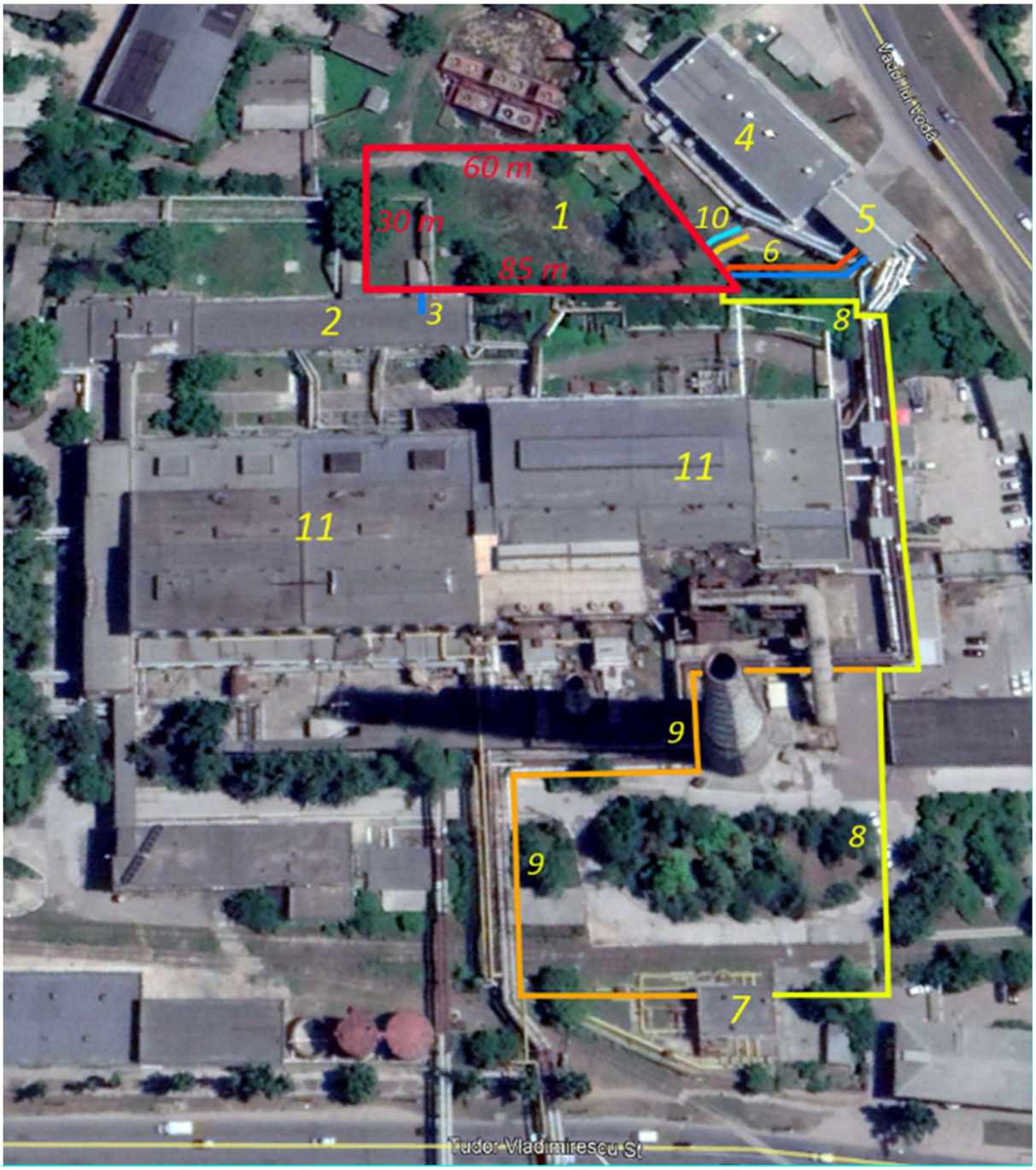
Source-2/CHPP-1 is located on the left bank of the Bic River in the industrial area of Chisinau city, in a place with the following approximate GPS coordinates: Latitude N47.0261, Longitude E28.8672. The official cadastral mapping shows that the original location consists of two properties with the following cadastral numbers: #01004240045 and #01004240002 of 12.7422 ha and 0.0060 ha accordingly.

The location is in the industrial area of Chisinau, on 5, Vadul lui Voda street. The land plot is owned by Termoelectrica SA, as evidenced by the document of the PI "Public Services Agency" of Oct 04, 2001 with the cadastral number 0100424282, and is located in Riscani district on 5, Vadul lui Voda street: its area makes up 12.7422 ha. In this location *2 internal combustion gas engines* will be installed (see *Box 2*, the area where the engines will be installed is marked with red). For the proposed location of the new cogeneration plant with internal combustion gas engines at CHPP-1/Source-2 (new proposed CHPP Source-3), the CC "Geovanmax" LLC carried out a *Topographic survey* (see *Annex 2*).

West Thermal Power Plant (West TPP). This location is in the industrial area of Chisinau municipality. *3 internal combustion gas engines* will be installed here. The land plot is the ownership of Termoelectrica SA, as evidenced by the document of the PI "Public Services Agency" of Apr 26, 2001 with the cadastral number 0100518.079 and is in Buiucani district on 24, Prunului street, having a total area of 3.9356 ha (see *Box 3*). For the proposed location of the new cogeneration plant with internal combustion gas engines at West TPP, the CC "Geovanmax" LLC carried out a *Topographic survey*, attached hereto (see *Annex 3*).

Areas adjacent to new Source-3 and West TPP (Stakeholders). The field survey shows the land owners adjacent to the Source-3 are different. The land plot with cadastral number 0100518.705 is situated far from proposed location for the new gas engines cogeneration plant at HOB West and the owner will not be disturbed the construction activity. When construction works will start the contractor will inform the owner and Traffic Management Plan will be coordinated with Road Municipal Police. With only one exception of a private landowner, the area is surrounded by various industrial enterprises (see *Annex 4*).

Box 2. Proposed location for the new gas engines cogeneration plant at CHP Source-2 (proposed new CHP Source-3) and preliminary solutions for connection to networks

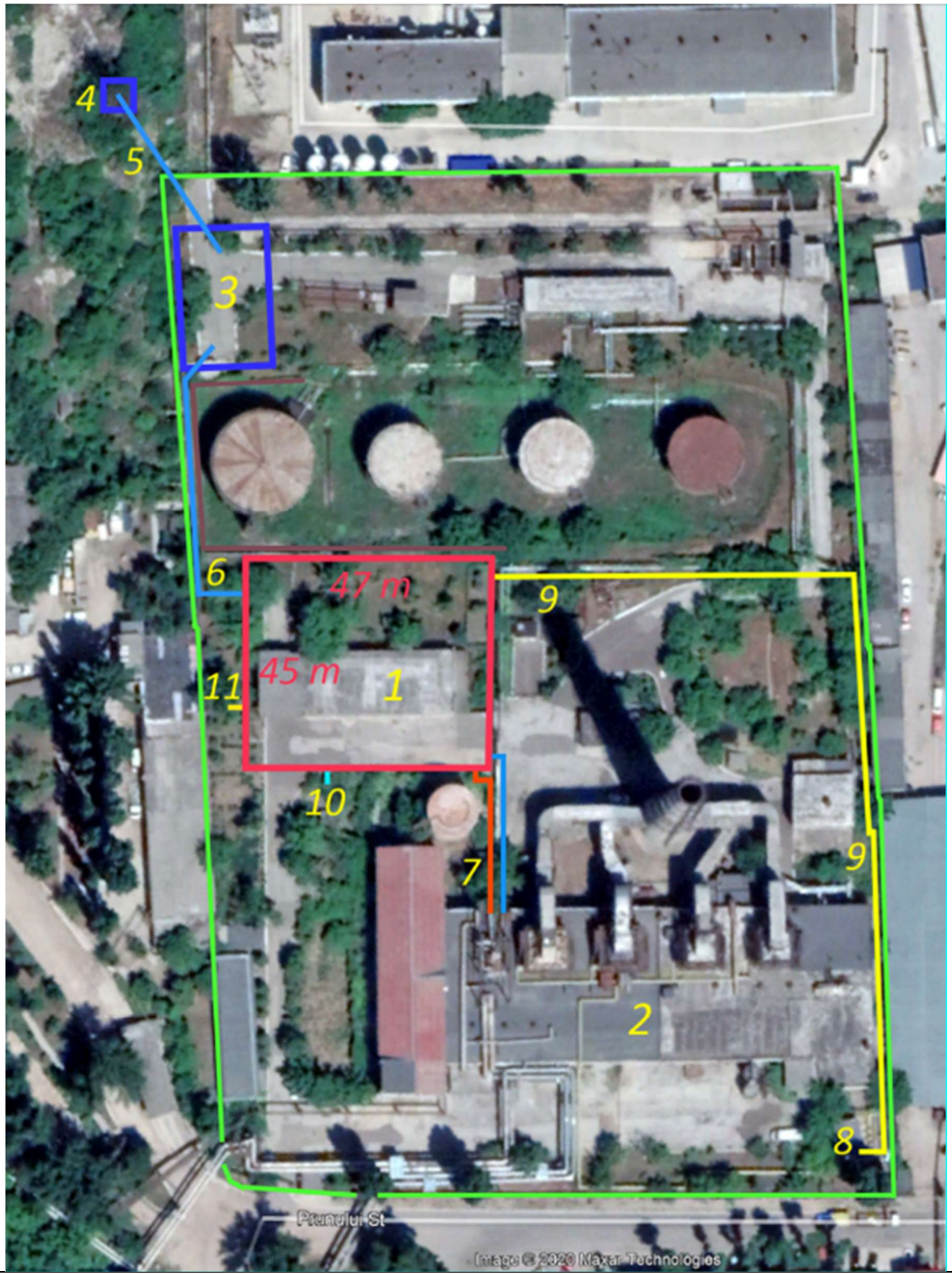


Explication:

1. Proposed location/area for the new gas engines plant, size of the proposed area appr. 60-85x30 m (the exact size and shape of the new gas engines plant building shall be determined during the design stage);
2. Existing 6 kV switchgear (ID-6kV);
3. Electricity connection of the new gas engines plant – new power cables to the existing switchgear ID-6 kV (located in immediate vicinity);
4. Existing Pumping Station #8 (on the DN1000 interconnection line between CHP Source 1 and CHP Source-2 areas);
5. Existing DH headers;
6. Connection of the new gas engines plant to the DH system – new DH pipes to the existing DH headers;
7. Existing natural gas regulation and metering station;
8. New natural gas pipe from the existing gas regulation and metering station to the new gas engines plant;

9. Alternative route for a part of the new gas pipe from the existing gas regulation and metering station – along the existing pipe route of the main DH pipes transiting the site (the optimal pipe route shall be determined depending on the future planning for the site);
10. Connections to the water supply and sewerage networks;
11. Existing CHP Source 2 main production building;
12. Existing 6/110 kV power transformers and 110 kV switchgear (ID-110kV)

Box 3. Proposed location for the new gas engines cogeneration plant at HOB West and preliminary solutions for connection to networks



Explication:

1. Proposed location/area for the new gas engines plant, size of the proposed area circa 47x45 m (the exact size and shape of the new gas engines plant building shall be determined during the design);
2. Existing HOB West main production building;
3. Proposed location/area for the new 110 kV switchgear (ID-110kV) and 6(10)/110 kV power transformers (the exact size and shape of the area for the switchgear and transformers shall be determined during the design, ensuring necessary access ways to the site);
4. Existing 110 kV overhead power line tower of the power distribution company (two 110 kV overhead power lines are available on the tower) – proposed connection point to the power system;
5. Connection(s) from the existing 110 kV overhead power line tower to the new 110 kV switchgear (ID-110kV);
6. New 6(10) kV cable lines to be installed from the new gas engines plant (from 6(10) kV switchgear to be included) to the 6(10)/110 kV power transformers (routed in space available outside mazut storage area);
7. DH connection of the new gas engines plant – new DH pipes to HOB West main production building (the new DH pipes will enter HOB West main production building in the area of the DH pumps);
8. Existing natural gas regulation and metering station;
9. New natural gas pipe from the existing gas regulation and metering station to the new gas engines plant;
10. Connection to water supply network;
11. Connection to sewerage network.

4.1.1 Description of the installation at Source-1/CHPP-2

At Source-1/CHPP-2, the reconstruction of the Generation Unit #2, which will include: overhaul of the steam turbine in the high pressure part, extension of the operating life of the steam turbine, increase of the electric capacity and efficiency of the steam turbine by reconstruction in the low pressure part (retrofit), diagnosis of the electric generator, modernization of the vibration control system, dismantling with replacement of the equipment related to the steam turbine retrofit, increasing the efficiency of the steam boiler by dismantling old burners and installing new energy efficient and low emission burners, dismantling the equipment related to old burners and (air ducts and fittings, natural gas, fuel oil and steam pipes and fittings) and installation of the respective new equipment, installation of an automatic system for power regulation, protection and control of combustion; Overhaul of the steam turbine and replacement of heat exchange surfaces at the GU #3, which will include: overhaul of the steam turbine in the high-pressure part, extension of the operating life of the steam turbine, replacement of the economizer at the steam boiler.

4.1.2 Description of the installations at Source-2/CHPP-1 (the new Source-3)

The proposed location for the new cogeneration plant with internal combustion gas engines at CHPP Source-2 (new proposed CHPP Source-3) and preliminary solutions for connection to networks (and final solutions as well) are to be determined during the Detail Design stage.

4.1.3 Description of installations and process flows when installing the ITPs

The modernization of the municipal DHS in Chisinau requires the installation of modern ITPs in the buildings that are currently connected to the DHS through the CTPs or, in some cases, directly to the transport network. In addition, there is also several older thermal points with conventional CTP schemes in the connected buildings. The installation of modern individual thermal points (ITPs) in all buildings (*Figure 4*), connected to the primary heat networks is an important factor enabling the development of a consumer-focused system, as the ITPs enable highly precise temperature regulation of the supplied heating. Thus, the ITPs are key-elements for energy saving. Normally, a modern ITP considers the local climatic conditions, the heating features of the building, and the outdoor and indoor temperature. These control functions enable energy saving.

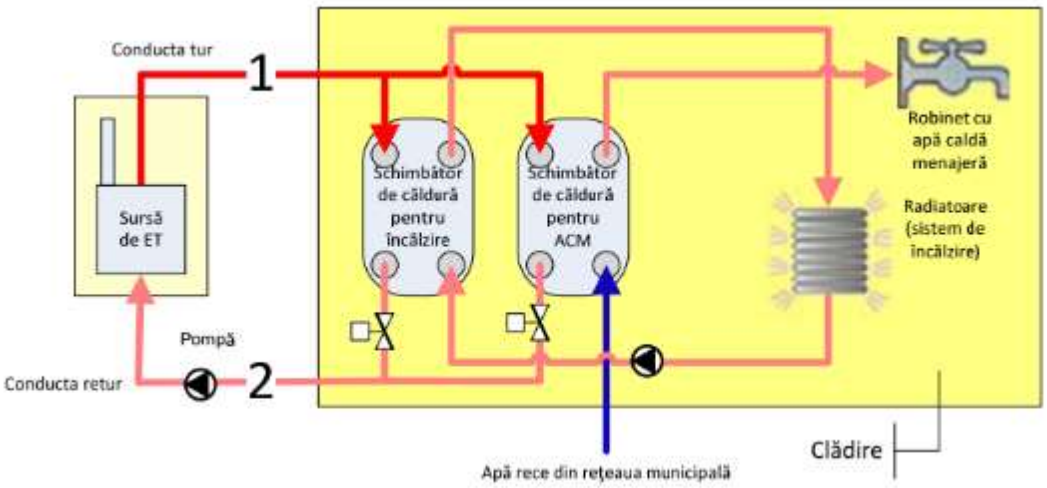


Figure 4. System with two-pipe heat networks and ITPs in the building.

4.2 Project alternatives

Several options for carrying out the planned activity were analyzed in the DH *Optimization Study*, and the most feasible option was selected.:

Location alternatives: The planned activity will be carried out on the premises of the new Source-3/CHPP-1 and West TPP. The final decision with regard to location of the proposed activities was based on technical data and the new topography studies for both locations. Two location alternatives have been considered, - placement of the gas turbines in existing at both site facilities, after conducting their remodeling and rehabilitation or, - in the new premises to be constructed at these sites. As in the case of reconstruction of the existing facilities would be necessary not only simple remodeling and rehabilitation activities but also reinforcing of the buildings themselves, the decision was taken to build new small-scale premises, by using sandwich panel technologies which would be cheaper and more efficient. For the new constructions TE has enough available space on both sites.

Technology: In terms of technological alternatives, Termoelectrica SA originally planned to renovate all the three units, but the Consultant suggests renovating only two units and making only a major overhaul to the third unit, since there is not enough heat load for viable operation of the third unit. The third unit would be in reserve in case of some failures in one of the two other units. As an alternative to the renovation of the units, extension of lifetime of the steam turbines could be applied for by making major overhauls and inspections for the turbines. With one overhaul the lifetime could be extended with 20000-25000. However, there are no guarantees that such an extension would be admitted. Also, the major overhauls would not necessarily provide a safe solution for the old CHP units. They would be risky to operate, including also serious life risk for operators. Therefore, the Consultant does not recommend the major overhauls as basis for the operation of Units 1 and 2 in the future. Respectively, the final decision is that the planned activity will be carried out on the premises of the new Source-3/CHPP-1 and West TPP and at the selected locations will be installed 2 new internal combustion gas engines at CHPP Source-2 (new proposed CHPP Source-3) and 3 new internal gas engines at Wets TPP. The scope of installing 5 new equipment is to reduce the emission of NO2, CO and GHGs and comply with EU Directive for air pollution.

4.3 Assessment of potential environmental and social risks and impacts

Overall the proposed Component 1 "Optimization of Heat and Electricity Generation" that will support mostly replacement of old and installation of new energy equipment (turbines; boilers; gas engines; power transformers and power facility/switch gears) and may generate a series of ***moderate risks and impacts*** such as: solid waste generation and disposal of obsolete equipment; and OHS risks associated with replacement of equipment activities, and welding operations. Additionally, as these activities will require minor civil works for rehabilitation of the existing premises and small-scale construction of facilities by applying sandwich-panels technologies for installing the new gas engines at HOB West and CHP Source-3 sites. The Project will also generate low-scale environmental risks and impacts such as soil and air pollution; generation of noise and construction wastes, labor safety, etc. No demolition or remodeling of existing facilities for proposed under these component activities is envisioned. During the project operational phase expected environmental risks and impacts will be associated with noise, vibration and GHGs emission and local air pollution.

These identified risks and impacts are expected to moderate to low scale, site specific, temporary by nature and can be mitigation by applying well known mitigation measures in energy sector and best civil works practices. These risks and impacts along with their magnitude and duration are summarized in the *Table 7* below.

Potential social impacts. In order to identify the potential social impacts of Component 1, taking into account the planned works for optimization of heat and electricity generation, a screening checklist to assess social risks and impacts of Component 1 interventions was elaborated (*see Annex 5*). ***Therefore, it was identified that under the Component 1 no additional or private land acquisition envisaged and all the civil works confined to the existing lands of the TE. Also, no resettlement any impacts including physical, economic displacement, or acces restriction anticipated***. The reconstruction and upgrading of energy infrastructures under Component 1 are exclusively in the premises of the exisiting land area of the sites belong to the Government.

From above description of the type of the civil cinstruction works planned to be caried out within Component 1 implementation result from low-scale social impacts on the owners of bussinesses/lands/buildings the owners to close proximity to TE's sites such us noise, dust.

The minimum distance from the owners of land/ buildings / businesses to the construction site is around 200 meters. All businesses in the area have their own permanent and reserve entrances and exits to their sites and facilities. Moreover, the entrance to the TE site that will be used during the construction period is not near the common access road. Therefore, it is not expected access restrictions and disturbance to ordinary activity on the identified potential affected owners of buildings, lands and bussinesses. Respectivily, no any impact on access to facilities, on livelihood and loss of income of this owners.

It anticipated moderate impacts on TE's employees from concerned subdivisions by Component 1 implementation during civil works. The anticipated impacts are noise, dust, access restriction in the site. These could result a potential impact on employee morale and productivity and an unfavorable working environment. No expected loss of employment for TE's workers. If would be neccesary, the employees from these subdivisons will be transffered, with mantaining their salary and positions, under other units of enterprise.

Table 7. Potential environmental and social impacts of the Component 1 activities

Project activity	Environmental component	Potential risks and impacts	Magnitude of risks and impacts	Duration of risks and impacts
Construction phase				
Dismantling old and installation of new energy equipment	Air	Air pollution with construction dust and exhaust gases	Site specific and local	Temporary
	Soil	Pollution with oil and mixt fertile soil with sterile soil or wastes	Site specific and local	Temporary
	Water	Water pollution with accidental spils and leaks	Site specific and local	Temporary
	Physical environment	Noise and vibration	Site specific and local	Temporary
	Wastes	Construction wastes generation on site	Site specific and local	Temporary
	Resources consumption	Resources depletion	Site specific and local	Temporary
	Haz. wastes and obsolete equipment	Pollution of air, soil and water with dangerous wastes	Site specific and local	Temporary
	Site's flora	Trees, bushes cutting and grass destrution	Site specific and local	Temporary
	Emergency situation	Accidental spils and leakage	Site specific and local	Temporary
	Health and Safety	Incidents and accidents	Site specific and local	Temporary
	Equipment safety	Equipment failure, accidental pollution	Site specific and local	Temporary
	Social aspects	Workers behavior, GBV, TiP, SH, labour influx, acces restriction, disturbance	Site specific and local	Temporary
	Community health and safety	Air pollution, noise and vibration, dust	Site specific and local	Temporary
Small scale civil works for construction of facilities for energy equipment	Air	Air pollution with construction dust and exhaust gases	Site specific and local	Temporary
	Soil	Pollution with oil and mixt fertile soil with sterile soil or wastes	Site specific and local	Temporary
	Water	Water pollution with accidental spils and leaks	Site specific and local	Temporary
	Resources consumption	Resources depletion	Site specific and local	Temporary
	Physical environment	Noise and vibration	Site specific and local	Temporary
	Wastes	Construction wastes generation on site	Site specific and local	Temporary
	Hazardous wastes	Pollution of air, soil and water with hazardous wastes	Site specific and local	Temporary
	Site's flora	Trees, bushes cutting and grass destrution	Site specific and local	Temporary
	Emergency situation	Accidental spils and leakage	Site specific and local	Temporary
	Health and Safety	Incidents and accidents	Site specific and local	Temporary
	Equipment safety	Equipment failure, accidental pollution	Site specific and local	Temporary
	Social aspects	Workers behavior, GBV, TiP, SH, labour influx, acces restriction, disturbance	Site specific and local	Temporary
	Community health and safety	Air pollution, noise and vibration, dust	Site specific and local	Temporary
Operational phase				
	Air	Pollutants emissions	Regional	Permanently during operation

Beneficiary operational activity	Physical environment	Noise and vibration	Local	Permanently during operation
	Waters	Pollutant emission	Local	Permanently during operation
	Solid and hazardous wastes	Wastes generation	Local	Permanently during operation
	Equipment safety	Equipment failure	Local	Permanently during operation
	Resources consumption	Resources depletion	Local	Permanently during operation
	OHS and social aspects	Incidents, personnel's behavior (GBV, HIV/AIDS, TiP, HS), disturbance to staff, access restrictions	Local	Permanently during operation
	Personnel health	Fit for duty	Local	Permanently during operation
	Vehicles	Traffic security	Local	Permanently during operation
	Community health and safety	Air pollution, noise and vibration	Local	Permanently during operation

During the project operational phase expected social impacts on the community in area (owners of lands, businesses and buildings) are the environmental expected impacts named above (noise, vibration and GHGs emission and local air pollution). Also, during operational phase it is anticipated that the new implemented technologies will require additional knowledge and skills from the TE's staff involved in the maintenance and operation of the new equipment.

Occupational Health and Safety: Occupational health and safety hazards may occur during construction, maintenance, and operation of new facilities and equipment, and must be carefully managed.

Many workers will be exposed to occupational health and safety hazards, primarily including, but not limited to:

- Lack of awareness on occupational health and safety requirements such as the use of personal protective equipment (PPE) and safe workplace practices;
- Electrical works;
- Exposure to chemicals (as paints, solvents, lubricants, and fuels);
- Traffic accidents;
- Excavations hazards;
- Lifting of heavy structures;
- Exposure to construction airborne agents (dust, silica and asbestos);
- Welding hazards (fumes, burns and radiation).

In particular, prevention and control measures must ensure that only trained and certified workers access the facilities or any area that could present occupational health and safety hazards, with the necessary safety devices and respect for minimum setback distances.

Labour and working condition: Any social impacts, included health and safety, must be avoided or anticipated on contractor's workers for the proper implementation of the Project according to WB's ESSs and national legislation.

The project is assessed as *Low* on *gender-based violence* (GBV) risk. Therefore, the GBV aspect in Component 1 implementation will focus on prevention of GBV, including sexual exploitation.

The complexity of planned civil works within Component 1 it could involve several contractors for different types of works at the same period. However, it is not expected to have excessive influx of labor force.
Although contracts will be implemented in parallel at the three sites, they will be extended in time and will involve specialized labor force at different stages of the works, without generating excessive labor influx.

Also, a Project *Labour Management Procedures* (LMP) has been developed, which include, inter alia, a detailed analysis on type and charachteristics of workers that will be involved in project implemenation, potential labour risks, national and ESS2 provisions on health and safety of workers. According to legal requirements, contained in LMP, the contractors must provide workers with good hygiene standards, with fresh drinking water, restrooms and showers, clean bedrooms (if necessary), good illumination, lockers, proper ventilation, safe electrical installation, fire and lightening protection, separate cooking and eating areas. The recreation and /or accommodation rooms must be equipped with a sufficient number of tables and chairs, corresponding to the number of workers. If there is no room for recreation and/or accommodation, other facilities must be made available to workers so that they can use them during work interruption.

MEPIU will provide an effective grievance mechanism for workers to raise workplace problems and concerns. The grievance mechanism will be established by the beginning of the project implementation and will be maintained over the project life. MEPIU will be the main body for receiving, recording and tracking resolution of grievances.

Information about the existence of the grievance mechanism will be readily available to all project workers (direct and contracted) through notice boards and other means, as needed. Also, the GRM will be described in workers' induction trainings, which will be provided to all project workers. The Contractors will be required to comply with the GRM provisions and to inform their workers, and sub-contractor(s), and display publicly on work-site the information about this GRM.

4.4 Potential Climate Change co-benefits

By optimizing the domestic district heating system, the Project will result in significant GHG emissions reduction due to installation of more energy-efficient equipment. Project investments under Component 1 are related exclusively to supply side efficiency and will allow to supply the same volume of heat and electricity more efficiently than in the baseline scenario (without project investments). The largest investment (*Efficient cogeneration* – sub-component 1.2) will supply heat throughout the year and replace primarily heat production from heat only boilers (HOB) and to a lesser extent from Source-1 CHP. The relative proportion will be confirmed by using the optimization model developed under the DH *Optimization Study*, which determines the optimal supply mix throughout the year depending on total heat demand and on the network constraints (primarily heat transmission to and from the DH network Western zone). The additional electricity production for the same heat output will displace electricity generation from Moldova Right Bank (MGRES) which is also gas-fired but was built in the mid 1960's and is characterized by low efficiency (~20%). The overall positive impact is a significant reduction in gas consumption (and emission) due to (i) replacement of separate production of heat and power by combined production in CHP mode, (ii) much higher power generation efficiency (~45% in gas engines to be installed under the Project instead of 20% with MGRES). This investment in new efficient cogeneration capacity meets the criteria for Climate-Change Co-Benefits under applicable MDB guidelines[10] (subcategory 2.2. Lower-Carbon and Efficient Energy Generation/Power plants – cogeneration technologies that generate electricity in addition to providing heating/cooling). Regarding investment under subcomponent 1.1 (*Modernization of Generation at CHP Source-1*), it will extend the availability of unit 2 of Source-1 cogeneration plant. This will unarguably reduce emission compared to a no reconstruction scenario under which the available cogeneration capacity in winter would be significantly reduced resulting in much higher production of heat with HOB by TE and by increased purchase of electricity to MGRES (which does not operate in cogeneration and has a significantly lower electricity generation efficiency than Source-1). However, the eligibility of this rehabilitation under co-benefits guidelines still needs to be confirmed (it could potentially fall under 3.3 Energy efficiency improvements in the utility sector and public services - Rehabilitation of district heating and cooling systems).

4.5 Socio-economic benefits

[10] Ref.: CLIMATE CHANGE CO-BENEFITS, METHODOLOGY AND APPLICATION IN WB OPERATIONS, (2015), Annex 1: List of Activities Eligible for Classification as Climate Mitigation Finance

Providing reliable, efficient, and environmentally friendly heating services will have a larger impact on the most vulnerable households in the city since they are often dependent on inadequate or expensive sources of heating (such as coal and firewood stoves) during cold months. The Project would be minimizing negative health impact caused by inefficient and dirty heating devices and indoor and outdoor air pollution. The Project will benefit women, who work or stay at home more often than men, as well as children and other people who use public facilities such as kindergartens, schools and other educational institutions, as well as health and elderly care institutions.

The modernization of DH system it would exclude the damages/disconnection of the heating services and will improve the DH services and, respectively, would decrease the number of consumers disconnecting from the DHS. Also, the Component 1 implementation will increases the operational efficiency of „Termoelectrica" S.A.

4.6 Cumulative impacts

The proposed activities under Component 1 will not generate cumulative impacts. They will not interact with other construction activities or other infrastructure development projects, and no other cumulative environmental and social aspects that could have a negative impact on the community and the environment in the construction area are identified. The environmental protection measures to minimize the negative impact during the project implementation (construction and operational phases) will contain the following impact minimization actions: (i) the construction activity will be coordinated with other activities in the area, and blocking the roads by vehicles with construction materials will be avoided; (ii) use of public roads during peak hours in the morning and evening will be used.

5. Environmental and Social Management Plan

To address identified above for Component 1 activities risks and impacts TE prepared an ESMP which includes the following: (a) a special environmental and social impacts mitigation plan; (b) supervision and monitoring plan, along with reporting on ESMP implementation schedule; and (c) the description of ESMP implementing arrangements (see *Section 8* of the document).

5.1 Mitigation Plan

5.1.1 Environmental and social impacts mitigation

This Plan is based on the technical design of the project activities, specifics of the proposed locations and considering *WB Environmental, Health, and Safety Guidelines for Thermal Power Plants*[11]. They include most efficient measures for ensuring both environmental protection as well as OHS issues. Furthermore, the Plan specifies also responsibilities in terms of implementing proposed mitigation measures, the source of funding for all three stages of project implementation: (i) design, (ii) construction, and (iii) operation (see *Table 8* below).

Environmental and social mitigation requirements, including *Traffic Management Plan, Grievance Redress Mechanism at project level, Grievance Redress Mechanism for workers, Code of Conduct that address, inter alia, GBV issues, contractor' Labor Management Plan, public information and awareness strategy* to ensure the transparent implementation of the project etc., will be incorporated in the final designs, technical specifications, and bidding documents for the construction contractor(s) and are aimed at avoiding, preventing, minimizing the potential social and environmental risks and impacts. The final design documents package will also include a list suggesting approved spoil disposal sites; permits and agreements to be obtained from the relevant state and local authorities for use of water resources, and sites for disposal of excavated spoils as appropriate; suggested list of construction preparation temporary sites such as access roads, transport and machinery sites, storage facilities, etc. They should provide such technical solutions that will have minimum impact on the environment and natural resources. Furthermore, these documents will ensure the temporary impacts from noise of operating machinery and civil works do not cause direct adverse impacts on nearby residents.

[11] Ref.: https://www.ifc.org/wps/wcm/connect/f82a5f06-f3f7-4033-8ea6-b767523cda8e/FINAL_Thermal%2BPower.pdf?MOD=AJPERES&CVID=jqeD9Eg&id=1323162579734

Table 8. Mitigation Plan for Component 1 activities

Note: It is obvious, that all proposed below mitigation measures will be adjusted and completed according to existing technical/safety/sanitary norms and safeguards solutions within Detail Design process, and will be submitted as a project environmental protection documentation for approval procedure by the State Ecological Expertise before the construction work will start.

Project activity	Potential risks and impacts	Mitigation measures	Costs	Responsibility
Design phase				
Dismantling old and installation of new energy equipment	Potential social distrubance	− Informing all involved parties and local construction environment inspectorates and communities of upcoming activities − Notifying the general public of the works through appropriate notification in the media and/or at publicly accessible sites (including the site of the works) − Obtaining all legally required permits for proposed activities − Ensuring all environmental protection measures and Occupational Health and Safety requirements are well specified in the project design and in the site specific ESMP	Covered by TE; included in the design works	TE, Designer
Small scale civil works for construction of facilities for energy equipment	Potential social disturbance	− Informing all involved parties and local construction environment inspectorates and communities of upcoming construction activities − Notifying the general public of the works through appropriate notification in the media and/or at publicly accessible sites (including the site of the construction works) − Obtaining all legally required permits for civil works − Ensuring all environmental protection measures and Occupational Health and Safety requirements are well specified in the project design and in the site specific ESMP	Covered by TE; included in the design works	TE, Designer
Construction phase				
Dismantling old and installation of new energy equipment	Occupational Health and Safety issues during dismantling of old equipment	− Strictly respecting the existing national regulations on conducting specified activities − Carrying out the routine inspection of the machinery and equipment to be used for the purpose of trouble shooting and observance of the time of repair − Organizing training and instruction of the workers engaged in maintenance of the machinery, tools and equipment on safe methods and techniques of work − Prohibiting: 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	To be included on the contractors' expenditures	Contractor
	OHS during Crane/excavators/bulldozers operations	− Strictly respecting the existing national regulations on conducting these activities − Carrying out the works under the supervision of electricians while approaching to the air electrical lines under tension	To be included in Contractors' expenditures	Contractor

Project activity	Potential risks and impacts	Mitigation measures	Costs	Responsibility
		− Installing and fixing the 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. Working on defective machines is not permitted − Members of mechanized brigades operating cranes and bulldozers should know and strictly follow all safety engineering rules during operations of relevant machines − Workers serving machines should be provided with instructions, comprising following: (a) Machine controlling instruction and caring about the workplace; (b) Safety engineering requirements; (c) Guidance of signals system; (d) The 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 − Allowing only specially trained and certified people to control the machines − Complying the basic requirements of cranes and bulldozers operations as follows: (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 cause an accident should be removed − Strictly respecting the existing national regulations on conducting these activities − Ensuring the personal with protective equipment, rubber gloves, special boots, as well as special helmets.		
	Noise and vibration	− Organizing work from 7:00 till 18:00 on weekdays − Minimizing operating time of the rustling equipment idling − Using the modern equipment and mechanisms with the low level of noise and vibration − Covering the motor casings of generators, air compressors and other similar equipment − Operating the equipment on the maximum distance from the housing − Providing personal protective equipment (PPE) to all workers	To be included on the contractors' expenditures	Contractor
	Dust	− Organizing work in a such a way to reduce the quantity of dust by using water to spread the construction site − Providing PPE to workers for dust protection − Installing signs for informing drivers about possible risk connected with dust on the local road	To be included on the contractors' expenditures	Contractor

Project activity	Potential risks and impacts	Mitigation measures	Costs	Responsibility
	Pollutants emissions	− Stopping engines when there is no tasks to perform − Refiling tanks with fuel from Authorized Stations only − Using equipment with law consumption of fuel − Ensuring equipment and vehicle maintenance in good order − Refiling tanks in the morning or in the evenings to avoid evaporation of fuel in the summer warm period	To be included on the contractors' expenditures	Contractor
	Solid wastes	− Organizing the system of separate collecting waste at the building site − Collecting and storing waste of different types in the containers intended for it − Marking containers for collecting waste (e.g. with the indication of a class of danger and a type of the collected waste) − Collecting hazardous waste in a liquid and paste like phase in the special capacities providing tightness and anticorrosive stability and established in the specially allotted place − Obtaining Permission to construction wastes disposal (the waste which is formed as a result of construction activity has to be taken out to the dump or processed by the licensed companies) − Observing that the placed waste wasn't in places of possible flooding	To be included on the contractors' expenditures	Contractor
	Obsolete equipment	− Evacuating and transporting obsolete equipment to the beneficiary site − Complying with Road Regulation regarding transportation of loads and to have an approved Traffic Plan (Scheme) − Approving the Traffic Scheme by the Municipal Police for transportation of obsolete equipment to the beneficiary site − Installing leakage tray under dismantled equipment in order to avoid soil pollution − Training of personnel regarding OHS risks when dismantled obsolete equipment − Developing a MSDS for dangerous wastes and used chemicals, providing to workforce PPE and training them regarding safety measures, described in MSDS − Developing a Emergency Preparedness and Responsa Plan and test it with workers in order to be able to react correctly in case of emergency	To be included on the contractors' expenditures	Contractor
	Traffic risks	− Coordinating the Traffic Management Plan with Municipal Police − Establishing the warning signages for the population and public transport about all potentially dangerous works − Organizing the control system of the movement and training of personnel, especially for ensuring access to an object − Organizing a safe passes and transitions for pedestrians in places of the movement of the construction equipment − Providing a safe and continuous access for the population to all nearby offices, objects of trade and houses during construction works	To be included on the contractors' expenditures	Contractor

Project activity	Potential risks and impacts	Mitigation measures	Costs	Responsibility
	General labor safety risks	− All works will be carried out with observance of measures on construction safety and rules of carrying out construction works for reduction of health and environmental impacts − Training in safety measures for all workers before works − All workers will be provided with personal protection equipment. Individual protection equipment has to conform to requirements of the international standards (construction helmets, as required respirators and goggles, safety mechanisms and special footwear are always used) − The corresponding bulletin boards on a construction site will inform workers on key rules and requirements which need to be observed − Implementation of rules and security guidelines and LMP, including use of individual protection equipment, will be encouraged and controlled on a regular basis	To be included on the contractors' expenditures	Contractor
	Emergency situations	− All works will be performed according to requirements of labor safety measures − The personnel will be trained in actions in case of emergency situations − Emergency equipment will be present on site and ready to be used − First aid equipment will be present on site and workers will know how to rend first aid	To be included on the contractors' expenditures	Contractor
Small scale civil works for construction of facilities for energy equipment	Solid wastes and air pollution	− Applying measures for reduction of dust content by regular water dispersion when carrying out excavator works and dismantling building − Using debris-chutes above the first floor during interior demolition − Covering truck bodywork with awnings while transportation of raising dust freights − Establishing the ban on use at construction of the materials and substances emitting cancerogenic and toxic substances in the atmosphere − Minimizing an operating time of motor transport engines idling − Organizing the passing of control by all vehicles concerning CO emissions and smoke	To be included on the contractors' expenditures	Contractor
	Dust and air pollution	− Applying measures for reduction of dust content by regular water dispersion when carrying out excavator works and dismantling building − Using debris-chutes above the first floor during interior demolition − Covering truck bodywork with awnings while transportation of raising dust freights − Establishing the ban on use at construction of the materials and substances emitting cancerogenic and toxic substances in the atmosphere − Minimizing an operating time of motor transport engines idling − Organizing the passing of control by all vehicles concerning CO emissions and smoke − Establishing the ban on combustion of solid wastes	To be included on the contractors' expenditures	Contractor
	Noise and vibration	− Organizing work from 7:00 till 18:00 on weekdays − Minimizing operating time of the rustling equipment idling − Using the modern equipment and mechanisms with the low level of noise and vibration	To be included on the contractors' expenditures	Contractor

Project activity	Potential risks and impacts	Mitigation measures	Costs	Responsibility
		− Covering the motor casings of generators, air compressors and other similar equipment − Operating the equipment on the maximum distance from the housing − Providing personal protective equipment (PPE) to all workers		
	Water pollution	− Establishing the ban on unregulated selection of subterranean waters or uncontrollable dumping of industrial waters, cement mortars or any other polluted waters into the soil − Ensuring measures for prevention of spill of fuels and oils and other toxic or dangerous substances − Establishing the ban on a wash of machines and mechanisms on the construction site − Water will be used for the construction process in accordance with the technical specifications of the detail design − Household waste waters will be discharged to the existing municipal sewerage network − Water consumption will be monitored and measured − Rain-waters will be disposed of from the site through the existing networks	To be included on the contractors' expenditures	Contractor
	Labor safety risks	− Identifying dangers, assessing risks and establishing measures to keep risks under control − Establishing the role, responsibilities and authorities for keeping risks under control − Encouraging to have competent and trained personnel on assessed risks − Developing and implementing all documented procedures and working instructions at the working places − Establishing operational procedures and instructions to comply with operating criteria and keeping under control contractor and subcontractors − Developing an emergency procedure in order to keep under control potential risks − Monitoring and measuring all potential risks and report performances to all interested parties − Evaluating compliance with applicable national requirements regarding operating criteria − Notification and Incident investigation and nonconformity treatment	To be included on the contractors' expenditures	Contractor
	Hazardous wastes	− Developing a Hazardous Management Plan and approving the Plan by Employer − Coordinating activity of HW with Environmental Agency − Developing a MSDS for each hazardous waste and training the workers regarding safety aspects on site − Providing special PPE for handling and management of hazardous wastes − Identifying a HW Operator/Contractor − Installing warning signs on site for HW − Ensuring and installing emergency equipment near the platform for HW	To be included on the contractors' expenditures	Contractor

Project activity	Potential risks and impacts	Mitigation measures	Costs	Responsibility
		− Providing leads for container for preventing evaporation or dispersion of dangerous gases in atmosphere or around the site − Providing safety fence and gate for HW platform, if applicable		
	Soil removal	− Establishing the ban on fueling of the construction equipment on the building site − Carrying out small repair of the construction equipment, replacement of oils and technological liquids only at authorized car repair shops − The machine equipment and mechanisms will be checked regularly regarding possible leak of fuel − The fulfilled fuels and oils will be collected and temporarily placed on storage in the individual containers located in the safe place until are sent for final utilization and neutralization − The fertile soil will be collected separately and will be used later to improve the surrounding areas − The fertile soil and the depth of the uncovered layer will be uncovered according to the recommendations of detail design − It is forbidden to mix fertile soil with sterile soil or construction waste	To be included on the contractors' expenditures	Contractor
	Impacts on local vegetation (trees, bushes, grass)	− Organizing construction works without removal and damage of local vegetation, whenever possible − Establishing the ban on journey and the parking of transport out of the roads and platforms allocated for this purpose − Protecting local vegetation which have remained on building site with wooden protections	To be included on the contractors' expenditures	Contractor
	Social impacts	− Before the beginning of construction works, the General Contractor will develop his own Labor Management Plan and Environmental and Social Mitigation Plan, specifying all the measures of protection of his own and contracted personnel, and the Employer will approve it − Contractor's ESMP will be prepared and approved by implementing entities prior construction works begins − The Customer will be in touch with the community adjacent to the construction area and will inform it about the terms of implementation and the community protection measures (SEP implementation) − To protect the community, an ES committee will be set up that will include representatives of the Employer and the Customer and other stakeholders that will work on the compliance with environmental protection and safety measures, solving complaints/grievances, customer satisfaction, etc.	To be included on the contractors' expenditures	Contractor
	Trafic risks and impacts	− Signposting, warning signs, barriers and traffic diversions: site will be clearly visible and the public warned of all potential hazards	To be included on the contractors' expenditures	Contractor

Project activity	Potential risks and impacts	Mitigation measures	Costs	Responsibility
		− 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 − Active traffic management by trained and visible staff at the site, if required for safe and convenient passage for the public. − Ensuring safe and continuous access to office facilities, shops and residences during renovation activities, if the buildings stay open for the public		
Operation phase				
Operation of gas turbines	Pollutants emissions	− Monitoring and controlling of air emissions, ensuring proper functioning of existing technological equipment and screen/filter systems, complying conditions of Environmental Authorization for emissions of pollutants	Beneficiary's cost	Beneficiary
	Noise and vibration	− Ensuring proper functioning of existing technological equipment, installing insulation and protective screens, complying conditions of Sanitary Authorization for operations		
	Solid wastes	− Monitoring and controlling of generated solid wastes, contracting of authorized wastes operator	Beneficiary's cost	Beneficiary
	Wastewater emissions	− Monitoring and controlling of generated wastewaters, ensuring contractual conditions of discharge to the municipal sewerage system	Beneficiary's cost	Beneficiary
	OHS issues	− Ensuring of personnel periodic medical control and workspaces risk assessment	Beneficiary's cost	Beneficiary
	Working environment	− Monitoring and controlling of working environment, complying conditions of Sanitary Authorization for operations	Beneficiary's cost	Beneficiary
	Equipment safety	− Ensuring of equipment and EMM testing and certification, receiving of Industrial Safety Authorization	Beneficiary's cost	Beneficiary
	Emergency situation and equipment	− Keeping under control the emergency situation and risks, and ensuring competent personnel to react in case of emergency	Beneficiary's cost	Beneficiary

Table 9. Monitoring Plan for Component 1 activities

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?)
Construction phase							
Civil works (construction of small-	Parameters given in construction permit - all special conditions of	Detail Design documentation,	A part of regular inspection by Termoelectrica	During construction and prior to issuance of	Regular review stipulated in the construction permits to	Included in the costs of Contractors	Supervision TE Engineer and MEPIU

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?)
scale facilities for energy equipment)	construction issued by different bodies	Construction Authorization		the Operation Authorization	ensure compliance with the specified by national legislation and EMP requirements		Environmental Specialist
	Human health and environmental impact	At the construction site	Visual observations; Personal protective equipment use, security barriers and signage in place	During construction works	To prevent incidents, to avoid workers health impacts	Included in the costs of Contractors	TE Environmental Department and MEPIU Environmental Specialist
	Labour and working condition: good sanitary standards, with fresh drinking water, restrooms and lockers, separate eating areas etc.	At the construction site	Visual observations; Checking out the OHS procedures, training records, PPE ensured and special safety signage in place	During construction works	To assure the safe and favorable labor and working conditions	Included in the costs of Contractors	TE Environmental Department and MEPIU Environmental and Social specialists
	Dust, air quality and noise	At the construction site	Visual observations, measurement of air quality and noise on site	At the start and during construction phase	To avoid environmental pollution and workers health impacts	Included in the costs of Contractors	TE Environmental Department and MEPIU Environmental Specialist
	Waste water	At the construction site	Visual observations, measurement of water quality on site	At the start and during construction phase	To avoid water pollution	Included in the costs of Contractors	TE Environmental Department and MEPIU Environmental Specialist
	Solid construction waste management	At the construction site	Visual observations on site; and checking out the procedures and records on waste transportation	During the construction phase and after reporting on waste management	Avoiding environmental pollution and human health impacts, and needed in accordance with the waste-related national regulations	Included in the costs of Contractors	TE Environmental Department and MEPIU Environmental Specialist
	Hazardous wastes (HW) and asbestos	At the construction site	Visual observations; checking out the	During the construction phase and after	Avoiding environmental pollution and human health	Included in the costs of Contractors	TE Environmental Department and MEPIU

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?)
			environmental procedures, records and permits on HW	reporting on waste management	impacts and needed in accordance with national regulations		Environmental Specialist
Dismantling/installing new electrical equipment/welding operations	Labor safety (Method Statement)	At the construction site	Medical control of workers	Once a year to pass medical control as per national laws	Avoiding accidents and health impacts	Contractors costs	MEPIU Environmental Specialist
	Obsolete equipment (OE)	At the construction site	Visual observations; checking out of developed lists, procedures and records on OE	When equipment is dismantled	Avoiding accidents and health impacts, ensuring rational use and/or adequate recycling of OE	Contractors costs	TE Environmental Department and MEPIU Environmental Specialist
	Hazardous wastes	At the construction site	Visual observations; checking out the environmental procedures, records and permits on HW	Before and when equipment is dismantled	Avoiding environmental pollution and human health impacts and needed in accordance with national regulations	Contractors costs	TE Environmental Department and MEPIU Environmental Specialist
	Emergency situation	At the construction site	Visual observations; Checking out the prepared and respected EPP; PPE ensured; safety signages in place	When equipment is dismantled	Avoiding accidents and health impacts	Contractors costs	TE Environmental Department and MEPIU Environmental Specialist
	Working at height	At the construction site	Checking out the availability of competent and trained personnel and able to work at height; Special PPE provided for working at height; Records regarding personnel trainings; Emergency situation and first aid kit; safety signages	When equipment is dismantled	Avoiding accidents and health impacts	Contractors costs	TE Environmental Department and MEPIU Environmental Specialist
	Electricity safety	At the construction site	Checking out the availability of competent and trained personnel and able to work at height;	When is working with electrical equipment and the process of dismantling	Avoiding accidents and health impacts	Contractors costs	TE Environmental Department and MEPIU

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?)
			Special PPE provided for working at height; Records regarding personnel trainings; Emergency situation and first aid kit				Environmental Specialist
Operation phase							
TPP operation	Labor safety (OHS Plan)	At the PTT	Checking out the OHS procedures, training records, PPE ensured and special safety signage in place	Periodically per procedures and timing specified in national norms and standards	Avoiding accidents and health impacts to station workers	Termoelectrica expenses	Chief Engineer of the TPP, State Labor Inspection
	Operations conditions	At the PTT	Checking out the Operations Authorizations and respected conditions	Periodically per procedures and timing specified in national norms and standards	Avoiding accidents and health impacts to human health, ensuring adequate working conditions	Termoelectrica expenses	Chief Engineer of the TPP, State Labor Inspection, Public Health Agency
	Personnel health	At the PTT	Checking out the personal records on health control	Periodically per procedures and timing specified in national norms and standards	Avoiding accidents and health impacts to station workers	Termoelectrica expenses	Chief Engineer of the TPP, State Labor Inspection, Public Health Agency
	Personnel competence	At the PTT	Availability of competent certified personnel; Checking out the personal records	Periodically per procedures and timing specified in national norms and standards	Avoiding accidents and health impacts to station workers	Termoelectrica expenses	Chief Engineer of the TPP, Labor Inspection
	Environmental issues for pollutant emissions	At the PTT	Checking out the Environmental Authorizations for pollutant emissions and respected conditions	Periodically per procedures and timing specified in national norms and standards	Avoiding accidents and health impacts to station workers	Termoelectrica expenses	Chief Engineer of the TPP, Inspection for Environmental Protection
	Equipment safety	At the PTT	Checking out the Monitoring and Maintenance procedure, incl. Plan and records on implementation, incl. periodical authorization	Periodically per procedures and timing specified in national norms and standards	Avoiding accidents and health impacts to station workers	Termoelectrica expenses	Chief Engineer of the TPP, Industrial Safety Agency, Labor Inspection

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?)
			and metrological certification				
	Monitoring and measurement equipment	At the PTT	Checking out the Monitoring and Maintenance procedure, incl. Plan and records on implementation, incl. periodical authorization and metrological certification	Periodically per procedures and timing specified in national norms and standards	Ensuring adequate monitoring and control of operations; Avoiding accidents and human health and environmental impacts	Termoelectrica expenses	Chief Engineer of the TPP
	Contractor and subcontractor	At the PTT	Checking out the competency, available trained personnel, adequate and safety equipment, developed ES procedures, records and reports on ES performances	To be established requirements in ToR as per specified in national norms and standards procedures and timing	Avoiding accidents and health and environmental impacts	Termoelectrica expenses	Chief Engineer of the TPP
	Supply chain	At the PTT	Checking out compliances to EHS criteria in the Contract of service	Contract of service as per national procurement procedure	Avoiding accidents and health and environmental impacts	Termoelectrica expenses	Chief Engineer of the TPP

5.1.2 Stakeholder Engagement

A *Stakeholder Engagement Plan* (SEP) has been prepared according to the Environmental and Social Standards (specifically - ESS10: *Stakeholder Engagement and Information Disclosure*) of the World Bank Environmental & Social Framework (ESF). The SEP provides a systematic approach to stakeholder engagement that will help the implementing entity identify key stakeholders – project affected parties and other interested parties – and build and maintain constructive relationships with them during preparation and implementation of the DHEIP-2.

For Component 1 of the Project the SEP provide the information and engagement methods during preparation, construction and operation stages of the Project of direct and other interested parties of the project.

Following these, SEP was identified that direct affected parties by planned activities within Component 1 are: the employees from the subdivisions affected by the modernization works – workers at CHP 2 (Source-1), CHP 1 (in future Source-3) and HOB West. Also, in this group are included the residential buildings and businesses to close proximity to the construction planned site, including local roads.

At preparation stage of the Project it was not planned and it is not known if any vulnerable groups will be directly affected in the implementation of the Component 1 activities. However, anticipating the impacts on employees, the implementing entities will provide particular attention to retirees from affected enterprise's subdivisions, employees in the 55+ age group, employees with disabilities and to other vulnerabilities as soon as they are identified.

Information materials will be developed to keep the stakeholders informed on Project activities and its environmental and social performance.

All contractors will be involved in the stakeholders engagement activities at project level, also they will contribute to the correct and appropriate dissemination of project information.

5.1.3 Grievance Redress Mechanism at project level

The two *Grievances Redress Mechanisms* (GRM) will developed according to project direct affected parties, identified taking in account the planned activities within Component 1:

Internal Grievance Redress Mechanism. The internal GRM is meant to TE's employees that are anticipated to be affected by implementation of Component 1 of the Project.

Through this mechanism the employees will be able to express any concerns, ask questions about the Project or express their dissatisfaction.

The employees will be able to express their dissatisfaction/grievance or question using the existing internal grievance redress mechanism within TE. According to this, the employees express their grievances in writing or verbally to the head of the subdivision in which he/she works and to whom he/she is subordinate. The head of subdivisions will give him/her an answer if he/she holds the necessary information, otherwise he/she will direct the dissatisfaction or question to enterprise's departments corresponding to grievance's type/content. However, the heads of potential affected subdivisions will report weekly to the top management on grievances received.

External Grievance Redress Mechanism. A two-level grievance management structure to address the public and PAPs concerns and complaints within the Project implementation will be established.

The implementation entities intend to establish the following channels through which citizens/beneficiaries/PAPs (Project Affected Persons) can make complaints/suggestions/compliments regarding Project-funded activities:

Moldova Energy Project Implementation Unit	**Termoelectrica S.A.**
Chisinau, 1, Alecu Russo str., office 163 Tel.: (+373) 22 496790 Fax: (+373) 22-49-67-90 Email: mepiu@mepiu.md	Chisinau, 6, Tudor Vladimirescu str. Tel.: (+373) 22 43-64-59 Fax: (+373) 22 49-50-97 Email: anticamera@termoelectrica.md
Verbal complaints addressed to Project staff could be recorded in writing by the receiver	

If the complainants will use the other existing TE's channel for consumers grievances (call center, viber number), these grievances will be directed to TE's Project/components managers.

I level – Site/sub-Project. The Project affected persons and stakeholders at site level will have the option to report their complaints/feedback to the site/subproject implementing contractor. The implementing agency/contractor will be responsible for addressing the complaint/feedback within *5 days* of being apprised of the issue.

The contractor's staff is responsible for maintaining logs of the complaints/feedback received, as well as issues that have been resolved and those which are pending and report bi-weekly to TE and MEPIU. If the issue cannot be resolved at the sub-Project/site level, then the site level engineer/safeguards staff will immediately direct the grievance to a higher level, to the TE/MEPIU.

II Level. If there is a situation in which there is no response from the local/site level, or if the response is not satisfactory then complainants and feedback providers have the option to contact the TE and MEPIU directly to follow up on the issue.

The grievances/complaints at every level will be recorded, examined and solved no later than *2 weeks* from their receipt.

The registration, examination, resolution etc, procedures are detailed described in the SEP.

5.2 Monitoring Plan

The environmental and social issues included within the mitigation measures will be monitored and supervised by TE, contractors and MEPIU. Although, the environmental and social impacts are expected to be *moderate*, the potential negative environmental and social impacts are planned to be prevented or mitigated during the construction and operation stages. Environmental and social monitoring system starts from the preparation phase of the subproject through the operation phase in order to prevent negative impacts of the project and observe the effectiveness of mitigation measures. This system helps the WB and the Client to evaluate the success of mitigation as part of project supervision and allows taking an action when needed. The monitoring system provides technical assistance and supervision when needed, early detection of conditions related

to mitigation measures, follows up on mitigation results, and provides information of the project progress.

To ensure the *Mitigation Plan* is efficiently implemented, the ESMP contains a special *Monitoring Plan* (see *Table 9* above), which provides: (a) details, of monitoring measures, including the parameters to be measured, methods to be used, frequency of measurements; and, (b) monitoring and reporting procedures to (i) ensure early detection of conditions that need particular mitigation measures, and, (ii) furnish information on the progress and results of mitigation.

Impact monitoring. Includes water and air quality, noise, and will be done by Contractors, MEPIU and TE. Costs for monitoring activities during construction phase of the Project shall be included in the bill of quantity for proposed civil works.

Compliance monitoring. In addition to supervision and monitoring activities to be done by Contractors, TE and MEPIU, the proposed measures for compliance monitoring for the construction and operation stages might be carried also by authorized state bodies: (a) State Labor Inspection who is responsible for the issues related to occupational safety and health; (b) State Construction Inspectorate who is responsible for overall supervision of construction works; and, (c) Municipal environmental authorities, responsible for environmental supervision and monitoring activities. Inspections of construction sites are among the duties of these authorities' staff and are covered form their own budgets.

5.3 Supervision and reporting on ESMP implementation

As the main implementing agency, the MEPIU environmental and social specialists will monitor all subprojects that it finances to ensure conformity to safeguard requirements during construction, operation and maintenance. They will ensure full compliance with the contract conditions and the ESMP. Final payment to the contractor should be contingent on the final inspection, with attention to the requirement to restore the site to its original condition upon completion of rehabilitation activities. They will visit to project sites as and when necessary. Based on performance of different subprojects, they will advise on the subsequent disbursements that should be done for the contractors awarded a contract to implement subprojects under the Project. If it is found that there is an ESMP noncompliance, further disbursements will be stopped until compliance is ensured. In addition, in the project areas the MEPIU will be responsible for the environmental and social monitoring activities identified above as part of the preventive actions and mitigation measures proposed to address potential adverse impacts. This monitoring will be incorporated into the overall project monitoring plan required by the World Bank as part of project performance. MEPIU is also responsible for processing, addressing and monitoring complaints and other feedback, including that on environmental and social issues.

Also, MEPIU will be responsible for ESMP reporting and will:

- Record and maintain the results of project supervision and monitoring throughout the life of the project. It will present summary progress reports on ESMP implementation and the E&S aspects of Component 1 activities on a semi-annual basis to the World Bank, and as part of this reporting, provide updates on any project related as grievances/feedback that was received, that has been addressed and that may be pending;
- Prepare quarterly reports on the progress of implementation of measures proposed by the ESMP;

- Prepare annual reports on the environmental impacts originated during implementation of Component 1 activities and analyze the efficiency of mitigation measures applied to minimize negative consequences;
- Prepare outlines and requirements for Contractors' reports on environmental and social protection and mitigation measures, and review Contractor's monitoring plan and reports; and,
- Present the impact of mitigation and environmental and social protection measures for general public via specific publications or/and by annual public seminars.

Also, Termoelectrica SA, as the project implementing agency will be closely involved in all stages of project design and implementation: procurement design, preparation of bidding documents (especially technical specifications), evaluation of bids and selection of contractors, engineering design, construction, installation, testing, commissioning and quality control.

As the main project beneficiary, TE will be responsible for the following aspects:

- Provide technical, cadastral and other data to contractor in order to facilitate DD process and construction works.
- Organize the process of giving the construction sites to the contractor and signed a Minute of handing over the sites.
- Approve Contractor's Method Statement in order to comply with requirements of industrial safety authorization and monitor the implementation of it.
- Provide site visit to the construction sites and identify technical and other non-conformity and issue Nonconformity Report to Contractor.
- Communicate with controlling Municipal Authorities (Environmental, Sanitary and Fire Agencies) in order to rend a support to Contractor to obtain Construction Authorization.
- Support and provide Contractor with existing emergency equipment and installations in order to keep under control emergency situation.
- Support and provide Contractor with first aids equipment and materials at the Sourse-3/CHP-1 and HOB West for keeping under control incidents at the working places
- Manage the (internal and external) grievance redress mechanism at project level

6. Environmental and Social Management Framework for Pilot Investments in Energy Efficiency Measures

Towards addressing the environmental and social risks that can occur within component 2 implementation, the following instruments have been prepared: (i) Environment and Social Management Framework (ESMF): (ii) Stakeholder Engagement Plan (SEP); and (iii) Labor Management Procedures (LMP). The ESMF covers applicable ESF Standards and the World Bank Group's Environmental Health and Safety Guidelines. The ESMF has checklists for determining where and when site-specific management plans (ESMPs) will be developed.

6.1 Proposed investments

At this stage of project design, it is expected the energy conservation and efficiency activities proposed under Component 2 would include:

(a) installation of about 140 Individual Heating Stations (IHSs) in public and residential buildings;
(b) reconstruction in 40 buildings of the internal heat and DHW distribution which would include network replacement of in-house heating distribution pipes and installation of new piping for switching from vertical to horizontal internal distribution; etc.; and
(c) thermal rehabilitation of 7 residential buildings, including walls insulation and replacement of windows and doors. The selection of project sites will be done during the project implementation.

Installation of IHSs will be done in the basement of buildings and for that purpose it will be necessary to:

(1) isolate a space of about 3x3 meters and install there a door for limiting access to energy equipment;
(2) conduct refurbishing of the walls and painting them, installation of floor tile;
(3) installing the HIS equipment; and,
(4) connecting the equipment to the electricity and thermal heating network for which might be needed welding activities.

All other Component 2 activities are of very small scale, typical for thermal heating supply and for civil works.

6.2 Approach and methodology for preparation of ESMF

During preparation of the ESMF, the following research methods were applied: desk review of the available World Bank, and national regulatory and legal documents related for the environmental and social assessment; screening of secondary socio-economic statistical data, meeting and discussions with implementation entities of DHEIP. It should mention that the similar works to those included in Component 2 were also carried out in several investment packages of the existing project to improve the efficiency of the DHS. Therefore, in preparation of this ESMF it was taken into consideration the experience and knowledge gained from the previous implementation of similar investments components.

The main goal of the ESMF is establish a mechanism ensuring that any potential negative environmental and related social impacts caused by implementation of the Project are avoided, minimized or mitigated. The Framework ensures that the identified subprojects are correctly assessed from environmental and social point of view to meet the WB's ESF and its applicable Standards, as well as local Environmental and Social Laws and Regulations for adequate mitigation of any residual and/or unavoidable impacts.

6.3 Socio-demographic data

At preparation stage of the Project, for Component 2, TE developed a preliminary list of potential beneficiaries. Taking into account that the full list of beneficiaries cannot be definitive at this stage of the project, TE identified a pilot group of buildings that will benefits by the planned investments (IHSs, horizontal distribution system and thermal rehabilitation).

In this group are included 23 buildings, of which 7 will also benefit from thermal rehabilitation of the buildings. These buildings are managed by 13 home owners associations or cooperatives, and 3 municipal enterprises of housing management.

The number of floors of buildings is different – minimum 8 floors, maximum 16 floors.

In total, there are 1695 apartments in the target buildings. Only 27 apartments from total are disconnected from the district heating system, which corresponds to about 1.6% of the residents of these buildings.

According to the data of the *National Bureau of Statistics* (NBS), the average size of an urban household in the Republic of Moldova, for the year 2018, constitutes 2.2 persons. Thus, taking into account the number of households disconnected from the DH system, about 3670 persons live in the targeted pilot buildings.

According to NBS data, only 2% of households in the urban area have 3 or more children in the family, which would correspond to about 34 apartments in the targeted buildings. At the same time, 4% of households in Chisinau municipality (NBS, 2018) children are educated by a single parent, which corresponds to about 67 households or about 147 persons from buildings in the pilot group.

24.8% of the members of households in Chisinau are retired. Thus, the number of pensioners in the targeted buildings would constitute about 910 persons.

Also, according to NBS data for 2019, 52% from Chisinau population are women.

In the *Table 10* below are summarized the socio-demographic data on potential beneficiaries from selected buildings in the pilot group.

Table 10. Socio-demographic data on potential beneficiaries

Category	Number
Buildings	23
Apartments	1668
Residents	3670
Women	1908
Retirees	910
Persons from incomplete families	147

6.4 Potential environmental and social risks and impacts

For projects funded by the WB is required environmental and social screening of each subcomponent to determine the appropriate extent and type of environmental and social assessment needed. Thus, during social screening of residential buildings prior to construction will identify each of such groups/individual and will prepare mitigation measures to minimize impacts. In addition, if those who are to get priority in heating service provision but poor, they will be provided with some concessions / provisions to benefit from the improved heating services.

Component 2 activities will provide a series of social and environmental benefits, including reductions in local pollution such as dust (PM10 and PM2.5) and sulfur dioxide, as well as of greenhouse gases such as carbon dioxide; improving livelihoods by securing heat supply; etc.

The vast majority of the buildings that will benefit from the planned investments have an defective internal heat and domestic hot water supply system, which is not energy efficient. In some of the buildings, the hot water distribution system is totally missing and residents are required to use electrical or other equipments, which supplies hot water at a higher price.

Proposed activities might also generate a series of various adverse environmental and social impacts that would be associated with generation of wastes (including *asbestos containing materials* (ACM)), noise, dust, and air pollution, health hazards and labor safety issues, etc., due to installation of IHSs and civil works for thermal heating supply and renovations. All of them are expected to be typical for small scale construction/rehabilitation works, temporary by nature and site specific, and can be easily mitigated by applying best construction practices and relevant mitigation measures.

Additional to potential impacts enumerated above, based on outcomes of discussions with the implementation entities of previous similar investments, it anticipated some social temporary impacts, such us short-time interruptions of heating and water supply, low impact on resident's income and temporary disturbance of residents living.

The summary of these potential environmental risks and impacts along with the generic mitigation measures are presented in *Table 11* below.

Table 11. Potential risks and impacts and generic mitigation measures

#	Key environmental and social risks and impacts	Mitigation Measures*
1	*Dust and noise* – Exposure to dust from construction materials, demolition and vehicle movement may pose short-term respiratory infirmities (e.g. coughs) to workers or residents. This impact will be short-term manifesting only during construction phase.	- Contractor should use the dust stopping elements (wall, curtains or water construction areas) to control dust - Travel speeds past roadside should be safely low to avoid dust plumes - MEPIU should require contractors to schedule noisy activities outside weekend time - The construction equipment and machinery used should be calibrated according to the Noise Standards - Proper and prior planning and appropriate sequencing and scheduling of all major construction activities - Construction materials would be stored in covered stores or enclosed spaces - Application of GRM at project level and LMP procedures
2	*Vibration, and emissions* – It will be generated in the course of the transportation of construction materials and truck traffic. Emission of inorganic dust from digging loading works and emission of harmful substances and dust from combustion of diesel used by transportation means and machinery occur during the construction works. Welding works cause welding aerosol and manganese monoxide emissions. Concrete mixers work result in concrete dust emissions.	- Organizing work from 7:00 till 18:00 on weekdays - Minimizing operating time of the rustling equipment idling - Using the modern equipment and mechanisms with the low level of noise and vibration - Covering the motor casings of generators, air compressors and other similar equipment - Operating the equipment on the maximum distance from the housing - Providing personal protective equipment (PPE) to all workersApplication of GRM at project level and LMP procedures
3	*Generation of excavated materials and construction waste, their handling and spill response* – Construction debris will be generated during rehabilitation works, including the possibility of asbestos containing roofing material heavily used in construction till recent time. Common waste streams are wood/timber waste with sharp nails, cement bags, demolition debris, etc. – improper management of construction waste would pose public health impacts and environmental contamination.	- It should be a contractual obligation for the contractor to properly manage construction waste at any buildings - Waste must not be dumped in surroundings in such way to create opportunities to be reused by local people. Disposal of waste should be in a designated location as advised by a local environmental regulation - The general provision regarding handling with construction materials that contains asbestos are described in *Section 7.1* and indicated in *Annex 6*. These effects will be localized, and will be minimized by means of appropriate removal and disposal procedures, which may include but not be limited to careful selection of waste temporary accumulation sites, clear delineation of these sites to exclude their expansion, prevention of washout of such sites, obtaining written agreement on permanent disposal site with local authorities and timely transportation of waste to the designated dump site - Application of GRM at project level and LMP procedures
4	*Waste waters* – Impact on the local water waste treatment system due to use of sewer system for spilling the solvents, paints, waste from construction materials etc.	- Implementation of suitable disposal methods of sediments/construction debris in tune with local condition to avoid water logging at construction area; - It should be a contractual obligation for the contractor to properly manage liquid construction waste, chemical waste at any stages of the civil work activities - Application of GRM at project level
5	*Labor and safety risks* – Civil works and construction traffic may pose several risks e.g. road accidents risk at road crossings and on public and residential buildings.	- The Contractor must provide appropriate and adequate PPE to all workers - Development of a contractor' Labour Management Plan (C-LMP) - Training should be carried out regularly to ensure

#	Key environmental and social risks and impacts	Mitigation Measures*
		workers are aware on LMP provisions and, particularly, on occupational risks and their control measures. - Fence of the construction site to limit un-authorized access by non-construction personnel - Safety signs, banksmen, speed control measures and adequate sensitisation of construction workers and people in project area should be undertaken to minimise accident risk - Contractors should work together with responsible persons from implementation entities to agree on public safety measures which should be disseminated to local people, in case it will be necessary - Application of GRM for workers, GRM at project level and developed Project Labour Management Procedures (LMP)
6	*Chance finds* – Some of the project activities can be in places where presence a chance of finding archeological heritage. It may happen during earth works, especially during soil excavation for tranches for connection to thermal heating pipes.	- Inclusion of special provisions in the ESMPs and following national requirements - Application of GRM and LMP procedures
7	*Labour influx* – No labor influx or large number of outside laborers for construction works is expected. Installations of IHSs – from 2 to 4 workers per buildings; rehabilitation if internal heating system - from 2 to 6 workers per building; thermal rehabilitation - from 5 to 15 workers per buildings.	- The site specific ESMP will be developed prior construction works begins. During preparation, the ESMP should identify the risks of labor influx and propose generic mitigation measures - Implementation of appropriate mitigation and monitoring programs, which includes development and implementation of a stakeholder engagement program (SEP implementation) - Application of GRM for workers and GRM at Project level - Monitoring and supervision, and, as needed, adaptive management actions
8	*Gender based violence* - The project is assessed as Low on gender-based violence (GBV) risk.	- The site specific ESMPs will be developed and will include GBV risks assessment and mitigation measures to prevent and respond to GBV risks - GBV-sensitized grievance mechanism (GRM at project level) - Awareness raising/training of all workers and community members on GBV risks and mitigation measures
9	*Access restriction*- during thermal rehabilitation works might be some temporary access restrictions. It will be established when the sites are known.	- Organization of the site according to construction norms - Implementation of appropriate mitigation and monitoring programs, which includes development and implementation of a stakeholder engagement program (SEP implementation) - Application of GRM at Project level - Monitoring and supervision, and, as needed, adaptive management actions
10	*Resident' income* – the reconstruction of internal heat and DHW systems and thermal rehabilitation of buildings could involve the financially contribution of residents. Residents could be financially affected when connecting their heating system from apartment with the building new heat and DHW system.	- Development and implementation of a stakeholder engagement program (SEP implementation) - Establishing a clearly defined procedure for obtaining the agreement of the residents regarding the accomplishment of the planned works - Negotiation of a partnership contract with the residents in which flexible payment methods will be established (if necessary) - Application of GRM at Project level - Monitoring and supervision, and, as needed, adaptive

#	Key environmental and social risks and impacts	Mitigation Measures*
		management actions
11	*Disturbance of residents living* - short –time interruption of heating and water supply will be.	- Carrying out construction works outside the heating season to avoid heat interruption - Disconnection with water supply only from strict necessity, no more than 2 hours and with a preventive notice for the residents - Site-specific ESMP implementation - SEP implementation - Application of GRM at Project level.

***Note:** It is obvious, that all proposed above mitigation measures will be adjusted and completed according to existing technical/safety/sanitary norms and safeguards solutions within Detail Design process, and will be submitted as a project environmental protection documentation for approval procedure by the State Ecological Expertise before the construction work will start.

6.5 ESIA and ESMP for Component 2 activities

6.5.1 Conducting subproject ESIA and ESMP

While per national legislation for proposed under Component 2 activities it is not required special EISA document, but it is necessary the construction authorization per national legislation. According to WB ESS1 for all subprojects and activities with some environmental and social risks and impacts a site-specific mitigation measures plan should be prepared in accordance with this *Environmental and Social Management Framework* (ESMF) document. These will be the responsibility of beneficiaries (Termoelectrica and building owners/pennants associations), supported by MEPIU. The ESMP documents must form an annex of bidding and contracts documents for construction works. In addition, the *Labor Management Procedures* will also form a part of bidding documents for proposed civil works. Implementation of ESMPs on the ground will be the part of the construction contractor's task, however in case of any non-compliance, the local authorities, or the subproject beneficiaries will inform the MEPIU which is expected to take corrective action as the primary responsible party.

Considering low scale of Component 2 activities potential environmental and social impacts, it is proposed to apply the ESMP in the form of the Checklist (see *Table 12*) that has been developed for the sub-projects with a low risk level to ensure recoding and implementation of the basic best practice measures within the construction or rehabilitation civil works, and, at the same time, to create convenient to use document corresponding to the World Bank ESS1 requirements. The *ESMP Checklist* consists of three sections:

Part 1 is a descriptive part, which specifies characteristics of the sub-project in terms of physical location in-situ, organizational conditions regulating legislative and regulatory frameworks; description of the project is also given, which includes that its need in the program of increasing technical and organizational capabilities is specified, and, also description of the public consultation process is given. This Part can be about two pages in volume, annexes can be used for more information, if necessary.

Part 2 sets forth results of assessment of possible environmental and social impacts within the framework of the subproject, herewith, assessments are given in simple form "yes" or "no", and then measures for mitigation are given for each separate work type. At present,

this list suggests examples of possible consequences. There is a possibility to extend the list of problematic issue and/or impacts in the Checklist.

Part 3 shall include the work control (monitoring) plan in the course of construction and the project execution.

Part 2 and Part 3 of the Checklist will be included in the Bidding Documents for the contractor.

At practical application of the Checklist (see *Table 12*), one shall fill in Part 1 of this document, where all corresponding characteristics of the work area are enumerated and documented. Part 2 specifies types of scheduled works, marks are ticked in the boxes, a filled in tabular form of the Checklist is saved and annexed as an integral part to the contract for work execution and, by analogy with all other technical and commercial conditions of these works, is signed by contract parties. Part 3 of the Checklist, namely, the work monitoring plan, is designed for the job inspector, for proper expertise of quality of safety conditions fulfillment by the contractor.

6.5.2 ESMP Checklist disclosure and public consultation

As per WB requirements, all prepared draft ESMP documents should be disclosed and consulted with residents and all involved parties. For that purpose, these documents will be (a) disclosed on TE or MEPIU website; and (b) the hard copies of the documents will be provided to local public administrations. Furthermore, in about 2 weeks from the ESMPs disclosure it is necessary to conduct public consultations, informing while disclosing the documents about the venue for the public briefings. In the case of installation of IHSs, when there will be no any impacts on residents and their access restriction, such public briefing can be done virtually, by inviting all interested parties to provide their comments. In the case there will be potential impacts on residents and access restriction, then it is necessary to conduct a face-to face meeting, providing information about these impacts and what is proposed to mitigate and monitor them. The public briefings will be done jointly by MEPIU representatives and local public authorities and the management of building to be included in the project.

The results of public consultations should be attached to the ESMP documents and received comments need to be addressed in the revised documents.

6.6 ESMP supervision, monitoring and reporting

As specified above under the section of monitoring for Component 1 activities, the environmental and social issues included within the mitigation measures will be monitored and supervised by the project beneficiaries, contractors and MEPIU. Although the environmental and social impacts for Component 2 activities are expected to be low, the potential negative environmental and social impacts are planned to be prevented or mitigated during the construction and operation stages. This system helps the WB and the Client to evaluate the success of mitigation as part of project supervision and allows taking an action when needed.

Environmental and social monitoring to be implemented by MEPIU must provide information about key environmental and social aspects of the subprojects, particularly the project environmental and social impacts and the effectiveness of taken mitigation measures. Such information enables to evaluate the success of mitigation as part of project supervision and allows corrective action(s) to be implemented, when needed. In this regard the Monitoring Plan identifies

monitoring objectives and specifies the type of monitoring, and their link to impacts and mitigation measures. Specifically, the monitoring section of the ESMP provides: (a) a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements; and, (b) monitoring and reporting procedures to: (i) ensure early detection of conditions that necessitate particular mitigation measures, and (ii) furnish information on the progress and results of mitigation. A Monitoring Plan Format is presented in the Part C of the ESMP Checklist enclosed in this document (see *Table 12*).

Regular semiannual subproject progress reports for Component 2 activities should include a section entitled "Project Environmental and Social Management". The section should be as brief as possible, providing a description of the monitoring activities, any issues identified and how they were or are planned to be resolved. These reports shall also contain corrective actions that may be required concerning environmental issues.

Table 12. Draft Format for an EMP Checklist for Component 2 subprojects

PART 1: 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	Contactor
SITE DESCRIPTION				
Name of site				
Describe site location			Attachment 1: Site Map [ ] Y [ ] N	
Who owns the land?				
Geographic description				
LEGISLATION				
Identify national & local legislation & permits that apply to project activity				
PUBLIC CONSULTATION				
Identify when / where the public consultation process took place				
INSTITUTIONAL CAPACITY BUILDING				
Will there be any capacity building?	[ ] N or [ ]Y if Yes, Attachment 2 includes the capacity building program			

PART 2: ENVIRONMENTAL /SOCIAL SCREENING			
Will the site activity include/involve any of the following:	**Activity**	**Status**	**Additional references**
	Building rehabilitation	[ ] Yes [ ] No	See Section **B** below
	New construction	[ ] Yes [ ] No	See Section **B** below
	Individual wastewater treatment system	[ ] Yes [ ] No	See Section **C** below
	Historic building(s) and districts	[ ] Yes [ ] No	See Section **D** below
	Acquisition of land[12]	[ ] Yes [ ] No	See Section **E** below
	Hazardous or toxic materials[13]	[ ] Yes [ ] No	See Section **F** below
	Impacts on forests and/or protected areas	[ ] Yes [ ] No	See Section **G** below

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
A. General Conditions	Notification and Worker Safety	The local construction and environment inspectorates and communities have been notified of upcoming activities The public has been notified of the works through appropriate notification in the media and/or at publicly accessible sites (including the site of the works) All legally required permits have been acquired for construction and/or rehabilitation All work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment. Workers' PPE will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots) Appropriate signposting of the sites will inform workers of key rules and regulations to follow.
B. General Rehabilitation and /or Construction Activities	Air Quality	During interior demolition use debris-chutes above the first floor Keep demolition debris in controlled area and spray with water mist to reduce debris dust Suppress dust during pneumatic drilling/wall destruction by ongoing water spraying and/or installing dust screen enclosures at site Keep surrounding environment (side-walks, roads) free of debris to minimize dust There will be no open burning of construction / waste material at the site There will be no excessive idling of construction vehicles at sites
	Noise	Construction noise will be limited to restricted times agreed to in the permit During operations the engine covers of generators, air compressors and other powered mechanical equipment should be closed, and equipment placed as far away from residential areas as possible
	Water Quality	The site will establish appropriate erosion and sediment control measures such as e.g. hay bales and / or silt fences to prevent sediment from moving off site and causing excessive turbidity in nearby streams and rivers.
	Waste management	Waste collection and disposal pathways and sites will be identified for all major waste types expected from demolition and construction activities. Mineral construction and demolition wastes will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and stored in appropriate containers. Construction waste will be collected and disposed properly by licensed collectors The records of waste disposal will be maintained as proof for proper management as designed. Whenever feasible the contractor will reuse and recycle appropriate and viable materials (except asbestos)

[12] potential 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.
[13] Toxic / hazardous material includes and is not limited to asbestos, toxic paints, removal of lead paint, etc.

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
C. Individual wastewater treatment system	Water Quality	The approach to handling sanitary wastes and wastewater from building sites (installation or reconstruction) must be approved by the local authorities Before being discharged into receiving waters, effluents from individual wastewater systems must be treated in order to meet the minimal quality criteria set out by national guidelines on effluent quality and wastewater treatment Monitoring of new wastewater systems (before/after) will be carried out
D. Historic building(s)	Cultural Heritage	If the building is a designated historic structure, very close to such a structure, or located in a designated historic district, notify and obtain approval/permits from local authorities and address all construction activities in line with local and national legislation Ensure that provisions are put in place so that artifacts or other possible "chance finds" encountered in excavation or construction are noted, officials contacted, and works activities delayed or modified to account for such finds.
E. Acquisition of land	Land Acquisition Plan/Framework	If expropriation of land was not expected and 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 task Team Leader is consulted. The approved Land Acquisition Plan/Framework (if required by the project) will be implemented
F. Toxic Materials	Asbestos management	If asbestos is located on the project site, mark clearly as hazardous material When possible, the asbestos will be appropriately contained and sealed to minimize exposure The asbestos prior to removal (if removal is necessary) will be treated with a wetting agent to minimize asbestos dust Asbestos will be handled and disposed by skilled & experienced professionals If asbestos material is be stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately The removed asbestos will not be reused
	Toxic / hazardous waste management	Temporarily storage on site of all hazardous or toxic substances will be in safe containers labeled with details of composition, properties and handling information The containers of hazardous substances should be placed in an leak-proof container to prevent spillage and leaching The wastes are transported by specially licensed carriers and disposed in a licensed facility. Paints with toxic ingredients or solvents or lead-based paints will not be used
G. Affects forests and/or protected areas	Protection	All recognized natural habitats 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. For large trees in the vicinity of the activity, mark and cordon off with a fence large tress and protect root system and avoid any damage to the trees Adjacent wetlands and streams will be protected, from construction site run-off, with appropriate erosion and sediment control feature to include by not limited to hay bales, silt fences There will be no unlicensed borrow pits, quarries or waste dumps in adjacent areas, especially not in protected areas.

Template for Environmental and Social Monitoring Plan

Environmental and Social Aspects	**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 design							
Potential tree losses	Trees to be cutted	Survey on site during detailed design	Visual monitoring, mapping of tress, include in detail design	During detailed design Before works starts,	Constructions may affect municipal green zones	Construction costs	Termoelectrica, Design Company,
Air quality	Dust, smog, waste burning[14]	To be determined during design	Visual monitoring	During works Daily	Air pollution prevention	Construction costs	Termoelectrica,
Top soil preservation	Soil	In parks, green areas	Visual monitoring	Monthly	Soil pollution prevention, Aesthetic view	To be included in BoQ	Termoelectrica,
During construction phase							
Potential tree losses	Trees to be cutted Trees to be planted	Survey on site during works Green areas	Visual monitoring, Obtain cutting trees permits	Permanently Before works starts,	Constructions may affect municipal green zones	Construction costs	TE, Design Company, Construction
Air quality	Dust, smog, waste burning	Survey on site during works	Visual monitoring	During works Daily	Air pollution prevention	Operation costs	Contractor, Termoelectrica, CPH,
Air pollution from improper maintenance of equipment	Technical condition	Car parking area Onsite	Regular technical inspection	During works Daily	Air pollution prevention	Operation costs	Contractor, CPH,
Top soil preservation	Soil	In parks, green areas	Visual monitoring	Monthly	Soil pollution prevention, Aesthetic view	To be included in BoQ	Termoelectrica,
Worker's safety and health	Workers safety	Works sites	Accident register Training register Provide PPE	Permanently	To protect workers safety and health	Construction costs	Contractor, Labor Inspection, Engineer

[14] According to Law on Wastes #209 of July 29, 2016 it is forbidden to burn any solid wastes on construction site.

Environmental and Social Aspects	**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?)
	Labour and working conditions		Organize adequate works planning				
Material transport	Are the truck loads covered or wetted? Compliance with legislation (restricted working hours; haul routes) dust suppression methods where required	Job site / municipal streets	Supervision	Unannounced inspections during work	Avoid dust and split of fine material Avoid damage and pollution of municipal routes	Construction costs	Construction Supervision (Engineer), Road police
During operation phase							
Planting trees	Regular monitoring and control of successful growth of new planted trees	At locations of new planted trees	Replanting of trees that have died	Monitoring to be conducted in autumn so as to allow for replacement of failures	Successful grow of trees	Construction costs in BoQ	Contractor 1st Year / Municipal agency "Spatii Verzi" subsequent year(s)

7. Addressing requirements under the WB ESSs

7.1 Requirements for addressing potential labor safety risks (ESS2)

To address identified above *Occupational Health and Safety* (OHS) risks and impacts associated with the civil works, it would be necessary to undertake a series of activities and implement mitigation measures which should be clearly specified in the construction contracts and enforced by the contractors. These measures that are in line with the *WB Guidelines on Environment, Health and Safety* are presented in *Table 4* above.

Requirements regarding Asbestos. As, during the proposed under Component 2 activities it might happen there will be identified *Asbestos Containing Materials* (ACMs), in such cases it is necessary to undertake a series of mitigation measures that would be reflected in short action plans (see *Annex 6*). Overall these plans should describe and evaluates the risk of contractors (and others) encountering ACM at the Project construction sites during the implementation stage of the project; and to provide a procedure for dealing quickly and safely with any ACM that may be found. Such plan should include:

- Containment of interior areas where removal will occur in a negative pressure enclosure;
- Protection of walls, floors and other surfaces with plastic sheeting;
- Removal of the ACM using wet methods and promptly placing the material in impermeable containers;
- Final clean-up with vacuum equipment and dismantling of the enclosure and decontamination facilities;
- Disposal of the removed ACM and contaminated materials in an approved landfill;
- Inspection and air monitoring as the work progresses, as well as final air sampling for clearance, by an entity independent of the contractor removing the ACM;
- Require that the construction firms/and or individuals employed during the construction have received training in relevant health and safety issues.

The general approach while handling this material is that constructors avoided crushing/destruction of asbestos plates from the roofs and or from the walls insulation and deposited them in an organized manner on the construction sites. Also, the constructors should avoid releasing asbestos fibres into the air from being crushed. It is also imperative while working with asbestos plates the workers must wear special closing, gloves and respirators. If the use of asbestos-containing materials (ACM) it is anticipated for the roof renovation, it is necessary to provide brief information about alternative non-asbestos materials, their availability and the rationale for the material choice made. Once the presence of ACM in the existing infrastructure has been presumed or confirmed and their disturbance is shown to be unavoidable, incorporate the following requirements in the ESMP for construction works: (a) provide for all construction workers with personal protection means, including respirators and disposable clothing; (b) require that the beneficiary or the selected contractor notifies authorities of the removal and disposal

according to applicable regulations and cooperates fully with representatives of the cognizant agency during all inspections and inquiries.

Requirements on Work Clothing & Personal Protective Equipment. Required *personal protection equipment* (PPE) will always be worn. At a minimum, each employee is required to wear a hard hat and safety glasses. High visibility safety vests with reflective striping are required when employees are exposed to vehicular traffic. In the absences of vehicular traffic, high visibility shirts should always be worn. Depending on circumstances, additional PPE may be required. This determination will be made by supervisor and may include: (i) Protective gloves; (ii) Hearing protection; (iii) Full face shields when cutting, grinding, or chipping; (iv) Chemical splash goggles; (v) Respiratory protection; (vi) Other equipment such as protective clothing, fall protection when working above 6 feet, or safety-toed shoes. All workers must wear shirts with sleeves, long work pants, and sturdy work shoes or boots. Sleeveless or tank top shirts, short pants, sweatpants, sneakers, sandals, and high-heeled or open-toed shoes are not permitted.

Requirements on tools & equipment safety. All power and extension cords must be equipped with ground-fault protection. If not built-in, a portable protection must be used between the receptacle and cord. The use of all tools and equipment, including ladders, scaffolding, powder-actuated tools, forklifts, etc., shall be performed by skilled, properly trained workers. Tools and equipment must be inspected before use and removed from service if found defective. Safety guards, devices, or features must be maintained in full operating condition.

7.2 Requirements on Recourse and Efficiency, Pollution Prevention and Management (ESS3)

The resource efficiency provisions under the present project shall comply with both – ESS3 requirements as well as with the approach on *Resource Efficiency for Public buildings,* promoted in the Republic of Moldova starting with beginning of 2000. Buildings are responsible for over 45% of total energy consumption and are important sources of greenhouse gas/GHG pollutants. Respectively, for the Republic of Moldova, the energy efficiency can be achieved through the adoption and application of the concrete programs of thermal energy rehabilitation of buildings and modernization of their installations. Respectively, the design activities for proposed under Component 2 energy efficiency and energy conservation will consider the best international practice in this regard.

7.3 Requirements for Community Health and Safety (ESS4)

To comply with the requirements under this ESS the contractors need to undertake a series of activities.

Site Protection and Security. Barricades, signs, or guardrails must be used wherever necessary for the physical protection of people or property, especially in the case of Component 2 activities. Barricades or guardrails should act as physical barriers, preventing contact by passers-by with the hazards created by energy efficiency activities. Also, signs should be used to direct traffic, both vehicular and pedestrian, safely through or around the work site. Secure worksites by locking doors, fencing, or barricades after work hours and whenever the site is unoccupied. Whenever required, follow check in/out procedures when entering or leaving the work site.

Fire Safety & Housekeeping. Follow hot work permit procedures for cutting, welding, or burning. Erect arc shields for the protection of co-workers or passers-by. Follow good housekeeping practices. Keep work areas orderly and clean-up worksite debris at the end of each work shift. Smoking is permitted in designated areas.

Disciplinary Procedure. "It is the Institution's expectation that all employees will conduct themselves according to generally accepted standards of conduct and performance. When employees do not meet these standards, it is the supervisor's responsibility to act in a timely manner and initiate a program of disciplinary steps to address the problem." Contractors may have established disciplinary procedures for worksites under their control that may result in dismissal from the project for violations of safety rules and procedures.

Inadequate ***lighting and fencing of construction sites*** inside of settlement areas can be dangerous for pedestrians and vehicles especially during the night time. Increasing of traffic due to trucks and vehicles movements to construction sites, temporary closing of roads during pipe lying inside of settlements may cause inconvenience for local population as well. In addition, pipe lying will cause temporary blockage of household access.

Untimely and ***inefficient disposal of solid wastes*** and improper sanitary conditions generated by the construction workers at construction sites may cause pollution of the surrounding environment and affect the health of local people. Moreover, a movement of heavy tracks may destroy or deteriorate conditions of roads inside settlements.

7.4 Requirements on Cultural Heritage (ESS8)

As required by the WB ESS8 and national legislation[15], rehabilitation of each cultural heritage site will be done in accordance with principles of good practice in the cultural heritage field. The task team that would be assigned for project design would include a safeguard specialist and/or a PCRs specialist knowledgeable in aspects of heritage preservation, based on an agreed PCRs management plan which will be consulted with all interested parties and will consider received stakeholder suggestions and inputs. In the case the project will support subprojects related to various civil works that would involve significant excavations, demolition, movement of earth, or other changes in the physical environment, during which unexpectedly might be found physical cultural resources, all such subprojects will have special clauses in all contracts for civil works on "chance finds procedure" which will set out how chance finds associated with the subproject will be managed.

These will specify the following: (a) do not disturb any chance find further until an assessment by competent professionals is made and actions are identified; (b) notify relevant authorities of found objects or sites by cultural heritage experts; (c) to fence-off the area of finds or sites to avoid further disturbance; (d) to conduct an assessment of found objects or sites by cultural heritage experts; (e) to identify and implement actions consistent with the requirements of the ESS8 – *Cultural Heritage* and national law; and (f) when needed, to train project personnel and project workers on chance find procedures.

7.5 Supervision and reporting on Occupational Health and Safety accidents

[15] Ref.: Law on the protection of monuments #1530/1993 and Law of culture #413/1999.

Occupational Health and Safety (OHS) issues must be covered under all supervision and monitoring activities. That means specifically asking whether there have been any incidents, checking logs and the availability and use of protective and preventative equipment. Respectively, the safeguards sections of all progress reports include statements indicating that the PIU have checked occupational health and safety issues, and existing procedures in this regard, and asked if there have been any serious incidents or fatalities. Similarly, the PIU will ensure that at the project launch workshop and in the operational manual contain adequate provisions for OHS issues.

The relevant text on OHS to be included in the progress reports might be as follows*:*

> *The Project has reported **X** Occupational Health and Safety (OHS) incidents since its start. Of these, **X** are classified as SEVERE, **X** as SERIOUS, and **X** as INDICATIVE. All incidents are confirmed accounted through the Environment and Social Incident Response Toolkit (ESIRT) (see below). During this mission period, the PIU checked with all contractors and consultants if any OHS incidents occurred, either reported or not yet reported. The MEPIU found (EITHER) (i) no new incidents occurred during this supervision period, or (ii) **X** incidents occurred (include classification, brief description of event and follow-up actions, and confirmation event was reported via SIRT).*

The World Bank *Environment and Social Incident Response Toolkit* (ESIRT) helps to manage incidents consistently by providing clear guidance on how to classify the incident's severity, how to provide a proportional response according to severity, and clarifies roles and responsibilities. ESIRT also requires a root cause analysis to be done by the Borrower when there is a severe incident.

"Incident" is defined as an accident, incident, or negative event resulting from failure to comply with identified Safeguards measures OR conditions that occur because of unexpected or unforeseen Safeguards risks or impacts during project implementation. Examples of Safeguards incidents include: fatalities, serious accidents and injuries; social impacts from labor influx; *sexual exploitation and abuse* (SEA) or other forms of gender-based violence (GBV); major environmental contamination; child labor; forced labor; risks and adverse impacts from temporary project induced labor influx; loss of biodiversity or critical habitat; loss of physical cultural resources; and loss of access to community resources. In most cases an incident is an accident or a negative impact if the contractor does not comply with the WB security policy or unforeseen events which occurred during the Project implementation.

The WB ESIRT does not replace monitoring procedures and implementation of regular monitoring of the implementation of the project safeguard provisions. The document includes the following six stages of the incident management and reporting process:

> Stage 1. *Informing* the MEPIU, Termoelectrica, local authorities, the WB, the public, providing urgent health care and providing the necessary safety measures for workers. All measures must be taken immediately. In parallel, all necessary data about the incident are collected - its scope, degree of danger to public health and environment, location, cause of occurrence, duration, what decisions are taken by the Executor, what actions should be taken next, etc.
>
> Stage 2. *Assess severity of the incident.* The Executor should promptly provide information to the WB about the incident and its degree of danger.

Stage 3. *Notification.* The Executor is preparing an incident notification for the WB. Submission of a notification in the event of an incident should be determined when signing a contract with the Contractor.

Stage 4. *Investigation of the incident.* The Executor provides any information requested by the WB and does not prevent to visit the incidence scene. The Executor is also obliged with the assistance of the Contractor to analyze the causes of the incident and to document the information received. The Executor may need to involve external experts in investigation of the incident. The term of the investigation should not exceed 10 days after the incident. The findings of the investigation should be used by the Executor and the Contractor to develop corrective actions and draw up a *Corrective Action Plan* (CAP) to avoid any future repetition of what happened. Besides, the conclusions should be submitted to the WB.

Stage 5. *Corrective Action Plan.* The Executor develops a CAP with specific actions, responsibilities, implementation dates and monitoring program and discusses it with the WB. In case of serious incidents, the WB and the Executor agree on a set of measures to eliminate the major causes of sources for such incidents. The CAP indicates actions, duties and terms that should be performed by the Executor and the Contractor. The Executor is responsible for implementation of the CAP. The CAP may include development or modernization of technical measures to protect the environment and prevent further pollution, conduct training, including on issues of emergency health care, compensation for insurance claims of injury or death. If the WB considers that the CAP measures are not effective, and/or the Executor has shown unwillingness or inability to take corrective measures, the WB may consider a decision on complete or partial suspension of the loan payments until such actions are taken, or in some cases it may consider a question of cancellation of the whole or part of the Project after its suspension.

Stage 6. *Monitoring execution of the CAP*. The Executor performs the CAP, monitors execution of individual CAP items and provides a report on implementation to the WB. For supervision of OHS issues during the project implementation which include civil works, the PIU Environmental Specialist may use, as appropriate, the "Health, Safety and Wellbeing Inspection Checklist" see *Annex 7*.

The proposed above scheme and stages of subproject beneficiaries and of MEPIU in the case of OHS accidents are mandatory and will be implemented through the whole project implementation.

7.6 World Bank assistance in complying with the ESSs

The Bank's environmental and social specialists will provide support to MEPIU to ensure smooth implementation of the Project activities in consistency with the applicable Environmental and Social Standards of the Bank. Regular site visits will be carried out to monitor the compliance of the contractors with good construction practices and other requirements to be specified in site-specific ESMPs. The Bank task team will provide guidance in, and review, key environmental and social monitoring documents, such as ESMPs, Completion Reports, and semiannually progress reports and support MEPIU in meeting its commitments set out in ESCP.

8. Institutional arrangements for implementation

8.1 Institutional responsibilities

Overall distribution of the responsibilities of all parties involved in the project is given in *Table 13* below.

Table 13. Roles and Responsibilities in ESIA, ESMP and ESMF implementation process

Responsible Party	Responsibilities
World Bank	− Review, acceptance and disclose ESMF, SEP, ESCP on WB's official website; − Review the site-specific ESMPs for all subprojects; − Review labor management procedures; − Conduct implementation support and supervision missions in order to ensure that the Project is following WB ESS requirements
Implementing Agency (MEPIU)	− Prepare and implement the site specific ESIA&ESMP (for Component 1 activities) and the ESMF for Component 2 activities and submit for Bank review and approval; − Disclose the ESMF and ESCP on its website; − Prepare ESMPs for Component 2 activities according to ESMF; − Submit ESMPs to the WB for prior review; − Perform the quality control and review of ESMPs; − Disclose ESMPs on its website and incorporate ESMPs into bidding documents; − Prepare Labor Management procedures; − Assign field specialists for the environmental and social monitoring; − Perform inspections of the implementation of ESMP by the construction contractor, make recommendations and decide whether additional measures are needed or not; − In case of non-compliance, ensure that the contractor eliminates the noncompliance and inform the WB about the noncompliance; − Prepare, update and implement a Stakeholder Engagement Plan (SEP) that considers vulnerable groups in addition to paying attention to the gender aspect of the Project; − Hold consultation meetings, and prepare and distribute leaflets or other informative documents to inform communities, on project, and its impacts and construction schedule; − Set up a two-level GRM, monitor and address grievances related to the project under specified timelines; − Manage the grievance redress mechanism for workers − Provide guidance to the construction contractor and engineering supervision firm; − Summarize the environmental and social issues related to project implementation to WB in regular progress reports; − Be open to comments from affected groups and local environmental authorities regarding environmental aspects of project implementation. Meet with these groups during site visits, as necessary;

Responsible Party	Responsibilities
	− Coordinate and liaise with WB supervision missions regarding; environmental and social safeguard aspects of project implementation.
Beneficiary – Termoelectrica SA	− Disclose the ESMF, ESCP and SEP documents on Termoelectrica website; − Provide Technical data to MEPIU for preparing bid document; − Provide Technical data for Contractor to prepare DD; − Conduct with Contractor and State Authorities (environment, sanitary and firefighting representatives) inspection on construction locations; − Attend at public consultation and provide information to all interested parties; − Manage the internal and external GRM at project level − Be open to comments from affected groups and local environmental authorities regarding environmental aspects of project implementation; − Report project performances to all interested parties; − Conduct randomly monitoring activities for the implementation of site specific ESMPs; − Conduct audit as per project requirements.
Building owners/associations	− Responsible for the process of getting Certificate of Urbanism and other approvals and permits for ensuring Detail Design process and civil works authorization − Conduct public consultation meetings with apartments' owners and sign Minute of meeting − Provide access to Termoelectrica and Contractor in the basement of the building − Participate at homeowner's association meeting and discuss issues regarding community health and safety − Report any EHS aspects and incident to MEPIU/Termoelectrica
Contractor	− Develop for Component 1 activities operational ESMP and own Labor Management Plan, TMP, etc. − Implement ESMPs on site, if required revise the ESMP together with MEPIU; − Implement labor management procedures; − Manage the grievance mechanism first level and/or direct the grievances to TE and MEPIU, communicate grievances to MEPIU regularly through ESMP monitoring reports; − Monitor site activities on a regular basis (daily, weekly monthly etc.); − Prepare the ESMP progress reports for the review of MEPIU; and − Compensate or fix all damages occurred during construction (i.e. damages to green spaces or to environment, infrastructure) as set out by the ESMP.
Municipal controlling authorities, including Environmental, Sanitary and Fire Agencies)	− Elaborate and issue Urbanism Certificate for Design − Elaborate and issue Informative Urbanism Certificate − Decide if it is necessary Environmental, Sanitary and Firefighting Permits for Design Stage − Checking and verifying DD, based on issued Urbanism Certificate for Design, by and authorized institution of Republic of Moldova − Elaborate and issue Building Certificate − On behalf of Mayoralty of Chisinau, Environmental Agency, AMSP and Fire Service have the responsibility to control implementation of issued Permits − Control if ESMP is implemented correctly.

For the Component 2 activities preparation and implementation of ESMP Checklist is expected to cost only a small fraction of design and construction cost, as most mitigation measures will be very generic, off-the-shelf, and implementable without specialized skills, experience or equipment. Moreover, it is assumed that most of the cost is covered in the bid proposals. For first three subprojects, MEPIU will submit ESMP Checklists to WB for prior review. When the WB is confident that MEPIU has demonstrated that the process is accurate, WB will transfer this prior review to post review.

8.2 Institutional responsibilities and capacities for ESMF implementation

This section describes all involved parties in the ESMF implementation and an assessment of their capacities to perform their duties (see *Table 12* above). Based on that it was proposed a set of capacity building and strengthening of involved institutions capacity to assess and control the environmental and social risks and impacts of the project activities and for inspection and enforcement to comply with national legislation and requirements of the WB ESSs.

Termoelectrica SA. The main project implementing agency is Termoelectrica SA, which will be closely involved in all stages of project design and implementation: procurement design, preparation of bidding documents (especially technical specifications), evaluation of bids and selection of contractors, engineering design, construction, installation, testing, commissioning, and quality control. The company is certified in conformity with requirements of ISO 9001 and now the company is in the process of establishing processes in conformity with requirements of ISO 14001 (Environmental Management) and ISO 45001 (Occupational Health and Safety Management) and has in its structure three subdivisions responsible for the issues related to environmental safeguards (Environmental Service, in charge of all environmental issues; Safety and Occupational Hazards division; and Technical Supervision division, which is responsible for ensuring all civil works financed by the company are done in compliance with the design documents and existing norms and standards).

The Project Management Unit (MEPIU). The daily project implementation duties will be delegated by the MoEI to its project implementation unit (MEPIU), established under the Government's Decree #1276 of Dec 21, 2000, as an autonomous legal entity, responsible for the day-to-day management of IFI-funded projects. MEPIU will take on the reporting functions on behalf of the Government and will carry out the fiduciary responsibilities (disbursement, financial management, procurement, and monitoring & evaluation) under the Project in compliance with the requirements of the World Bank Environmental and Social Standards (ESSs), to be outlined in the Financing Agreement and Project Operational Manual. The unit is staffed with highly qualified and experienced professionals, both in technical, as well as environment and social aspects and will ensure project implementation in accordance with project ESF documents. For the purpose of implementing ESF environmental social issues, MEPIU has in its staff an Environmental Specialist (ES) and a Social Specialist. Their main responsibility is to coordinate all Environmental and Social Assessment activities and to ensure adequate implementation of ESMF and site specific ESMP requirements. Overall, the role of the environmental and social specialists are (see *Table 8*) but not limited to: (i) provide assistance to the project's beneficiaries to determine the environmental and social risks and impacts that can be generated by proposed activities supported under the project as well as prescribe the required mitigation actions to be taken; (ii) conduct screening and ensure that due environmental and social work (ESIAs/ESMPs) are prepared for the proposed investments; and, (iii) monitor and report on a regular basis the effects on the environment and on social issues that financed activities may provoke and ensure that mitigation is carried out. The environmental and social specialists also must regularly and selectively visit sub- projects and ensure proper environmental and social monitoring for project activities.

Beneficiaries and Contractors' responsibilities. The actual investments will be carried out by contractors selected through the public tendering process. They should operate in full compliance with national environmental and social legislation and with the ESMPs requirements. Further, the contractors are obliged to follow regulative requirements of the national law related to traffic safety, occupational health and safety; fire safety; environmental protection; and community health and safety. All ESMPs' associated activities will be financed by the contractors. The contractors

will also be requested to designate a person in charge of environmental, social, health and safety issues and for implementing the ESMP. Similarly, in order to ensure an efficient implementation of the ESMPs, the subprojects' beneficiaries, in most cases these are district authorities of Chisinau municipality, will also appoint responsible persons with the main tasks of supervising subproject implementation and reporting to the MEPIU in case of any environmental or social non-compliance.

Prior Statement regarding the beginning of the works on the site and specific management Plans. According to national regulations on civil works, for the all construction activities, the contractor shall make a prior statement regarding the beginning of the works on the site and shall inform the Termoelectrica of the beginning of the works on the site. The prior statement regarding the beginning of the works on the site shall be also submitted to the territorial labour inspectorate at the location of the works to be carried out, at least 30 days before their beginning. The content of the prior statement regarding the beginning of the works on the site shall be made available on the site, in a visible place, before the beginning of the works and shall be updated whenever changes occur. For the construction period, the Contractor will develop the *Operational Management Plans* necessary for the construction works on the sites, and the Termoelectrica will them. The Contractor will design an Execution Plan, which will include the phases of execution, commissioning, operation and subsequent reconstruction and use in accordance with the provisions applicable in the Republic of Moldova. The Execution Plan will be approved by the Termoelectrica. In addition, the Contractor will prepare the following specific plans:

1. The Operational ESMP that includes the reconstruction of the site and the land improvement, planting of trees and sowing of grass, etc., - as per requirements and specifications of the current ESMP (see *Annex 8* – Environmental guidelines for civil works contracts);
2. Own OHS Plan of the Contractor;
3. Traffic Management Plan to be agreed with the local Traffic Police;
4. Emergency and Response Capacity Plan (includes situations of accidental pollution, emergency and first aid equipment, list of useful emergency telephone numbers, etc.);
5. Solid Waste Management Plan, including hazardous wastes; and,
6. Site Reconstruction Plan.

Requirements for raw materials, energy and fuels to be used for project activities. The raw materials used to carry out the planned activity should be in accordance with the quality requirements for constructions, Law #721 of Feb 02, 1996 on the quality in constructions. The contractor will be responsible for providing the construction sites with raw materials; the energy will be provided from the electricity source of the customer under a contract basis, and fuels will be purchased from the Peco Stations located in Chisinau. For the operational phase, Termoelectrica SA has signed contracts with Moldovagaz SA, Union Fenosa JSC for gas and electricity supply.

8.3 Termoelectrica environmental audit

The results of assessment of current environmental performances of the company and its main components are provided in *Environmental Audit Report* (see *Annex 9*). So, it was identified and documented the compliance status of the current (generation) company`s activities from the perspective of following the specific environmental procedures and requirements:

a) Assurance of *environmental permissive base* for current activities in accordance with the national legislation:

Permit, authorization / Facility	Source-1	Source-2	West TPP
Authorizations for emission of pollutants in the atmosphere from the fixed sources	IES #002278, valid Mar 07, 2023	IES #002244, valid Mar 13, 2021	#P-0355/2020, valid Jan 20, 2025
Water use authorization	Contract #2-217-33 of Jan 02, 2012 on the delivery of water and reception of waste water in the municipal sewerage network		
Sanitary authorization for operation (incl. Report on measurement of environmental factors at workplaces)	#4012, valid Mar 25, 2021 (for 200 workplaces)	n/a	n/a

b) *Environmental reporting.* The company is complying the reporting obligations according to national statistical report requirements on *air pollution* (1-aer), *wastes* (1-deseuri) and *toxic wastes* (2-deseuri).
c) *External environmental audit/inspection*. The company`s activity is inspecting periodically by municipal authorities (Inspection for Environmental Protection, Public Health Center, Agency for Technical Supervision). Results and findings of the last environmental inspections are confirming the compliances with the national norms:
   - *Certificate of Inspection* #00243 of Feb 13, 2017 issued by the Chisinau Inspection for Environmental Protection (IEP);
   - *Certificate of Inspection* #04-01/26 of Sep 15, 2015 issued by the Chisinau IEP for the technical supervision of dangerous industrial objects;
   - *Control Minutes* #356-PV-1/C-19 of Dec 04, 2019 issued by Chisinau IEP.
d) *Current environmental management* at Termoelectrica SA and its main subdivisions and its staffing, analytical capacities to enforce environmental legislation as well as the need for any capacity building activities are well enough to implement the project;
e) Information on payments for environmental pollution (emissions) and about any arears in this regards are updated and available and at the moment no any of outstanding payments.
f) Information about any existing court cases on environmental issues which are on-going or have been solved last 5 years – are updated and available and there were no such cases recorded during this time period.

The summary of the status of TE environmental performances are presented in a special *Audit Report* presented in the *Annex 9*. Based on all mentioned above and *Annex 9* data, it is possible to conclude overall, the company OMS is in compliance with the WB and GIIP standards. Termoelectrica SA have in place efficient environment, OHS and energy management systems, and the company operates in full compliance with all national regulations on industrial safety, environmental protection and OHS.

8.4 Institutional capacity building

The implementation of the ESMF requires specific knowledge for all parties, including beneficiaries (Termoelectrica SA and building owners/associations) and operators that will be engaged in the different phases of the project implementation. Respectively, the project will support relevant trainings on knowledge and information on topics such as the ESMF implementation, ESMF/ESMP reporting, WB Environment, Health and Safety Guidelines, management of hazardous materials, etc. For this purpose, before the civil works will start, MEPIU will hire a Consultant with knowledge on the environmental and social management requirements in the country, along with substantial knowledge on World Bank ESSs.

Although MoEI, as well as MEPIU and Termoelectrica have good experience in successfully implementing safeguards issues within several World Bank projects (Energy II; District Heating; and Competitiveness Enhancement I and II Projects), - their safeguards performance last years had been always rated satisfactory, - they do not have experience in preparing and implementing projects under the Banks' new ESF, - in particular all specified institutions are not familiar with the requirements of WB ESSs with regard to labor and working conditions, labor safety issues, and, community health and safety. In this regard, the prepared by Borrower ESIA&ESMF document contains a special section which specifies the capacity building in these areas to be financed under the Project.

The MEPIU specialists shall also undergo training on the following issues: (a) purpose and basic provisions of the ESMF; (b) analysis of the World Bank ESSs requirements for conducting of the environmental and social impact assessment procedure; (c) requirements of the Environmental and Social Standards with the focus on ESSs 2 and 4 on labor and community safety issues; (d) requirements of the legislation of the Republic of Moldova on environmental and social protection.

Within the framework of implementation of the subprojects of Component 2, it is proposed to prepare a training program for capacity building of municipal authorities' representatives regarding environmental and social impact assessment for determining potential environmental and social impacts of financed energy efficiency sub-projects and preparation of ESMPs. Special attention should be given to the issues of energy audits and, also energy saving and increase of efficiency of fuel and energy resources use. A separate training on handling, collection and disposal of hazardous materials (asbestos materials) for MEPIU's Specialists, municipality representatives and contractors will be provided by the Consultant before starting civil works. As per national requirements the contractors will have to conduct OH&S training for workers with indication in special logbook which will be kept on each construction site.

These training activities should continue also during the project implementation when hired consultant will provide on the job training regarding environmental and social monitoring and supervision.

The *tentative plan* of capacity building and training plan is presented in *Table 14* below.

Table 14. Tentative plan for capacity building and training program

#	Training subject	Time and tentative duration	Recipients	Organizer	Tentative cost, EUR
1	Review of WB safeguards and their implementation during the project cycle. National environmental requirements for project preparation and implementation	During the first year of the Project implementation; Duration - 0.5 days	MEPIU, TE, LPA, MEI	MEPIU/TE	1,500 EUR
2	Workshop on Implementation of ESMF, ESMP, LMP, SEP	During the first year of the Project implementation; Duration – 2 days	MEPIU, TE	MEPIU/TE	3,000 EUR
3	Workshop on Implementation of SEP, GRM mechanism	Half-day workshop; Continuously during the project implementation	TE, heads of HOA, LPA	MEPIU/TE	5,500 EUR
4	GBV, other gender issues awareness-raising training in energy sector	One-day workshop	MEPIU specialists, TE, LPA, MEI	Consultant	1,500 EUR
				Total	**11,500 EUR**

9. Stakeholder Engagement

A Stakeholder Engagement Plan (SEP) has been prepared according to the Environmental and Social Standards (specifically, ESS10: *Stakeholder Engagement and Information Disclosure*).

For implementation of Component 2 of the Project in the SEP are identified the following direct affected parties:

> *Direct affected parties* (beneficiaries) – Consumers of district heating services from: 140 residential buildings and public institutions subject of installation of IHS, 40 buildings subject of reconstruction of internal heating distribution system, 7 residential buildings subject of thermal rehabilitation and managers of buildings/representatives of the buildings' management institutions.

The other interested parties will be informed and involved in all Projects' components implementation. Thus, all national government stakeholders include Ministries responsible for permitting and monitoring of the Project and other agencies that may provide support to Project development will be properly informed as is provided in stakeholder engagement programme from SEP.

Also, a *Labor Management Procedures* (LMP), according to ESS2 requirements, was elaborated. Therefore, the LMP provide an overview of the requirements and characteristics of Project Workers to be engaged under the Project, identifies the main labor requirements and risks associated with the project and help the implementation entities to determine the resources necessary to address labor issues, including a grievance mechanism for workers.

Based on available information, the project is expected to involve a limited number of direct and contracted workers. No community workers and primary supply workers will be involved in the project's works. The exact numbers and source of the workforce will be confirmed during project due diligence activities. Necessary procedures will be in place and operating before the engagement of the first workers.

10. Grievance Redress Mechanisms

A *two-level grievance management structure* to address the public and PAPs concerns and complaints within the Project implementation will be established.

The implementation entities intend to establish the following channels through which citizens/beneficiaries/Project Affected Persons (PAPs) can make complaints/suggestions/compliments regarding project-funded activities:

Moldova Projects Implementation Unit	**Termoelectrica S.A.**
Chisinau, 1, Alecu Russo str., office 163 Tel: (+373) 22 496790 Fax: (+373) 22-49-67-90 Email: mepiu@mepiu.md	Chisinau, 6, Tudor Vladimirescu str. Tel: (+373) 22 43-64-59 Fax: (+373) 22 49-50-97 Email: anticamera@termoelectrica.md
Verbal complaints addressed to Project staff could be recorded in writing by the receiver	

If the complainants will use the other existing TE's channel for consumers grievances (call center, viber number), these grievances will be directed to TE's Project/components managers.

I level – Site/subproject. The Project affected persons and stakeholders at site level will have the option to report their complaints/feedback to the site/subproject implementing contractor. The implementing agency/contractor will be responsible for addressing the complaint/feedback within *5 days* of being apprised of the issue.

The contractor's staff is responsible for maintaining logs of the complaints/feedback received, as well as issues that have been resolved and those which are pending and report bi-weekly to TE and MEPIU. If the issue cannot be resolved at the subproject/site level, then the site level engineer/safeguards staff will immediately direct the grievance to a higher level (TE/MEPIU).

II Level. If there is a situation in which there is no response from the local/site level, or if the response is not satisfactory then complainants and feedback providers have the option to contact the TE and MEPIU directly to follow up on the issue.

The grievances/complaints at every level will be recorded, examined and solved no later than *2 weeks* from their receipt.

The grievance mechanism is expected to address concerns promptly and effectively, in a transparent manner that is culturally appropriate and readily accessible to all project-affected parties, at no cost and without retribution.

During the project implementation, the implementation entities will inform the project-affected parties about the grievance process in the planned community engagement activities, and will make publicly available a record documenting the responses to all grievances received. The mechanism will also allow for anonymous complaints to be raised and addressed. The registration, examination, resolution etc., procedures are detailed described in the SEP.

11. Borrower's Environmental and Social Commitment Plan

In accordance with the requirements of the ESS1 Termoelectrica prepared an *Environmental and Social Commitment Plan* (ESCP). The ESCP sets out the material measures and actions required for the project to meet the ESSs over a specified timeframe and will form part of the legal agreement. The legal agreement will include, as necessary, obligations of the Borrower to support the implementation of the ESCP.

Prepared ESCP for the project specifies the main responsibilities and actions to be undertaken by the TE and MEPIU to ensure project compliance with the WB ESSs and in particular: (a) implementing site-specific ESIA&ESMP for Component 1; (b) conducting environmental and social screening for Compoinent 2 activities via ESMP Checklist covering specified above aspects; (c) application of the ESMF to all Component 2 project activities, including the need to prepare site-specific ESMPs; (d) reporting on environmental and social performance, as well as on OHS incidents for all project activities on a biannual reports; (e) ensuring transparency in providing project environmental safeguards and ensuring all new ESMPs to be prepared for Component 2 activities are disclosed and publicly consulted with all interested parties; (f) maintaining through the whole period of project implementation human capacity to ensure ESMPs' supervision and monitoring and providing adequate reporting to the implementing agency and to the WB; (g) preparation and adherence to the Environment, Social, Health and Safety Code of Conduct by works contractors; and, (h) implementing and reporting on: (i) Stakeholders Engagement Plan (SEP); (ii) Labor Management Plans (LMP); and Grievance Redress Mechanism (GRM).

12. ESIA and ESMF disclosure and consultation

The ESIA/ESMP and ESMF will be published on the Beneficiary's web site, MEPIU's and WB's web sites.

After public consultation will be developed a Public Consultation Report and a Minute with signatures of all participants will be attached to the report.

References

Regulatory acts

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Governmental Decision on Environmental Protection Inspectorate Regulation #548 of June 13, 2018
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Governmental Decision on MARDE Regulation #695/2017
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CLIMATE CHANGE CO-BENEFITS, METHODOLOGY AND APPLICATION IN WB OPERATIONS, (2015), Annex 1: List of Activities Eligible for Classification as Climate Mitigation Finance
WB Environment, Health and Safety Guidelines – https://www.ifc.org/wps/wcm/connect/f82a5f06-f3f7-4033-8ea6-b767523cda8e/FINAL_Thermal%2BPower.pdf?MOD=AJPERES&CVID=jqeD9Eg&id=1323162579734)

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National Geospatial Data Fund − http://geoportal.md/
Public Services Agency – https://asp.gov.md/
Termoelectrica SA − http://termoelectrica.md/
The State Register of Legal Acts – http://lex.justice.md (legis.md)
World Bank Documents&Reports Site – http://documents.worldbank.org

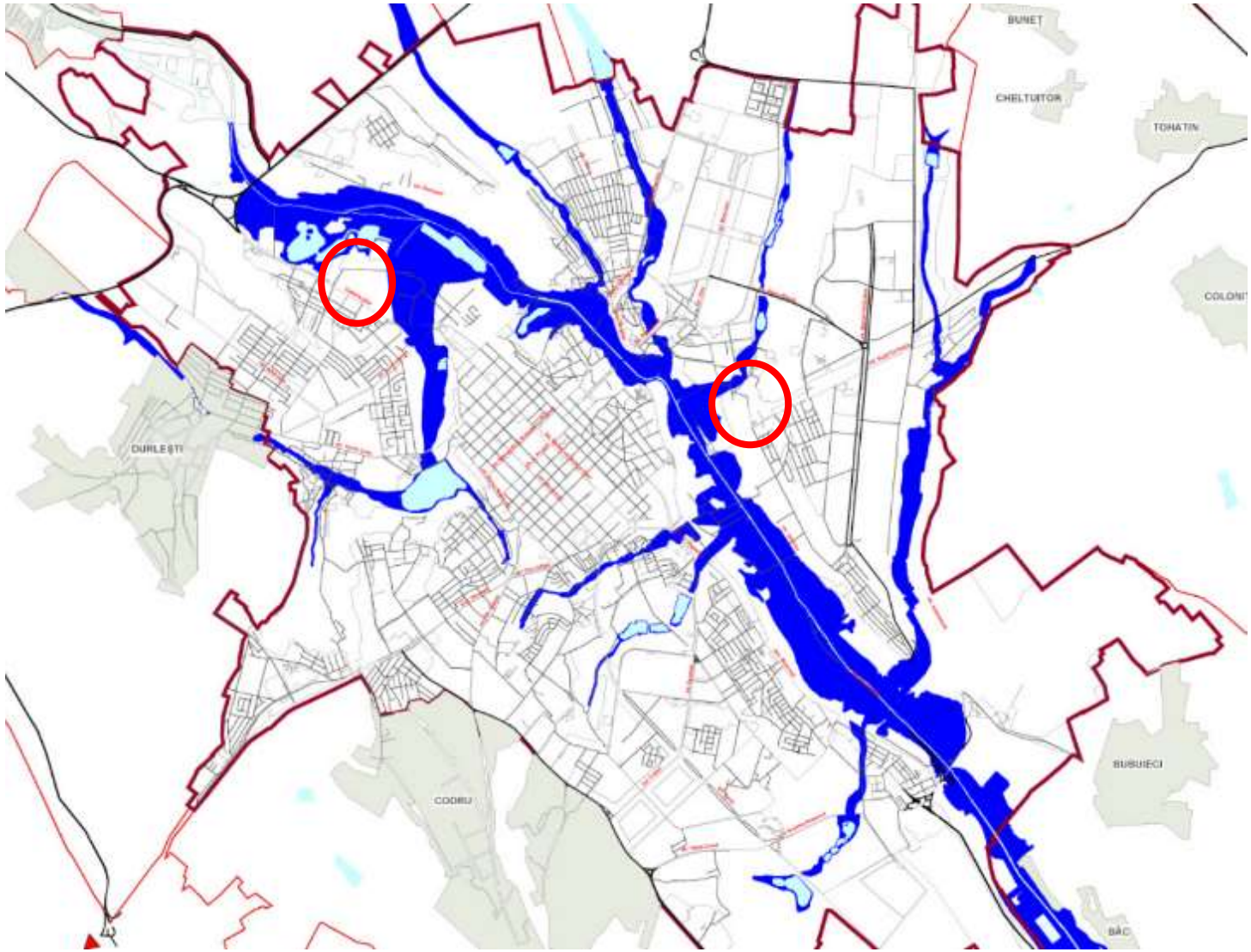
Annexes

Annex 1. Chisinau City Master Plan

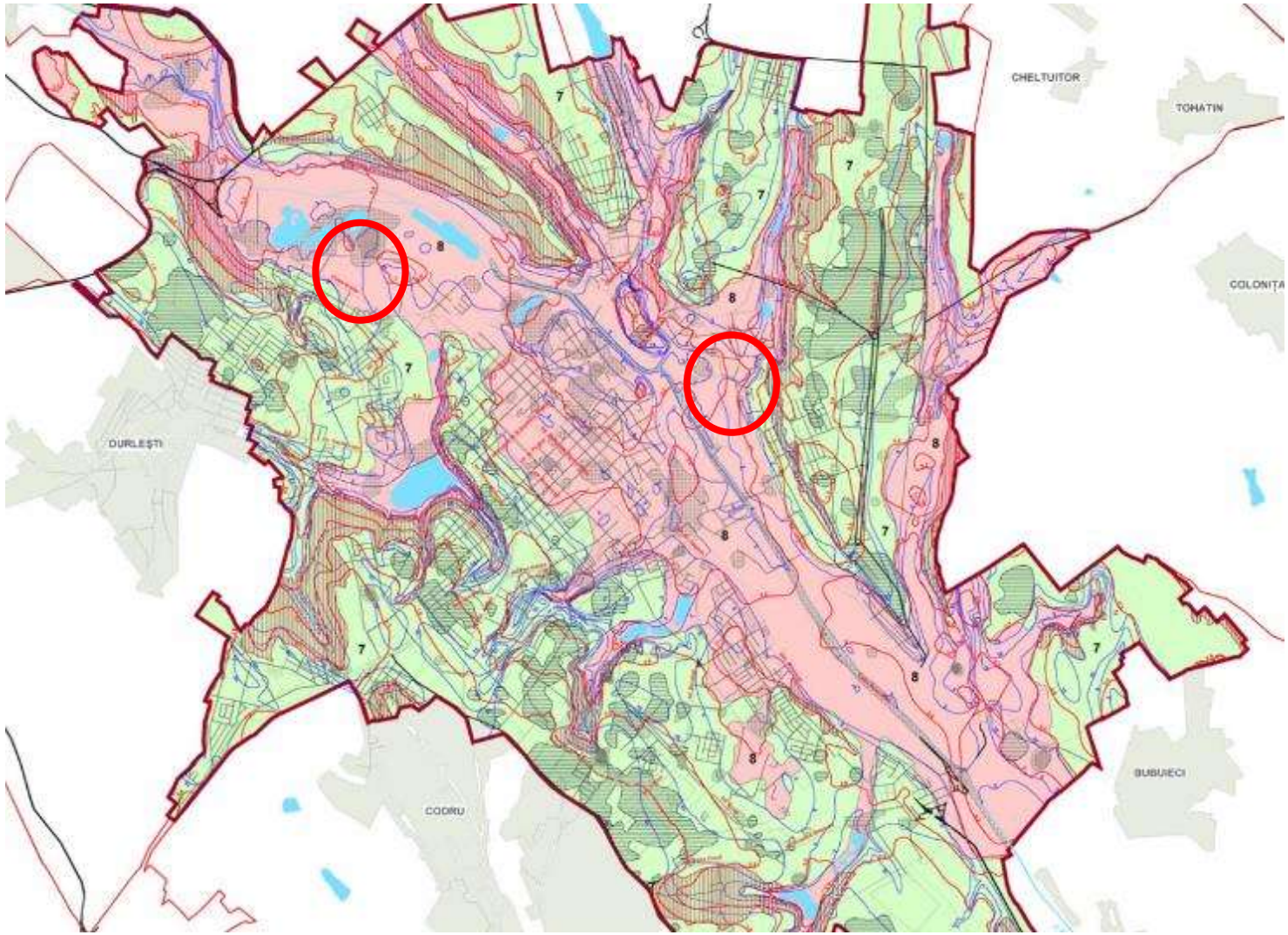
1.1. Geological and hydrogeological evaluation of the territory

1.2. Landslide affected areas

1.3. Areas at high risk of flooding in Chisinau municipality

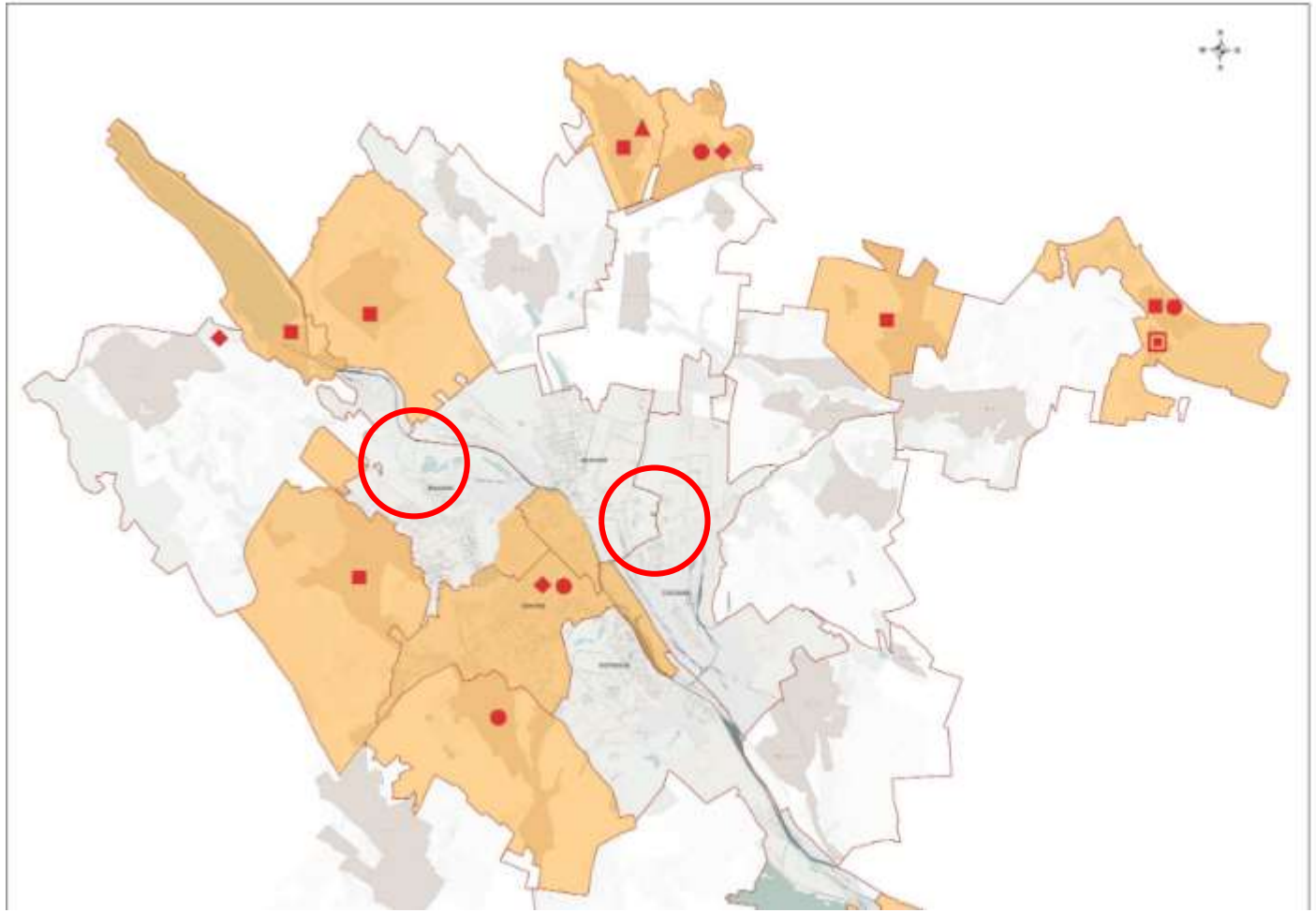


1.4. Areas at high seismic risk (Green – 7 degrees, Pink – 8 degrees)



1.5. Compact green areas in Chisinau municipality

1.6. Protected built areas



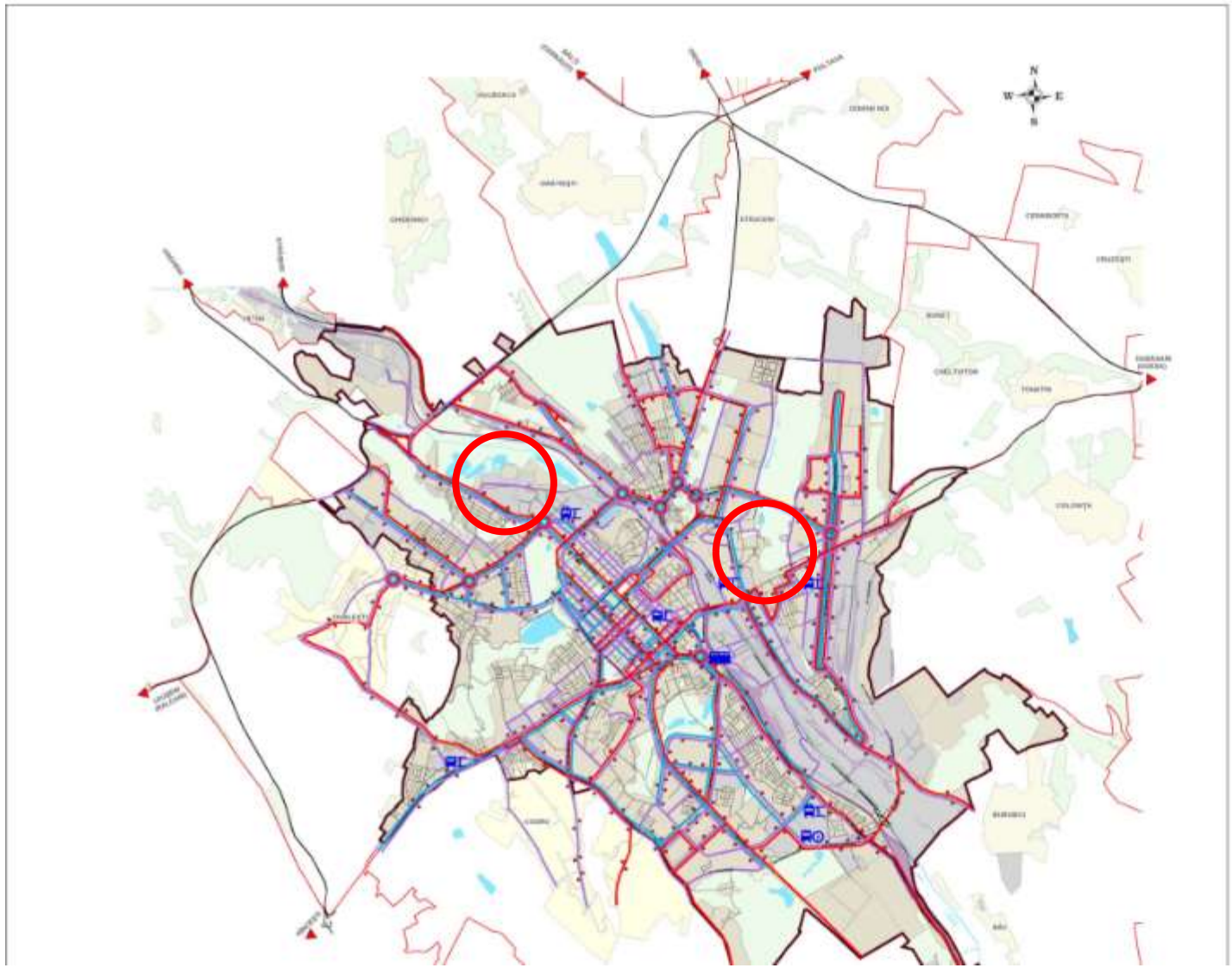
ZONE CONSTRUITE PROTEJATE

Notă: Harta indică tipurile de monumente și situri
în cadrul zonelor protejate. Fiecare unitate adminis
teritorială, prin Planurile Urbanistice Generale și r
mente proprii vor preciza în detaliu elementele de
moniu arhitectural, cultural, istoric în conformitate
islația în vigoare și acordurilor internaționale semn
guvernul Republicii Moldova.

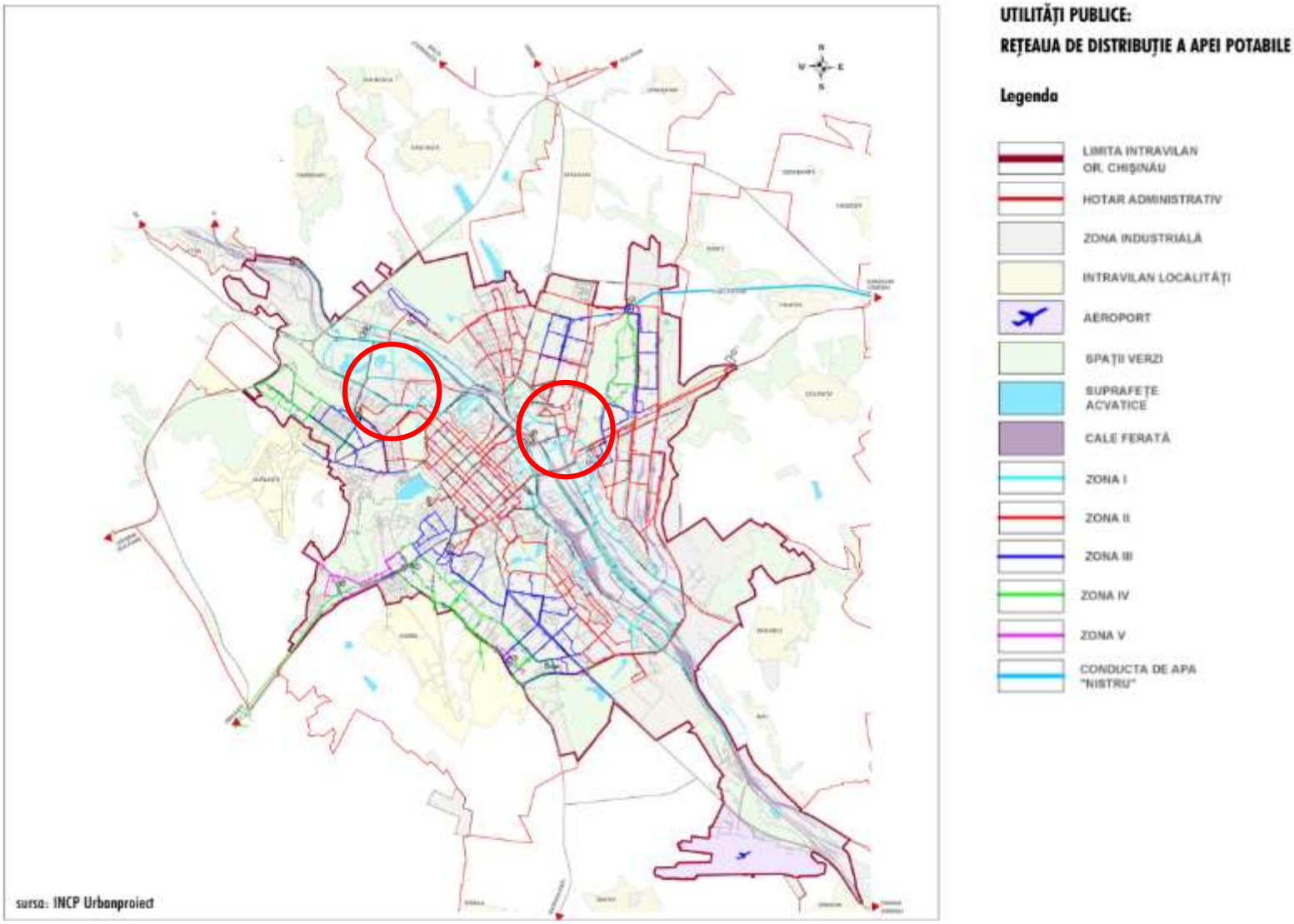
Legenda

- ZONE CONTRUITE PROTEJATE
- SITURI AREHEOLOGICE
- COMPLEX CLĂDIRI REPREZENTATIVE
- COMPLEX MĂNĂSTIRI
- COMPLEX SUBTERAN VINURI
- SOLURI FOSILE
- HOTARE ADMINISTRATIVE
- CAI FERATE
- ZONA AEROPORTULUI
- LACURI, RÂURI
- SPAȚII VERZI
- INTRAVILANUL LOCALITĂȚILOR SUBURBANE
- TERENURI AGICOLE PROPRIETATE PRIVATĂ
- ZONE INDUSTRIALE
- CARTIERELE ORAȘULUI CHIȘINĂU

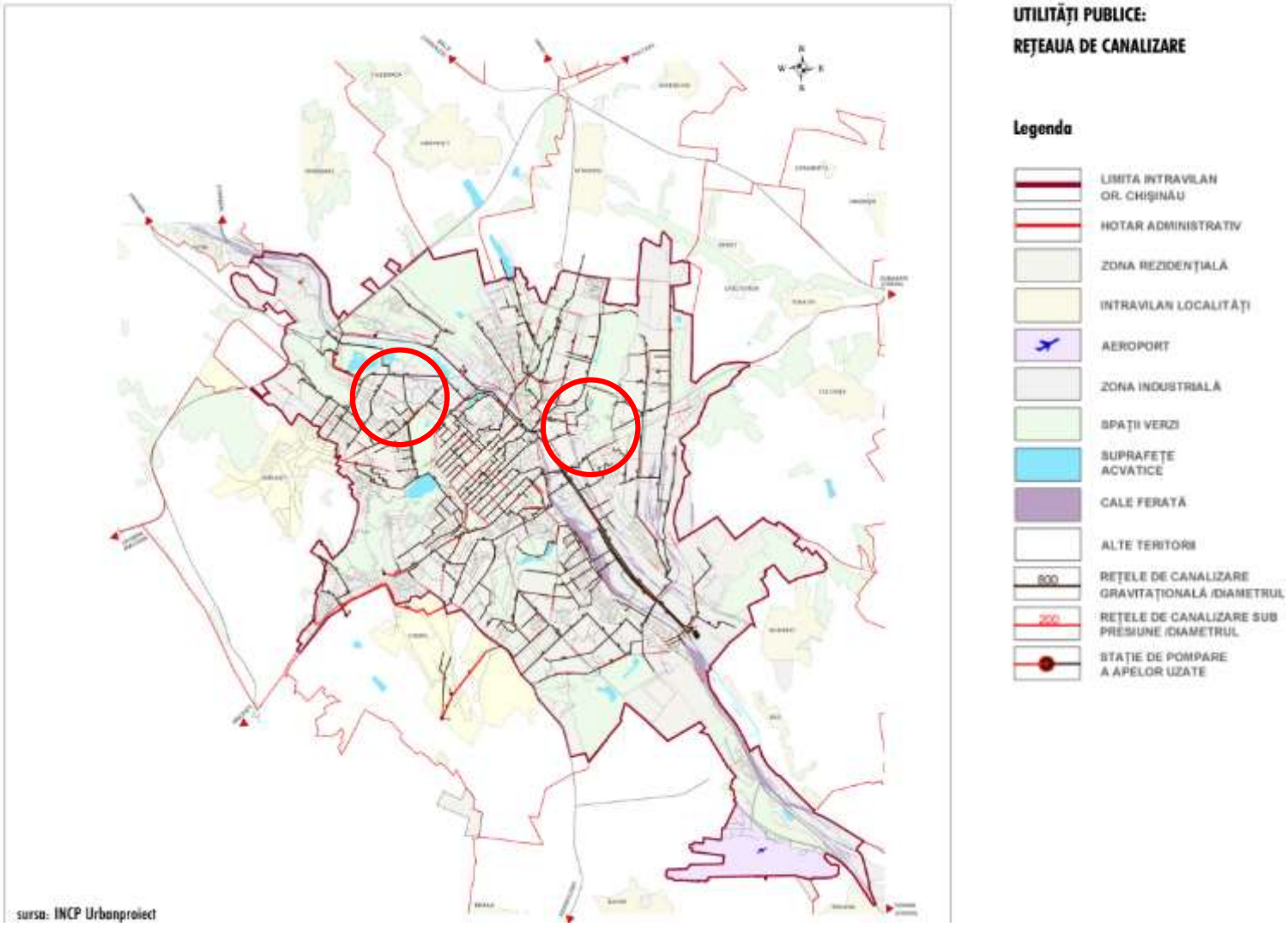
1.7. Public transport infrastructure



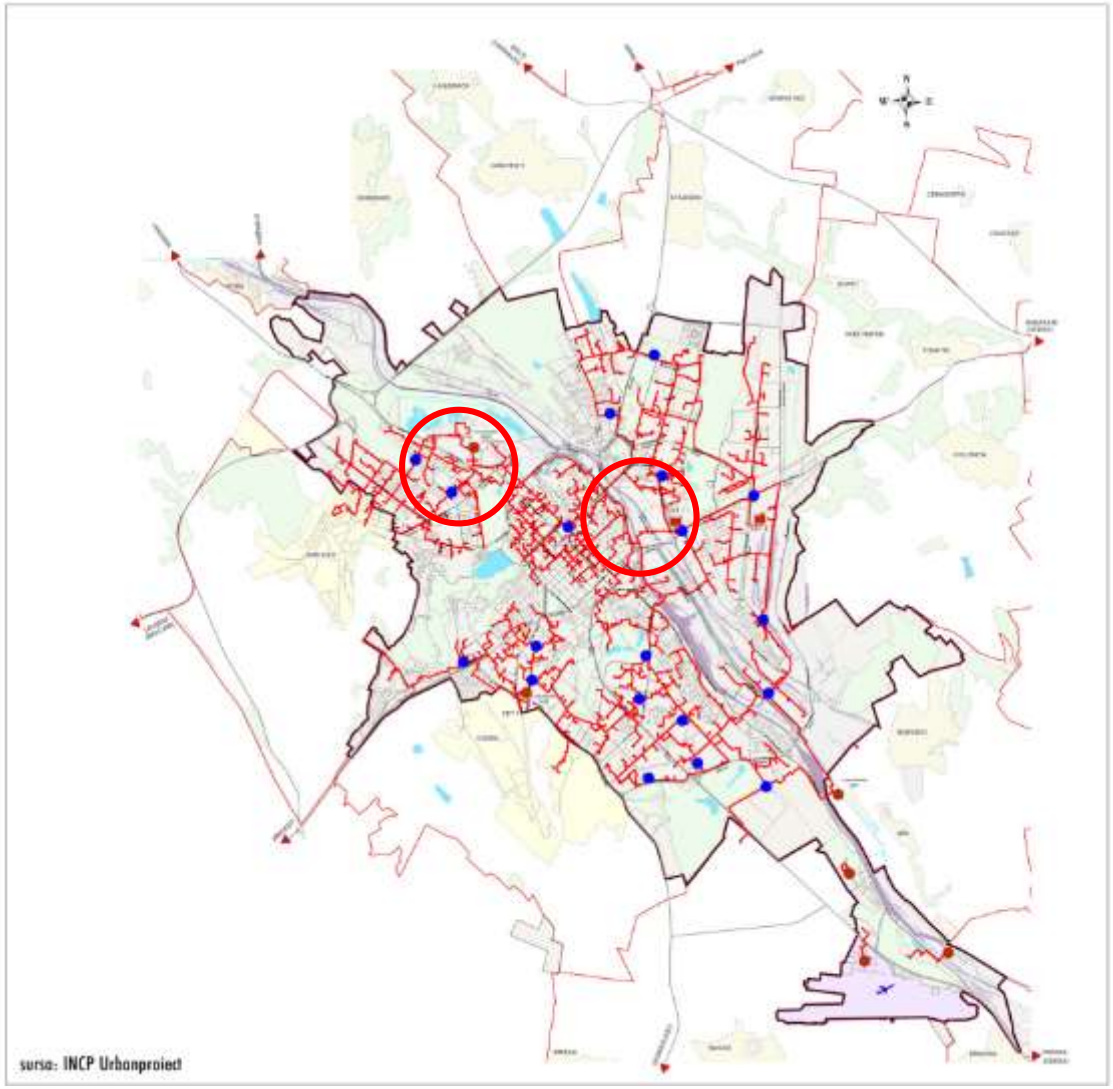
1.8. Drinking water distribution network



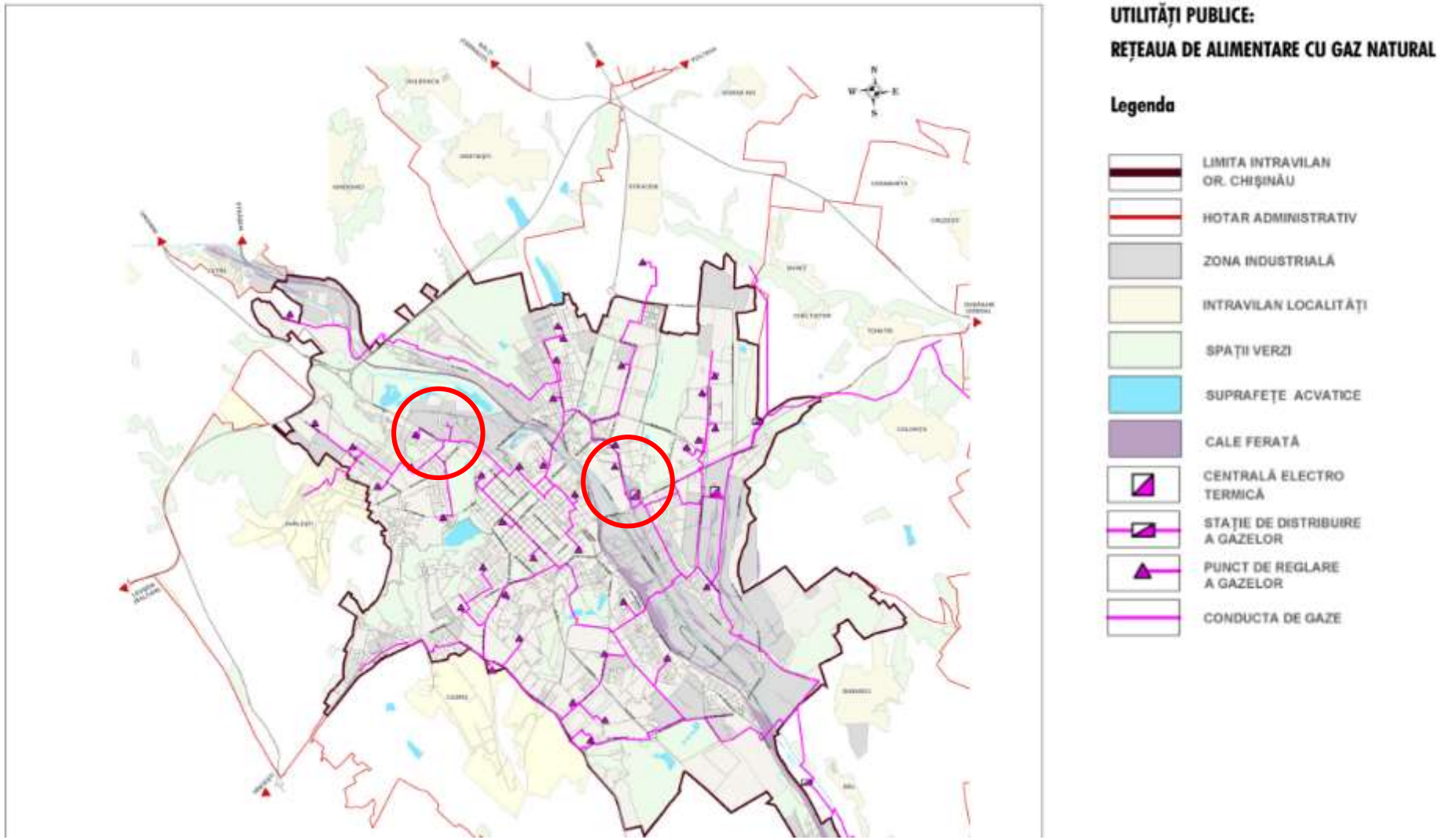
1.9. City sewerage network



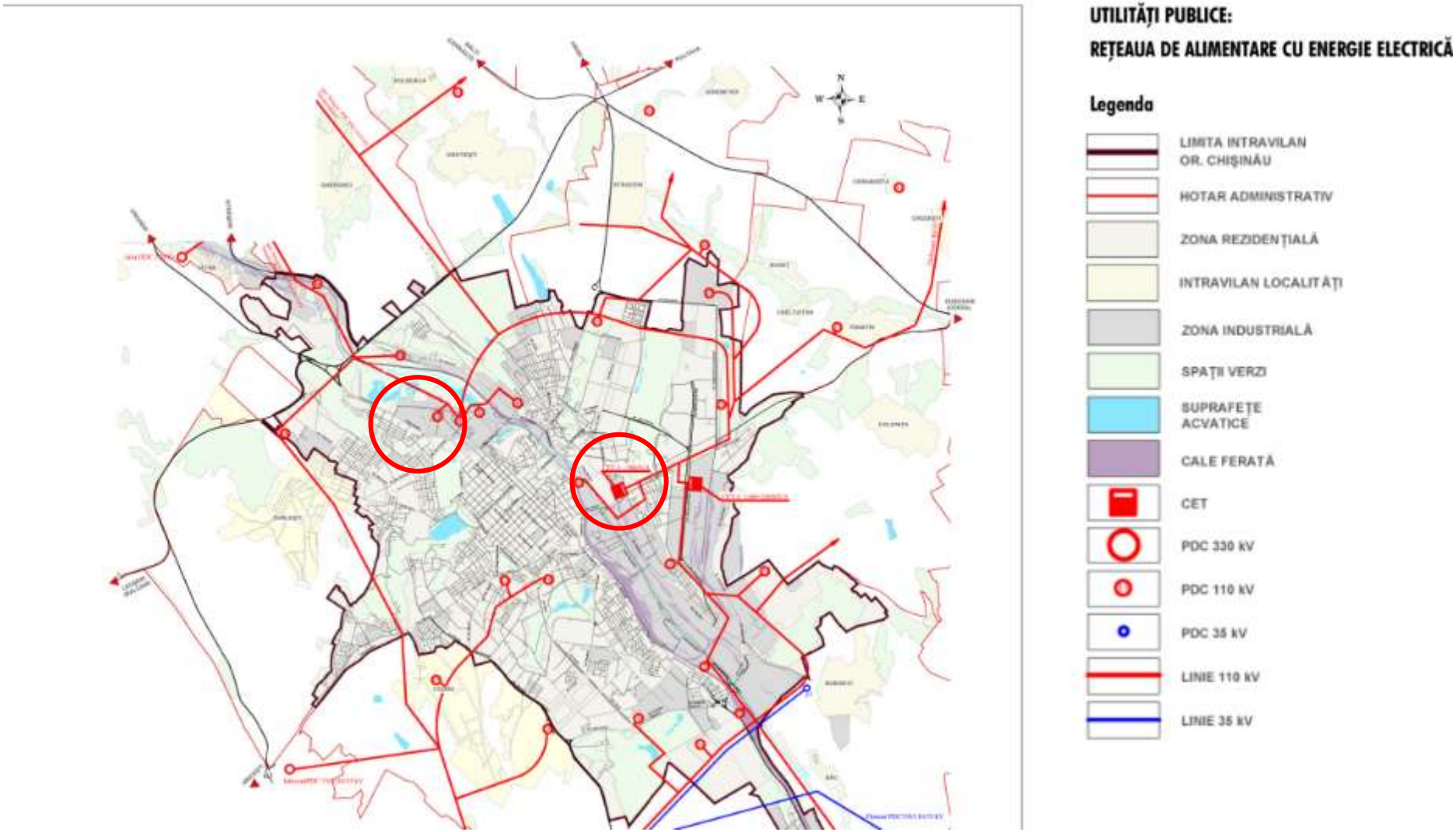
1.10. District heating network



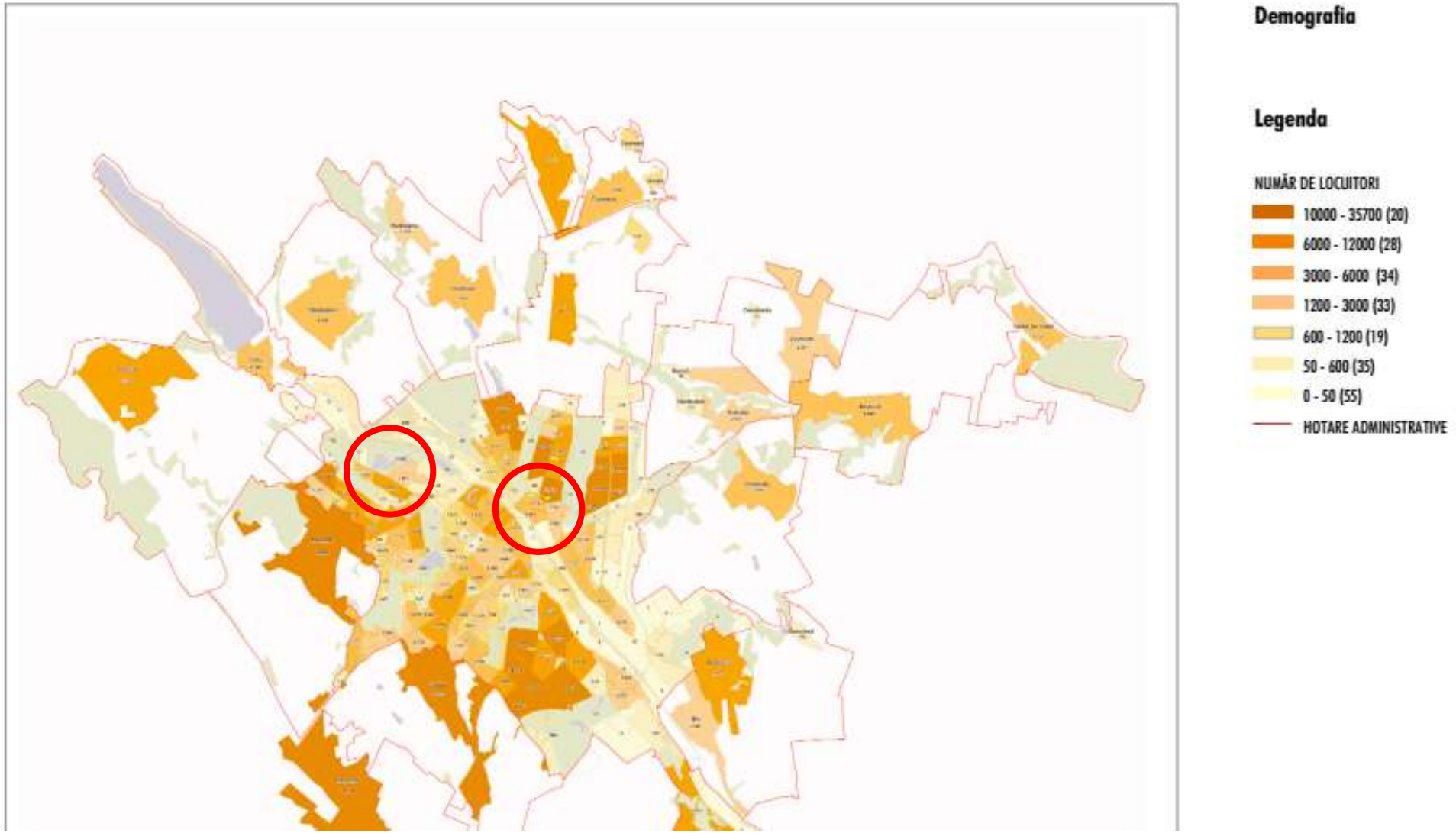
1.11. Natural gas supply network



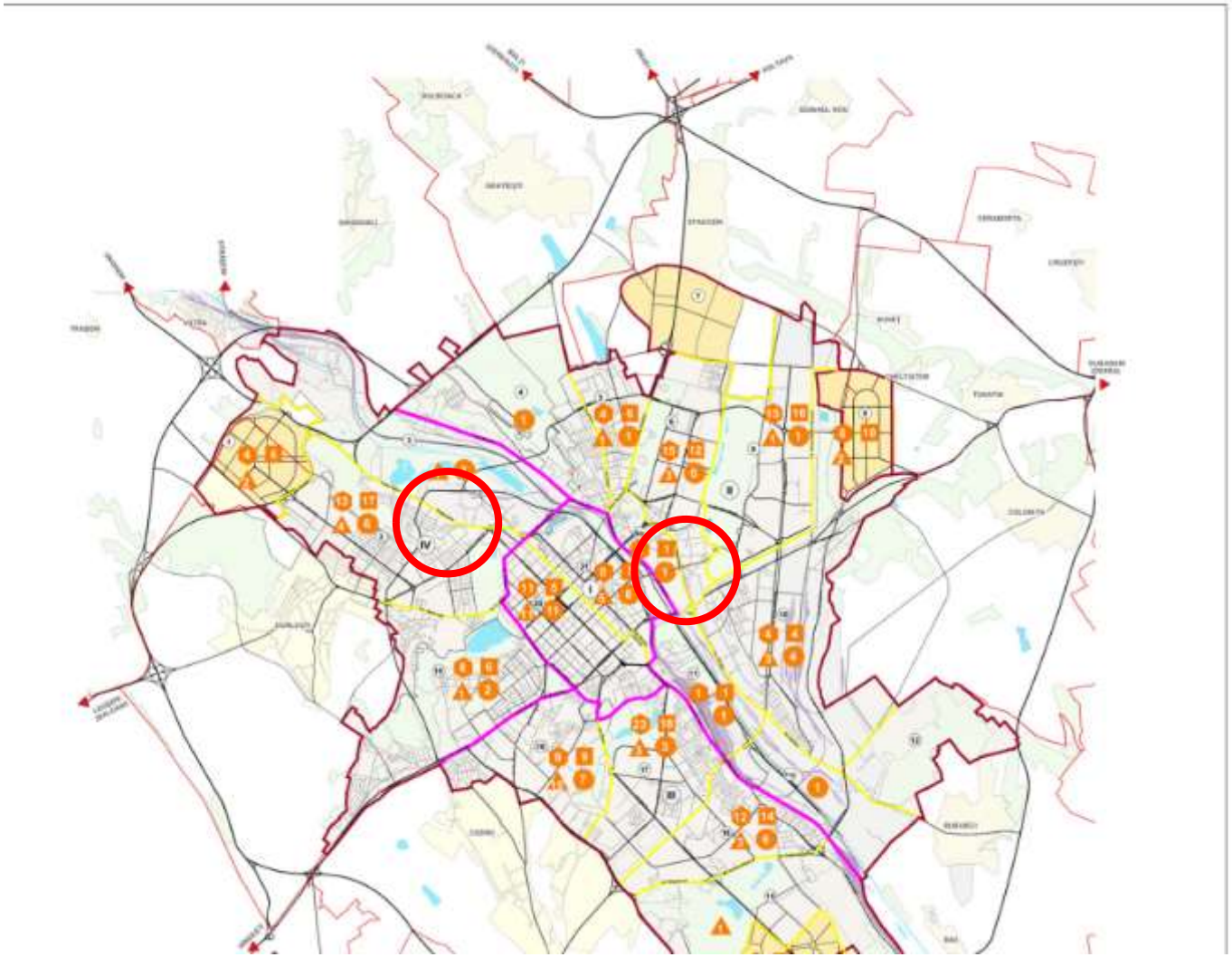
1.12. Electricity supply network



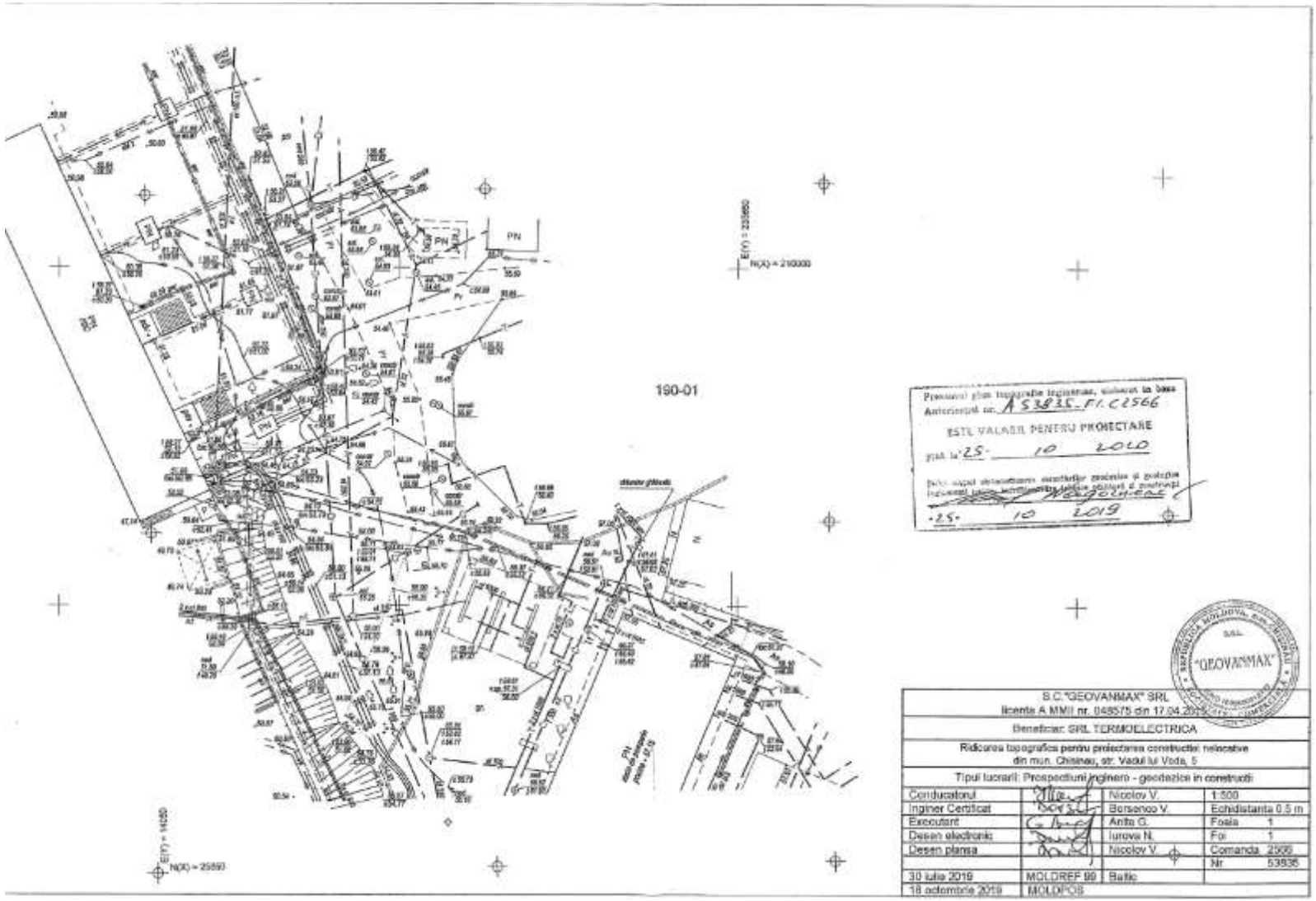
1.13. Population density



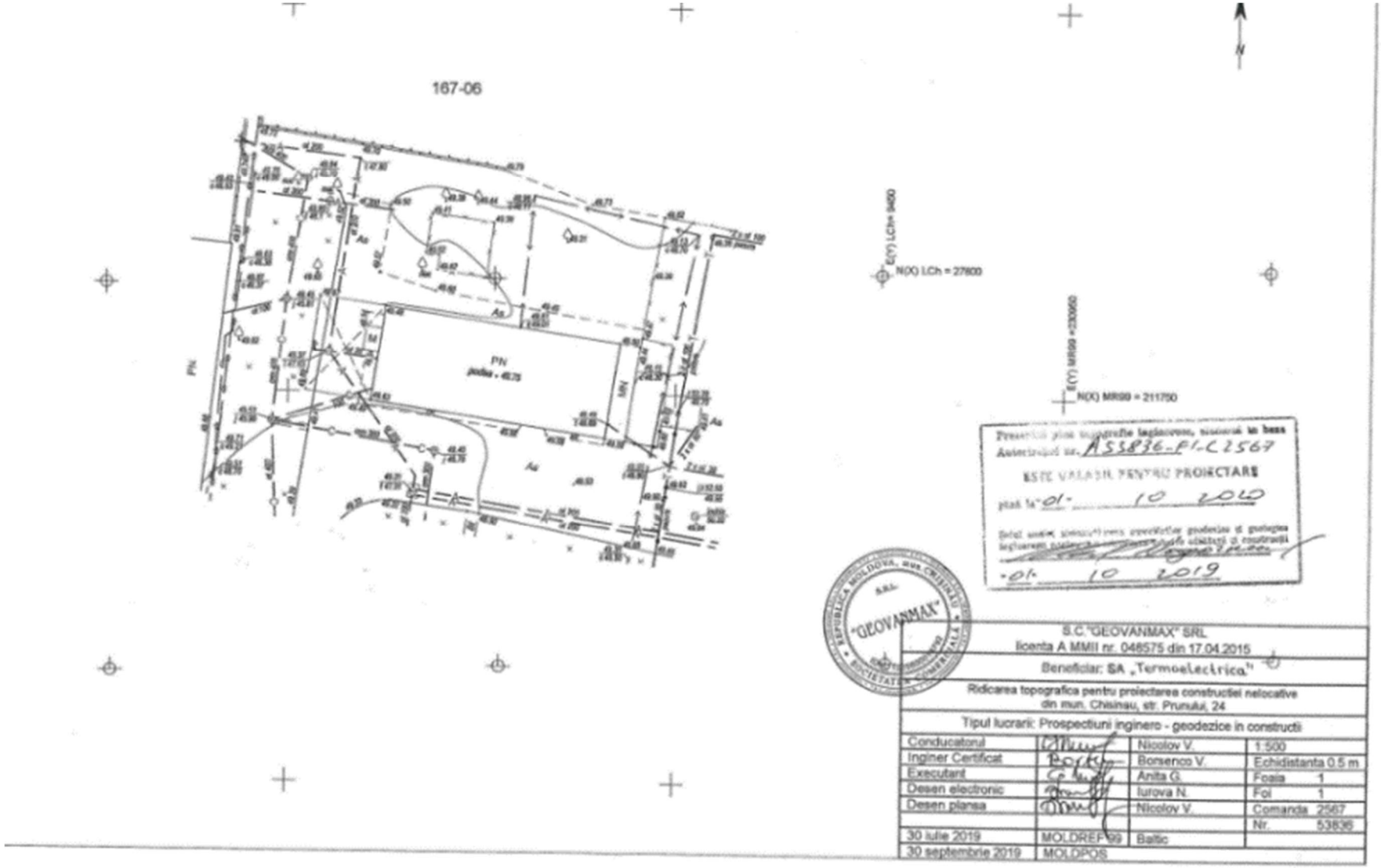
1.14. Public services



Annex 2. Topographic survey at Source-3 location



Annex 3. Topographic survey at West TPP location



Annex 4. List of real estates and its owners, neighboring to CHP-1 and HOB West

No.	Owner	Real estate	Cadastral number	Address, street	Purpose	Area
1	Tataru Vasile Chisinau, 130. M. Dosoftei str., bld. D, apt. 17	Land plot	0100518.705	26 Prunului/A	For construction	0.2659 ha
		Construction	0100518.705.01	26 Prunului/A	Construction	830.8 sq.m.
		Construction	0100518.705.02	26 Prunului/A	Construction	9.3 sq.m.
2	I.C.S. TEHGAZ GRUP S.R.L.	Land Plot	0100518.155	8 Mesager	For construction	
		Construction	0100518.155	8 Mesager	Construction	
3	CC “Fabrica de Beton si Mortar” LLC, Chisinau mun., 26 Prunului str.	Land plot	0100518.079	26 Prunului	For construction	3.9356 ha
		Constructions	0100518.079.01	26 Prunului	Production building	498.6 sq.m.
		Constructions	0100518.079.02	26 Prunului	Production building	567 sq.m.
		Constructions	0100518.079.03	26 Prunului	Construction	134 sq.m.
		Constructions	0100518.079.04	26 Prunului	Construction	89.7 sq.m.
		Constructions	0100518.079.05	26 Prunului	Construction	397 sq.m.
		Constructions	0100518.079.06	26 Prunului	Construction	953.8 sq.m.
		Constructions	0100518.079.07	26 Prunului	Construction	189.3 sq.m.
		Constructions	0100518.079.08	26 Prunului	Construction	181.6 sq.m.
		Constructions	0100518.079.010	26 Prunului	Construction	54.5 sq.m.
		Constructions	0100518.079.011	26 Prunului	Construction	25.1 sq.m.
		Constructions	0100518.079.012	26 Prunului	Construction	9 sq.m.
4	„Energoreparatii” LLC Chisinau mun., 1 Otovasca str.	Land plot	0100424.527	9 Vadul lui Voda	For construction	0.9049 ha
		Construction	0100424.527.01	9 Vadul lui Voda	Production building	448.2 sq.m.
		Construction	0100424.527.02	9 Vadul lui Voda	Production building	1152 sq.m.
		Construction	0100424.527.03	9 Vadul lui Voda	Production building	1310.2 sq.m.
		Construction	0100424.527.04	9 Vadul lui Voda	Warehouse	332.2 sq.m.
		Construction	0100424.527.05	9 Vadul lui Voda	Garage	135.2 sq.m.
		Construction	0100424.527.06	9 Vadul lui Voda	Additional construction	161.5 sq.m.
		Construction	0100424.527.07	9 Vadul lui Voda	Warehouse	227 sq.m.
		Construction	0100424.527.09	9 Vadul lui Voda	Warehouse	16 sq.m.
		Construction	0100424.527.10	9 Vadul lui Voda	Warehouse	341 sq.m.
		Construction	0100424.527.11	9 Vadul lui Voda	Construction	6 sq.m.
		Construction	0100424.527.12	9 Vadul lui Voda	Construction	38 sq.m.
5	APLP-52/305 COOP	Construction	0100424.045.01	2j Florarii lane	Multi-storey residential building	587.2 sq.m.
6	“Gestiune economică Termoelectrica” JSC	Construction	0100424.045.02	2j Florarii lane	Multi-storey residential building	204.8 sq.m.
7	Chisinau mun.	Land plot	0100424.282	17j Vadul lui Voda	For construction	0.099 ha
	Republic of Moldova	Land plot	0100424.282.01	17j Vadul lui Voda	Multi-storey residential building	242.4 sq.m.

Annex 5. Screening checklist to assess social risks and impacts of Component 1 subproject interventions

Probable Social Impacts	Yes	No	Provide details to justify the answer
1. Will the intervention include new physical construction work?	■		Under Component 1: • For CHP Source-1 the intervention will not include any new construction work. The intervention provides reconstruction/major overhaul of existing equipment (steam turbine and boiler – retrofit, repairs, replacement of worn out parts, etc.) and installation of new associated equipment (new burners, control systems, etc.). All the works will be carried out inside the existing building of the plant. • For CHP Source-3 the intervention will include construction of a new building (light construction made of sandwich panels, with foundation) on the territory of the existing CHP Source-2 to accommodate the gas engines and associated equipment, and their installation. Other works will include replacement/installation of certain equipment within the existing 110 kV power facility/switchgear – which is also located on the territory of the existing CHP Source-2. All the works will be carried out on the territory of the existing plant. • For HOB West the intervention will include construction of a new building (light construction made of sandwich panels, with foundation) on the territory of the existing HOB West to accommodate the gas engines and associated equipment, and their installation. Other works will include installation of new transformers and 110 kV power facility/switchgear – also on the territory of the existing HOB West. All the works will be carried out on the territory of the existing plant.
2. Does the intervention include upgrading or rehabilitation of existing facilities?	■		Under Component 1: • For CHP Source 1 the intervention provides upgrading and rehabilitation of existing facilities: (i) Reconstruction of Unit 2, including reconstruction and retrofit of the steam turbine to extend its operational lifetime, modernization of vibration control module, replacement of turbine supporting equipment, replacement of heat boiler burners and other equipment to increase boiler's efficiency, and installation of automated control module for capacity regulation and burning; (ii) Major overhaul of turbine and replacement of boiler heat surface at Unit 3, which will include major overhaul of the steam turbine to extend its operational lifetime, and replacement of steam boiler' economizer. All the works will be carried out inside the existing building of the plant. • For CHP Source 3, besides installation of new gas engines (as described above), the intervention includes modernization of the existing 110 kV power facility/switchgear, which is also located on the territory of the existing CHP Source 2. All the works will be carried out on the territory of the existing plant.
3. Is the intervention likely to cause any permanent damage to or loss of housing, other assets, resource use?		■	The type/nature and short duration of the construction works do not foresee this impact.
4. Is the site chosen for this work free from encumbrances and is in possession of the Public/government/community land?	■		The land/site is owned by TE

Probable Social Impacts	Yes	No	Provide details to justify the answer
5. Is this sub project intervention requiring private land acquisitions?			The land/site is owned by TE. No land acquisitions required.
6. If the site is privately owned, can this land be purchased through negotiated settlement? (Willing Buyer – Willing Seller)			The land/site is owned by TE
7. If the land parcel has to be acquired, is the actual plot size and ownership status known?			*It is not anticipated in this component*
8. Are the subproject cause any access restriction to the commuters/pedestrians/ business and trades?			Component 1 – Minimum distance from the owners of land/ building / businesses to the construction site is around 200 meters. All businesses in the area have their own permanent and reserve entrances and exits to their sites and facilities. The works will be carried out on the territory of existing TE facilities, which will be accessed via existing entrances and exists. No restriction to commuters/pedestrians/ business and trades will be caused.
9. Is land for material mobilization or transport for the civil work available within the existing plot/ Right of Way?			The land is sufficient in the planned site owned by TE for material mobilization.
10. Are there any non-titled people who are living/doing business on the proposed site/project locations that use for civil work?			*It is not anticipated in this component*
11. Is any temporary impact likely?			During construction works – such as noise and dust.
12. Is there any possibility to move out, close of business/commercial/livelihood activities of persons during constructions?			*It is not anticipated in this component*
13. Is there any temporary or permanent physical displacement of persons due to constructions?			*It is not anticipated in this component*
14. Does this project involve resettlement of any persons? If yes, give details.			*It is not anticipated in this component*
15. Will there be loss of /damage to productive trees, fruit plants or crops that generate livelihood income for the households?			*It is not anticipated in this component*

Probable Social Impacts	Yes	No	Provide details to justify the answer
16. Will there be loss of incomes and livelihoods for anyone due to project intervention?			*It is not anticipated in this component* The construction works will be carried out on the site owned by TE, placed in the industrial area.
17. Will people permanently or temporarily lose access to facilities, services, or natural resources?			*It is not anticipated in this component*
18. Will project cause loss of employments/jobs			No loss of jobs for TE's employees during Component 1 implementation. If it will be necessary, the employees from the subdivisions concerned by the implementation of component 1 will be transferred to other units within company, maintaining their position and salary.
19. Will project generate excessive labor influx as a result of new constructions			It is not expected to have excessive influx of labor force. Although contracts will be implemented in parallel at the three sites, they will be extended in time and will involve specialized labor force at different stages of the works, without generating excessive labor influx.
20. Does construction activities require additional/skilled labor from outside the locality			The works (design, supply and install) will be procured using international competitive bidding. It is expected that international contractors with certain foreign skilled labor force will be involved. At the same time, it is expected that local experienced subcontractors with their local labor force will also be involved in the works.
21. Will subproject/construction activities cause destruction/disturbance to host community living			During component 1 implementation it is not expected to have any significant impact on communities, because the sites are located in the industrial area, inside and/or on the territory of existing industrial facilities. All construction works will be carried out on existing sites owned by TE.
22. Will construction of new buildings, drainage lines, powerlines create any degradation/disturbances for public buildings/resources/ adjacent houses, wells, lands, Burial places, children parks, schools etc			*It is not anticipated in this component*
23. Will this intervention generate downsize in current labor force(retrenchments) of the agency			*It is not anticipated in this component*
24. Does intervention may cause unintended consequences such as accidents/ damages to adjacent buildings			*It is not anticipated in this component*
25. Are any vulnerable groups who may affect adversely (including indigenous people) due to the project intervention?			*It is not anticipated in this component*

Annex 6: Requirements and measures when handling asbestos materials

Organizational measures

Before starting work and even before submitting a tender for work with materials containing asbestos, an employer must take a number of different steps. By planning and preparing the work procedures carefully, an employer can avoid exposing workers to risks, e.g. as a result of improvisation or disruption of the work process, and thus provide the basis and the necessary conditions for safe completion of the work. The most important measures are:

- the notification to the authorities,
- the risk assessment, and
- the work plans.

In addition, employees must be given the opportunity to have a medical examination. Moreover, before starting with demolition and refurbishment work the companies should give proof of their expertise.

The more conscientiously the employers and their workers observe these rules, the smoother and therefore the more economically the work can be carried out.

Working instructions

Working instructions are an indispensable component of staff training. They point out the risks to the workers and explain to them the protective measures required.

Whilst the work plan is primarily addressed to supervisors, the working instructions are intended for the workers themselves, identifying the risks, the corresponding protective measures and their expected behaviour. Information relating to their workplace and tasks enables workers to act safely in full awareness of the risks.

Working instructions should be concisely and clearly formulated, so that all employees can understand them. They should be displayed at the place of work where they are clearly visible. The staff should observe the working instructions of the employer. The instructions must give information on:

- the type of work and specific tasks;
- the hazardous materials containing asbestos;
- personal protective equipment;
- necessary protective and hygienic measures;
- what to do in the case of breakdowns, accidents and other emergencies;
- how to deal with waste.

For simple tasks this information can be included in the work plan, which then replaces the working instructions.

Annex 7. Health, Safety and Wellbeing Inspection Checklist

Health, Safety and Wellbeing Inspection Checklist

Project name: _____ **Project no:** _____

Project location: _____ _____

Inspection team: _____ **Inspection date:** _____

Note: Full compliance record Y=Yes and record positive findings – For partial compliance record N=No and record findings to correct.				
Item	**N/A** **Y** **N**	**Comments and Corrective actions if required**	**Close-out**	
			By (date)	**Initials**
1.0 Plant and Equipment				
Plant in sound condition?				
Daily pre-start checks completed?				
Safety items/faults recorded in pre-start checklist?				
Lights, signals, beepers working?				
Fire extinguishers fitted/charged?				
Seat belts installed/worn?				
Speed limits posted/observed?				
Driver/operator ticketed/licenced?				
Warning signs/stickers in place?				
PPE worn for type of plant?				
Worker and Other separation acceptable?				
High visibility clothing worn?				
Spotters being used during plant operations?				
Safe operations being observed by all?				
2.0 Cranage and Rigging				
Operator, dog man, rigger, Trained/certified?				
Log book/maintenance records?				
Daily pre-start checks completed?				
Any oil or diesel leaks?				
Load charts/certificates available?				
All Rigging gear tagged/colour code?				
Rigging gear/slings good condition?				
Rigging gear/slings stored correctly?				
Fire extinguishers fitted/charged?				
2 tag lines available?				
Hooks, clasps, shackles good working order and condition?				
Outriggers used, stabilized pads and correct set-up?				
PPE available and worn?				
3.0 Motor Vehicles				
Daily pre-start checks completed?				
4wd roll-over bar fitted?				
Brakes, warning lights operating?				
Glass in clean condition?				

Note: Full compliance record Y=Yes and record positive findings – For partial compliance record N=No and record findings to correct.				
Item	**N/A** **Y** **N**	**Comments and Corrective actions if required**	**Close-out**	
			By (date)	**Initials**
Fire extinguishers/fitted/charged?				
Seat belts installed/worn?				
Reverse beeper operating?				
Qualified operators for on-site plant and equipment appointed?				
Operators are provided with refresher training?				
First aid kitted fitted/supplied and stocked?				
4.0 Power Tools				
Tools, cords in good condition?				
Correct tools used for the job?				
Guards on tools in place?				
Tools/leads/cords tagged/correct colour and recorded?				
RCDs fitted, including portable generators?				
RCDs tested and results recorded?				
Terminal boxes with covers?				
Switch boards locked, access, phone number for access?				
Electrical leads protected from damage?				
PPE available and worn?				
Specialized PPE for special work (face/eyes/gloves) provided and worn?				
Earth stake in place on generators (unless earth bonding on generator)?				
5.0 Compressed Air				
Compressor fitted with silenced unit?				
Fire Extinguisher available?				
All valves operational and correct?				
Inspection – Tags on machine/tools with details recorded?				
Whip checks/chains on hoses fitted?				
Drip tray provided under diesel engine fill point?				
Specific PPE for Workers using air tools (AVG/Hearing Protection/etc.)?				
Manifolds tested and identified effective?				
Exhaust fumes from compressor away from working area/location?				
6.0 Flammable Gases and Liquids				
Containers/drums clearly marked with contents?				
Safety Data Sheets is available /current?				
Correct separation of cylinders?				
Storage area well ventilated?				
Cylinders stored out of sun/heat?				
Gas cylinders vertical, secured/chained?				
Fire extinguishers available /charged?				

Note: Full compliance record Y=Yes and record positive findings – For partial compliance record N=No and record findings to correct.				
Item	**N/A** **Y** **N**	**Comments and Corrective actions if required**	**Close-out**	
			By (date)	**Initials**
No smoking and hazard signs in place and visible?				
Cylinder caps in available and use?				
Bunds/drip trays available and in place?				
All inspection/colour coded tags used and legible?				
Empty/Full cylinders segregated, stored and secured?				
7.0 Welding and Cutting				
Hot work permit in place/used?				
All hoses fitted with 2 Flash Back arrestors (Cylinder/Torch end)?				
Electrical leads protected?				
Screen in place when welding is being carried out?				
Gas bottles on trolley and restrained?				
Fire extinguisher in place at work point?				
All equipment inspected/tags current?				
Cylinder caps in use and secured in place?				
Specific PPE available and being used?				
Fireproof blankets available and in place?				
Signage in positioned and placed to notify workers and others?				
Drip trays under stationary diesel-powered machines?				
Flammable material separated as required by the permit?				
8.0 Materials Handling, Storage				
Material stored, secured and/or stacked safely?				
Traffic control in storage and access area?				
Manual lifting operations safe and correct for material handling?				
Mechanical aids for lifting available and used?				
Materials weather protected (Sun, Rain, Storm etc.)?				
Signage is in place to notify workers and others?				
No temporary or permanent water holding areas to favour mosquito breeding?				
Spotters available to manage traffic and worker movement and control?				
Adequate space for vehicles to manoeuvre around/through compound?				
9.0 Hazardous Substances				
Safety Data Sheets available at location?				
Hazardous/Chemical (HazChem) storage with good ventilation?				
Eye wash, showers, and hand wash facility?				

Note: Full compliance record Y=Yes and record positive findings – For partial compliance record N=No and record findings to correct.				
Item	**N/A** / **Y** / **N**	**Comments and Corrective actions if required**	**Close-out**	
			By (date)	**Initials**
Hazardous liquids in suitable bund facility?				
No smoking signs displayed?				
Correct PPE available and being worn?				
Signage for HazChem displayed and visible?				
Correct spill kits available and stocked?				
HazChem containers appropriately labelled?				
HazChem certified handlers appointed?				
HazChem test certification required and certificates displayed/available?				
10.0 Work at Height				
Fall protection (barricades, railings) in place to prevent falls?				
Access to working at height is adequate and safe?				
Exclusion zones are in place and effective for the area?				
Ladders used are inspected/tagged?				
Are ladders used for access only?				
Are ladders secure (top & bottom) to prevent movement - 1m over, 1m < / 4m>??				
Are industrial ladders used for the work being undertaken?				
Are harness available and required/worn and used correctly?				
Is the work permit required, completed in full and sign-off obtained by all involved?				
Are all penetrations covered/cover secured – wording ‘hole below’?				
Are ladders stored/maintained/protected correctly?				
11.0 Scaffold				
Are Scaftags/Registers in place (signed off) and current as required for inspection requirements?				
Is scaffolding erected where needed for the work activities?				
Is the scaffolding erected by Competent/Certified persons?				
Are access to platforms in place, hand, mid-rails, toe boards in place secure and safe?				
Floor openings coverings – As above in 10.0 Working at height?				
Safety harness available, worn and used during erection of scaffolding?				
Foundations support for type of scaffolding adequate for loading, sound and secure?				
Warning signage in place, visible to all workers and others?				
Is the Scaffolding adequate for the job/activities being carried out?				

Note: Full compliance record Y=Yes and record positive findings – For partial compliance record N=No and record findings to correct.				
Item	**N/A** **Y** **N**	**Comments and Corrective actions if required**	**Close-out**	
			By (date)	**Initials**
The scaffolding complies with design drawings (Temporary Works)?				
What type of Scaffolding is provided – basic, special, suspended, hanging?				
12.0 Excavations and Trenching				
Daily checks completed by competent person and recorded?				
Checks for underground services performed prior to excavation?				
Underground services located prior to excavation (hand digging, HydroVac)?				
Are sufficient and adequate barricaded in place to prevent falls into excavations?				
Are ladders used/secured for a safe means of access and egress in/out of excavation?				
Is the excavation >1.5 metres deep shored, battered benched?				
Is the excavated material away from the cut face (1 metre)?				
Is the excavation/trench width adequate for working activities?				
Is Air quality checks being done prior/during work activities and are the readings recorded?				
Is the excavation/trench Benching/Battering/Shoring adequate?				
13.0 Formwork/Concrete Work				
Are design drawings available for the temporary works and sign-off obtained?				
Is the temporary works erected in accordance with design drawings?				
Is the temporary works inspected prior to and during pour?				
Is the Formwork In good order and safe condition?				
Is the Formwork process/JSEA covers “do not drop” when being stripped?				
Penetrations covered and cover secured/fixed with words – ‘hole below’?				
All Vertical bars are covered and protected with anti-implament devices				
All waste concrete controlled and disposed of correctly?				
14.0 Traffic Management (Pedestrian and Vehicle)				
Traffic Management Plan(s) approved by the Engineer?				
Traffic control and signs checked every 2 hourly for compliance with the plan?				
Road traffic rules/signs being obeyed by workers and others?				
Barriers and signage adequate for the work activities?				

Note: Full compliance record Y=Yes and record positive findings – For partial compliance record N=No and record findings to correct.				
Item	**N/A** **Y** **N**	**Comments and Corrective actions if required**	**Close-out**	
			By (date)	**Initials**
Are proactive measures in place to prevent pedestrians and vehicles entering active working areas?				
Parking rules are obeyed by workers and others?				
Speed limits obeyed by workers and others?				
Dust suppression systems being operated and adequate for the whole operation?				
Lighting available and adequate for the tasks during dusk/night operations?				
Driving habits being observed comply with on-site requirements?				
Haul roads sign posted, marked, maintained and have adequate edge bund for usage?				
Traffic awareness workshops held – Schools, churches, community meetings etc.?				
TMP distributed to all workers, drivers, operators working on-site?				
Are weekly safety awareness and enhancement meetings held and attended by everyone?				
Traffic light system used, maintained and is manned?				
Maximum traffic diversions for work activities – 5 Km rural – 1 Km urban?				
Minimum lane width for traffic movement – single 3.5m – two-way 7.5m				
Roads maintained in a safe and trafficable condition at all times?				
Has the contractor prepared a response plan for deteriorating road conditions/environment?				
Has the Contractor prepared a detailed completion report?				
15.0 Housekeeping				
Specific waste bins available and in place/used emptied/lids?				
Waste bins to segregated items used on-site (Wood, Steel Recycle)?				
All work areas are tidy and with safe access to all locations?				
On-site sewage/septic tanks are controlled and not allowed to overflowing?				
Walkways and passages demarcated/tidy/safe and maintained?				
Shelter from sun/rain provided and maintained?				
Signage legible, clean, visible and appropriate?				
Waste containers for cigarette butts provided and used?				
Lighting adequate provided within facilities and to work locations?				
Hi Glare locations identified, and workers advised/informed to avoided?				

Note: Full compliance record Y=Yes and record positive findings – For partial compliance record N=No and record findings to correct.				
Item	**N/A** **Y** **N**	**Comments and Corrective actions if required**	**Close-out**	
			By (date)	**Initials**
Security site fencing installed around hazards/compound?				
Site fencing in good order and condition with appropriate signs advising "Authorised Entry Only"?				
Office areas in a clean, tidy and hygienic condition?				
Storage areas clearly defined, tidy and maintained?				
Appropriate signs to inform visitors, workers and others fixed and visible to all?				
16.0 Fire Prevention				
Adequate number of Fire extinguishers available and in place?				
All extinguishers have clear and ready access to uplift?				
All extinguishers inspection tags up to date?				
Appropriate signage in place to inform those in the area?				
Correct Firefighting procedure displayed?				
Emergency contact Numbers' displayed (fire, ambulance, police)?				
No smoking enforcement/signs displayed?				
Extinguishers suitable type/size for environment?				
Company vehicles fitted with fire extinguishers?				
Emergency response plan displayed and understood by all in the area?				
17.0 First Aid Facilities				
1st Aid person(s) on site for the number of workers in the area?				
1st Aid kit stocked, maintained and stocks are within expire date?				
Emergency contact numbers for first aiders is displayed around site?				
Signage for response is adequate and visible for all to see/read?				
All shifts operations are adequately covered?				
Emergency plan displayed and understood by all workers?				
A clinic provided with suitable equipment and staff to provide treatment for workers?				
Medical doctor appointed and a nurse with two years' experience?				
18.0 Health / Amenities				
Mess Rooms/Toilets clean, hygienic and tidy condition?				
Mess rooms and toilets adequate for numbers and size of workforce?				
Female toilet provided with additional personal equipment provided?				

Note: Full compliance record Y=Yes and record positive findings – For partial compliance record N=No and record findings to correct.				
Item	**N/A** **Y** **N**	**Comments and Corrective actions if required**	**Close-out**	
			By (date)	**Initials**
Soap and paper towels available and maintained?				
Wash your hands signs legible and displayed?				
Correct drinking water supply available?				
Food storage adequate for all types of environments?				
Quit smoking signage visible and displayed?				
Fitness for work signage visible and displayed?				
UV Protection cream available, used and maintained?				
Hazard/Incident reporting system in place?				
Vehicle available for treatment and transport of injured worker/visit to medical centre?				
The breeding sites (stagnant water ponds) for mosquitoes are eliminated?				
Is a medical clinic, with all necessary medication provided?				
Has any outbreak of illness of an epidemic nature occurred?				
Is a plan in place to manage an outbreak of illness?				
19.0 Asbestos Removal				
JSEA prepared to cover the removal of asbestos and engagement of workers prior to it being issued?				
Is the correct PPE available and being used?				
Is the asbestos material being contained correctly?				
Are the correct disposal methods being used and the appropriate dockets available and completed in full)?				
Is the Asbestos Contractor an approved remover with current certification?				
20.0 Lasers				
Is appropriate signage in place and visible to all in the area?				
Is the equipment being used positioned so as Not erected at eye level?				
Has a Laser Safety Officer been appointed on-site for (class 2 or 3A)?				
21.0 Noise				
Has a noise assessment been conducted to identify if any excessive levels exist?				
Has any personnel monitoring been carried out in noisy areas?				
Is the correct PPE available, been issued, worn and maintained by the workers and others?				
Is the correct signage erected to inform workers and others as required?				

Note: Full compliance record Y=Yes and record positive findings – For partial compliance record N=No and record findings to correct.				
Item	**N/A** **Y** **N**	**Comments and Corrective actions if required**	**Close-out**	
			By (date)	**Initials**
Is a medical assessment conducted with each worker exposed to high noise levels?				
22.0 Explosive Power tools				
Are Operators trained and hold the correct certification?				
Are warning signs visible and in place to warn workers and others?				
Is the correct PPE available, been issued, worn and maintained by the workers using the tool and other in close proximity?				
Is the tool placed in a secure container?				
Does the tool display and has current certification?				
23.0 Confined spaces				
Has the Hazard/Risks been Identified for the confined space?				
Has a JSEA been prepared with the engagement of the workers and, issued?				
Is air monitoring completed prior to entry and during work within the confined space and recorded?				
Is breathing apparatus available and used by workers and have they received the required training?				
Is a rescue plan developed and appropriate rescue equipment available?				
Is an entry permit prepared and complete correctly?				
Are all those involved trained and competent workers for the confined space work?				
Standby/Spotter are in place and trained to respond?				
All Isolation of external hazards are in place, checked and verified complete?				
All workers familiar with confined space requirements?				
24.0 Explosives				
Has a Blasting Management Plan been prepared and approved by the Engineer?				
Site location/plan approved by the Engineer?				
Storage facility designed and approved for the explosives?				
Transportation of explosives is in compliance with legislative controls and procedures?				
Controls during blasting operations are in-place and effective?				
Blasting operations under the control of a qualified and certified Blaster?				
The Engineer is notified within the specified time-lines set within the contract?				

Note: Full compliance record Y=Yes and record positive findings – For partial compliance record N=No and record findings to correct.				
Item	**N/A** / **Y** / **N**	**Comments and Corrective actions if required**	**Close-out**	
			By (date)	**Initials**
Buildings and services are provided with adequate protection to prevent damage from flying debris?				
All precautions are in-place to ensure no harm to individuals during blasting operations?				
Police control traffic movement within 400 m of the blasting operations?				
All signs are in place to warn others of the blasting operations?				
The use of a Vibro-metre is in place during blasting?				
Weather condition have been assessed (Lighting Storms etc.)?				
24.0 Other – Specify Activity:				
JSEA reviewed by all relevant workers?				
JSEA controls being implemented and review as required?				
Has the work environment changed since commencement?				
Does the JSEA require revision and has this been done on a regular basis?				

Close out of previous corrective actions

Have all the hazards/risks identified and documented in the previous site safety inspection checklist dated (insert date) ___/___/_____ been rectified.

Yes/No If No give details: -

_____

_____

_____

_____

_____

_____

_____

_____

Name: _____ **Signature:** _____

Position: **Date:**

Reviewed by Project Manager.

Name: _____ **Signature:** _____

Date: _____

Annex 8. Environmental guidelines for civil works contracts

The contractors are required to use environmentally acceptable technical standards and procedures during the implementation of construction of works. All construction contracts will contain the following requirements:

a. Take precautions against negative influence on environment, any environmental damage or loss through prevention or suppression measures (where it is possible) instead of liquidation or mitigation of negative consequences.
b. Observe all national and local laws and rules on environmental protection. Identify officers responsible for the implementation of activities on environmental protection conforming to instructions and directions received from the construction and design or environmental protection agencies.
c. Store and dispose of construction waste consistent with national regulations and the subproject (site-specific) EMP
d. Minimize dust emission to avoid or minimize negative consequences influencing air quality.
e. Provide pedestrian crossing and roads and access to the public places.
f. Provide markets with light and transient roundabout connections to assure safety and convenience.
g. Prevent or minimize vibration and noise from vehicles during explosive activities.
h. Minimize damages and assure vegetation recovery.
i. Protect surface and underground water from soil pollution.

Annex 9. Termoelectrica Express Environmental Audit

PLAN OF EXPRESS ENVIRONMENTAL AUDIT No. 1

Audited entity: **Termoelectrica SA**

1. Process name**:** **Top Management, EHS processes**

2. The scope of audit**:** **Audit of compliance with WB and GIIP requirements**

3. Normative references**:** **WB ES Standards, ISO 9001:2008, ISO 14001:2004, ISO 45001, Republic of Moldova's legal requirements**

4. Auditors/Consultants**:** **Overcenco Aureliu and Burlacu Anatol**

5. Type of audit**:** **Audit of compliance**

6. Audited activities

Date	Hour	Examined requirements (Quality & EHS)	Audited party	Auditor
02.03.20	14:00-17:00	WB ES Standards ISO 9001:2015 ISO 14001:2015 ISO 45001:2018 Republic of Moldova's legal requirements	Lupan Alexandru Mita Vitalii Contedailova Oxana Rusu Octavian	Overcenco A. Burlacu A.

AUDIT QUESTIONNAIRE

Audited entity: Termoelectrica SA

Audited Process: Top Management, EHS processes

No.	EXAMINED REQUIREMENTS	AUDIT PROOFS	Audit findings	
			C	N
	Q&EHS POLICIES			
1.	Does the company have an integrated Q&EHS and Social Responsibility Policy?	The Company established, implemented and maintains a Quality Management Policy and now Company is working for integration of QMS with EMS and OHS MS. Recertification process will take place this year.	Yes	
2.	Does entire company personnel know, respect and apply integrated Q&EHS Policy?	The policy is posted on the Company's web site and on the wall of each department.	Yes	
3.	Does the company have developed an Operational Policy for their scope of work?	The Company keeps under control operation with high risks and has specific operational procedures and instructions.	Yes	
4.	Does entire personnel know, respect and apply this policy?	Entire personnel know about the provision of stipulated on Quality Policy and result of training is recorded in Minute of training.	Yes	
5.	Does entire personnel know, respect and apply company objectives and targets?	Entire personnel know about the established objectives and targets of the Company and result of training is recorded in Minute of training.	Yes	
6.	Does the company have integrated management system procedures?	The Company has selected a Consultant in order to help them to develop an Integrated Q&EHS Management System	Yes	
7.	Does the company have established, implemented and maintain an Operational Management System?	The Company has selected a Consultant in order to help them to develop and implement an Integrated Q&EHS Management System		**No**

	MANAGEMENT OF RISK			
8.	Does the company identify its operational dangers, assessed risks and take measures for keeping them under control?	The Company developed a Procedure for danger/aspects identification, risks assessment and risks control; and has assessed specific risk and established measures to kept risks under control	Yes	
9.	Does the company have the list of critical activities/tasks?	The Company identified all critical activities and established operational control for those aspect that need to be controlled	Yes	
10.	Does the company have available an Operational Management System Program?	The Company comply with Industrial Safety regulations for industrial dangerous objectives and keep these aspects under control	Yes	
11.	How does the company keep critical risks under control?	The Company established operational procedures for processes with high risks and specific instruction	Yes	
12.	Does the company assess working places?	The Company has assessed working places by engaging an authorized laboratory for working environment measurement	Yes	
	LEGAL AND OTHER REQUIREMENTS			
13.	Does the company identify, access the legal and other requirements?	The Company complies with all applicable ES laws of Republic of Moldova	Yes	
14.	Does the company apply legal and other requirements?	The Company applied all applicable ES requirements to its scope of work and domain of application	Yes	
	RESOURSES, ROLES, RESPONSIBILITIES AND AUTHORITY			
15.	Does the company establish roles and responsibilities and authority?	The Company has an Organization Chart and this chart is approved by the General Manager	Yes	
16.	Does the company have a management representative?	For QMS, the Company has a management representative for managing quality process	Yes	
17.	Does the company establish roles, responsibilities and authorities for company top management?	The Company has established role and responsibilities and these activities are described in Job Description	Yes	
	COMPETENCE, TRAINING AND AWARENESS			
18.	Does the company have available an annual training matrix?	The Company keep this aspect under control and HR manages this aspect, including preparation, updating and implementing an Annual Training Plan (ATP)	Yes	

19.	Does the company identify its HSE needs for training?	HR collect all training needs form Company's Department and all these training needs are entry data for Annual Training Plan. ATP is approved by the General Manager of the Company.	Yes	
20.	Are personnel competent for performing HSE work?	The Company keep under control the competence of personnel and all records are at HR	Yes	
21.	Are personnel awareness of jobs performed?	The Company performs training on the job, periodically and other types of training	Yes	
22.	Does company have a "job description" for all personnel?	The Company has all JD for all personnel	Yes	
23.	Does the company have available an organizational chart?	The Company Organization Chart is approved by the General Manager	Yes	
24.	Does the company have available all copies of diplomas, training records?	HR department is responsible for keep under control all data regarding process of recruiting and records	Yes	
25.	Does the company have the contracts signed with entire personnel?	The Company complies with all applicable Republic of Moldova laws and all Contractors signed with workers are at HR	Yes	
	COMMUNICATION			
26.	Does the company communicate to interested parties?	The Company has a procedure to communicate with all interested parties including communities.	Yes	
27.	Internal communication?	The Company has an internal procedure to communicate all aspects in accordance with ISO 9001 requirements.	Yes	
28.	External Communication?	The Company communicates its information based on procedure established ISO 9001	Yes	
29.	Does the company communicate with client?	The Company has a call center and communicate continually with clients.	Yes	
30.	Does the company analyze and respond to complaints from interested parties?	The Company's call center records all complaints in a special log.	Yes	
	OPERATIONAL CONTROL			
31.	Does the company have a procedure for PPE?	The Company established special instruction for each risk and provide PPE for each worker.	Yes	
32.	Does the company have a procedure for PTW?	The Company established a special instruction for issuing PTW for open fire.	Yes	

33.	Does the company have a procedure for fire prevention, firefighting and fire control?	The Company has a firefighting plan and a team with all necessary firefighting equipment and emergency pollution prevention equipment.	Yes	
34.	Does the company have a procedure for welding and cutting/oxygen cylinders?	The Company has a special instruction for welders and all welders are qualified (hold diploma of training issued by MEI)	Yes	
35.	Does the company have a procedure for protection of environment?	The Company complies with Republic of Moldova's environmental laws and hold (for each objective/unit) an environmental authorizations for emission in air of gaseous pollutants and for water use.	Yes	
36.	Does the company have a procedure for contractor management?	The Company has a special instruction for keeping under control contractors and subcontractors.	Yes	
37.	Does the company have a procedure for first aids?	The Company has a medical department for rending first aid in case on emergency	Yes	
38.	Does the company have a procedure for work environment?	The Company complies with Republic oi Moldova environmental laws and measure environmental factor	Yes	
39.	Does the company have a procedure for medical control?	The Company has a schedule for medical control and keep records at OHS Department	Yes	
40.	Does the company have a procedure for management of chemicals?	The EHS Department has Regulation and role and responsibilities are established	Yes	
41.	Does the company have a procedure for equipment safety?	The Company complies with Industrial Safety laws and hold Authorization for management of industrial safety objects	Yes	
	EMERGENCY PREPAREDNES AND RESPONCE			
42.	Does the company establish the list of possible emergency situations (ES)?	The Company has a plan in case of emergency	Yes	
43.	Does the company establish credible scenarios for ES?	The Company establishes scenarios for all potential types of emergency	Yes	
44.	Does the company have all necessary equipment in case of ES?	The Company has all necessary emergency equipment	Yes	
45.	Does the company have plan, layout, muster point, wind direction indicator, etc in case of ES?	The Company has all arrangement in case of emergency	Yes	
46.	Does the company have a plan in case of spill and leakage?	The Company has in place all spill and leakage devises.	Yes	

47.	Does the company have a plan of actions in case of ES?	The Company has established a Communication plan in case of emergency	Yes	
48.	Does the company have a plan of communication in case of ES?	The Company has established a Communication plan in case of emergency	Yes	
49.	Are personnel competent in case of ES?	The Company has a firefighting team to act in case on emergency. FFT are competent and performed training with Firefighting Department of RM	Yes	
50.	Does the company test its ES equipment?	The Company keeps under control all emergency equipment by checking and testing them annually	Yes	
51.	Does the company have enough firefighting suits?	The Company has all necessary equipment in case of fire	Yes	
52.	Does the company have enough wash stations in case of ES?	There are some washrooms on the territory of the Company	Yes	
53.	Does the company have shower in site in case of emergency?	The Company has enough showers to be used in case of emergency	Yes	
54.	Does the company have gas detectors or other monitoring devices?	The Company has gas detectors for monitoring gas leakage	Yes	
55.	Does the company have an alarm system?	The Company has a alarm system in case of emergency situation	Yes	
	MONITORING AND MEASUREMENT			
56.	Does the company monitor its HSE performance?	The Company monitors all EHS performances and report to all interested parties	Yes	
57.	Does the company have a procedure for equipment maintenance?	The Company keeps all monitoring and measurement equipment in conformity with Republic of Moldova requirements	Yes	
58.	Does the company have a list with all equipment?	The Company has a list with all used equipment	Yes	
59.	Does the company have a plan of preventive maintenance?	The Company has a Plan for maintenance	Yes	
60.	Does the company have a plan for corrective maintenance?	The Company has a Plan for maintenance	Yes	
61.	Does the company have an annual maintenance program?	The Company has an annual maintenance program	Yes	
62.	Does the company have a list with MM equipment (MME)?	The Company has a list with all MME	Yes	
63.	Does the company have an annual program for MME metro-logical testing?	The Company has a MME Annual Program for metrological testing	Yes	
64.	Does the company keep the records of MME testing?	The Company keeps all records of metrological testing	Yes	

65.	Does the company monitor and measure its performance regarding environment?	The Company monitors and measures environmental performances, including by complying with authorization conditions and with reporting obligations on environmental aspects (e.g., on air, water, wastes)	Yes	
66.	Does the company monitor and measure its performance regarding OHS?	The Company monitors and measures OHS performances and have a Sanitary Authorization	Yes	
67.	Does the company monitor and measure its performance regrading security?	The Company monitors and measures its security performances	Yes	
	EVALUATION OF COMPLIANCE			
68.	Does the company comply with legal and other requirements?	The Company complies with applicable EHS RM requirements	Yes	
69.	Does the company comply with standards requirements?	The Company complies with all branches standards and have a License	Yes	
70.	Does the company comply with work authorization/permission?	The Company obtained all necessary permits and authorization	Yes	
71.	Does the company comply with third party audits and other requirements, operator requirements?	The Company complies with third party audit and took all measures to correct nonconformities	Yes	
	NON-CONFORMITY, CORRECTIVE AND PREVENTIVE ACTION			
72.	Does the company establish preventive measure?	The Company takes all measures to prevent nonconformities and incidents	Yes	
73.	Does the company have a report for investigating non-conformities?	The Company reports all incident to all interested parties	Yes	
74.	Does the company keep all non-conformities under control?	The Company keeps all nonconformities under control	Yes	
75.	Does the company communicate nonconformity to interested parties?	The Company communicates nonconformities to interested parties	Yes	
76.	Does the company analyze non-conformities?	The Company analysis and takes measures to prevent nonconformities	Yes	
77.	Does the company establish HSE measures for preventing re-occurrence of nonconformity?	The Company takes all measures to prevent the reoccurrence of nonconformity	Yes	
	INTERNAL AUDIT			
78.	Does the company have an annual safety audit plan?	The Company has an intern audit team established based on ISO 9001	Yes	
79.	Does the audit plan contain all aspects of company activities?	The Company’s audit plan covers all processes	Yes	

	PARTICIPATION AND CONSULTATION			
80.	Does the company have a HSE Committee?	The Company has a Trade Union organization and all employees have right to be a member. The Company has a EHS Committee and the scope of this committee is to consult employees with EHS aspects	Yes	
81.	Does the company consult personnel regarding HSE issues?	The Company consults employees and keeps records of consultation	Yes	
82.	Does the company consult interested public with its HSE performances?	The Company has a call center for consultation of all interested parties	Yes	
83.	Does the company communicate to interested parties about their scope of work?	The Company organizes one a year “Open day” for all interested parties	Yes	
	INCIDENT INVESTIGATION			
84.	Does the company investigate EHS incidents?	The Company investigates and reports all incident to all interested parties, according to national labor safety regulations	Yes	
85.	Does the company report HSE incidents interested parties?	The Company investigates and reports all incident to all interested parties	Yes	
86.	Company HSE statistics?	The Company has an incident statistic	Yes	

Drawn up,

Auditors

Overcenco Aureliu

Burlacu Anatol

AUDIT REPORT No. 1

1 Date: 2020.03.02

2 Audit scope: Audit of compliance with WB and GIIP requirements

3 Auditor: Burlacu Anatol, Overcenco Aureliu

4 Entity / audited process: Termoelectrica SA / EHS processes

5 Contacted personnel: Lupan Alexandru, Mita Vitalii, Contedailova Oxana, Rusu Octavian

6 Audit objectives: Check Operational Management System if comply with normative references.

7 Normative references and audit criteria: WB ES Standards, ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, Republic of Moldova's legal requirements

8 Audit findings:
As an overall finding, the company OMS is in compliance with the WB and GIIP standards. Termoelectrica SA have an implemented Quality Management System according to ISO 9001:2015, and other three important management systems (environment, OHS and energy management) are under development with the assistance of specialized/recognized company. Due to a high industrial and community importance, the company respect all national regulations on industrial safety, environmental protection and OHS as a priority.

8.1 Observation:
As from environmental point of view, the Carbon Footprint monitoring (reporting) in accordance with the Greenhouse Gas Protocol is not performed by the company, and should be considering as new project activity.

9 Non-conformity (ies) findings: MAJOR/MINOR

10 Conclusions regarding audit objectives:

11 System efficiency regarding meeting objectives:

12 Dissemination: (entity, function, name, surname and signature**)**
Copy 1: Burlacu A.
Copy 2: Mita V.

Drawn up,	**Accepted,**
Auditor	Management Representative
BURLACU A.	MITA V.
Date:	Date: