Project Information Document (PID)
# BASIC INFORMATION

## A. Basic Project Data

<table>
<thead>
<tr>
<th>Country</th>
<th>Project ID</th>
<th>Project Name</th>
<th>Parent Project ID (if any)</th>
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<td>Moldova</td>
<td>P172668</td>
<td>Second District Heating Efficiency Improvement Project</td>
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<td>Termoelectrica, Moldova Energy Projects Implementation Unit</td>
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**Proposed Development Objective(s)**

The Development Objective of the Project is to help increase the efficiency of the District Heating system in Chisinau.

**Components**

- Optimization of Heat and Electricity Generation
- Pilot Energy Efficiency Investments
- Project Management and Technical Assistance

## PROJECT FINANCING DATA (US$, Millions)

### SUMMARY

<table>
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### DETAILS

**World Bank Group Financing**

| International Bank for Reconstruction and Development (IBRD) | 100.00 |
Environmental and Social Risk Classification

Moderate

Decision

The review did authorize the team to appraise and negotiate

Other Decision (as needed)

B. Introduction and Context

Country Context

1. **Since the early 2000s Moldova has made significant progress in achieving inclusive growth, averaging 4.6 percent annually, and reducing poverty, which declined from 26 percent in 2007 to 9.6 percent in 2015.** Despite heightened political instability, in the first three quarters of 2019 the economy grew by 4.8 percent after a 4 percent growth rate in 2018. In the second half of 2019, however, the growth subsided slightly. The growth was supported mostly by strong investments and robust private consumption driven by remittances, pre-election tax cuts and increase in public wages and transfers. Construction (+1.7 pp), trade (+1.2 pp), and ICT (+0.4 pp) exhibited the strongest growth, while agricultural contribution remained dismal at 0.3 pp.

2. **The economy is facing recession in 2020 and mid-term outlook has significant downside risks.** The uncertainty related to the severity of the COVID-19 pandemic weighs heavily on the downside. With tumbled remittances and foreign demand, and the country in lockdown since March 17, the economy is facing both steep supply and demand contractions. Against this background and the uncertainty related to the length of the shutdown of the economy, including at the international level, the economy is expected grow by around 3.8 percent, provided that consumer and business confidence returns to normal.

3. **With declining productivity levels, lower external financing and existing structural deficiencies, the coronavirus crisis amplified the macroeconomic risks.** First, the impact of the COVID-19 pandemic is expected to hit hard the economy and disposable income of the population. Depending on the duration of the lockdown, many industries and businesses will be affected, increasing bankruptcy rates. Additionally, even before the pandemic breakout, external financing was uncertain and conditioned by genuine commitment to reform agenda. With a sharp drop in public revenues and high fiscal costs to support health spending, households and businesses, the fiscal stance will remain fragile, while weak institutions and governance compound this risk. Reduced trade and business activity at the regional and global level may further affect negatively Moldova’s growth. The slowdown of transmitting economies may lead to a further reduction of remittances, which have shown a declining trend already in 2019. Over the medium term, potential delays in the implementation of structural reforms pose a key
macroeconomic risk. The economy struggles with low productivity, unfavorable demographics, and serious governance challenges. The 2020 Presidential and possible parliamentary elections expenditure spree poses another risk to the fiscal framework. Additionally, vested interests undermine the reform agenda and the investment process. The large share of the state in the economy, coupled with weak institutions and governance challenges, including in the financial sector, especially non-banking, pose additional risks.

4. **With limited resources, Moldova is vulnerable to energy security shocks.** Moldova imports most of its necessary energy resources and has been susceptible to energy security shocks – in 2008 gas import was halted due to the inability of the main Moldovan DH operator to pay for the gas supplies, which impacted vulnerable parts of the population. Moldova is one of the most energy intensive economies in the region despite halving its energy intensity since 1990 due to the decline in industrial production. Improving energy efficiency and ensuring energy supply security are critical factors in enhancing Moldova’s economic competitiveness. Inefficient energy use in Moldova is leading to higher energy costs for industries and residents, with a negative impact on growth and competitiveness. An efficient and diversified energy system is a basic prerequisite for sustaining growth and directly fighting poverty. In the winter season, a median Moldovan household devotes a fifth of its expenditures to energy services and products, with the poorest quintiles spending up to 20 percent on an annual basis.

**Sectoral and Institutional Context**

5. **After the collapse of the Soviet Union and until 2000, the district heating (DH) sector in Moldova went through a significant contraction.** During the 1990s two companies were providing district heating services in Moldova, namely, JSC “Termocom” (serving customers in the country’s capital Chisinau) and RPA “Termocomenergo” (serving customers in the rest of the country). As the macroeconomic situation in the country was worsening and residential tariffs skyrocketing (increasing 12 times between 1994 and 1999), consumers had difficulties paying for services and started looking for alternative solutions disconnecting from central DH supply. As a result, production of heat and its supply to end-consumers dropped by half between 1994 and 1999. Overall, in 1999 only 53% of the available DH capacity was in use – with utilization rates ranging from 9% to 76% in different cities. The DH system was also very inefficient with Termocom facing increasing losses.

6. **Facing the need to increase efficiency of utilization of DH assets in municipalities, the Government carried out a reorganization of Termocomenergo which mostly resulted in further degradation of DH assets.** According to the provisions of the Government Decision No. 438 of May 10, 2000, RPA “Termocomenergo” was dissolved, and its assets were transferred to local public administrations (LPAs), which established municipal DH enterprises. Most of those enterprises didn’t have enough experience or funds to maintain their DH systems and as a result those systems kept failing or losing efficiency. In 2000, apart from the municipalities of Chisinau and Balti, around 189 central district heating systems were operating with heat energy produced by 121 gas-fired plants, 46 heavy fuel oil-fired plants, and 22 coal-fired plants. By the beginning of 2000s the municipal DH companies in most of the small towns had gone bankrupt and the DH systems stopped their operation with infrastructure either being conserved or dilapidated and lost. This had a negative social and economic impact and consumers had to find alternative heating solutions.
7. ** Currently, there are 7 central district heating (CDH) companies licensed to provide DH services in Moldova.** Five of them operate in small towns and at a very small scale – typically supplying heat to a limited number of public buildings and, in some cases, to a few residential consumers and industrial and commercial facilities. Other consumers in small towns use individual heating solutions. The other two are large-scale DH systems currently operating in the cities of Chisinau (including several small-scale DH facilities in Chisinau suburban areas) and Balti, with most heat generated by Combined Heat and Power Plants (CHPs). Chisinau covers about 86% of DH delivered to consumers in Moldova and Balti about 11%. The share of other DH providers is very small, only about 3% combined.

**District Heating in Chisinau**

8. **Between 1990 and 2015, the district heating system in Moldovan Capital – city of Chisinau was managed by the municipally owned DH company “Termocom” (TC).** TC owned and operated a pipeline network of 711 km serving a population of more than 500,000 or about 62 percent of Chisinau Municipality’s residents (including suburbs), for whom the DH system was the least cost option for heating. Lack of investments led to rapid deterioration of the quality of DH services and the sector’s financial condition, resulting in a massive loss of consumers and a drastic increase in cost of services. The inability of Termocom to generate sufficient revenue precluded the conducting of preventive maintenance, rehabilitation and investments, ultimately leading to an inefficient and deteriorating heating system. The poor quality of DH services led to a rise in disconnections from the centralized DH system by the wealthier residents of Chisinau, who could afford installation of individual gas boilers in their own apartments. As a result, about 24.1 thousand apartments (or 11% of the total number of apartments) with the heat load of 85.2 Gcal/h disconnected from the CDH system starting 2000. The peak of disconnections took place between 2003 to 2005 with 5581 apartments disconnected in 2003, 5442 in 2004 and 2744 in 2005. Many businesses and public institutions also disconnected because of deteriorating service installing their own gas-fired boilers.

9. **The rate of disconnections was so high that the viability of CDH 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 in a region with temperatures of minus 6 degrees Celsius during winter, which would have in turn left the vulnerable to depend on a rapidly deteriorating DH system and higher costs of service due to a shrinking consumer base. Letting the CDH system in Chisinau collapse would have had not only a strong negative impact on the welfare of the vulnerable population in the capital, but the loss of revenues would have also threatened the only significant source of power generation on the Right Bank\(^1\) of the Dniester River negatively impacting vulnerable groups with significant implications for the country’s energy security.

10. **Since 2001 TC had been financially in default and under legal bankruptcy proceedings.** For several decades the situation in the district heating sector in Chisinau has been deteriorating. Due to below cost-recovery level heating tariffs that had been imposed by the municipality, TC has been generating the cash flow required for operations by accumulating arrears to CHP-1 and CHP-2, its main suppliers of heat. The CHPs managed their own cash flow by passing on the financial burden to Moldovagaz (the gas supply company jointly owned by the Government of Moldova and Gazprom, Russia)

\(^1\) The terms “Left Bank” and “Right Bank” are used in accordance with the Government’s official documents and statistics, including the Government’s *Energy Strategy.*
and their distribution subsidiary Chisinaugaz. The debt stock to Moldovagaz accumulated to about MDL2.8 billion (US$220 million or 3.5 percent of GDP per the 2009 exchange rate).

11. **In 2009, with assistance from the World Bank (WB) and the Government of Sweden, the Government of Moldova (GoM) has embarked on a comprehensive DH sector reform resulting in the creation of a new DH company – Termoelectrica in 2015.** In November 2008, Moldovagaz halted gas supply to Moldova due to the inability of Termocom to pay for the natural gas supplied. The disruption in the gas supply 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 accumulated debt stock, which was well beyond municipal authorities’ financial capacity, GoM took the decision to take on the responsibility for the DH sector reform as well as debt restructuring with Moldovagaz and asked for the World Bank’s support. As a result of intense analytical TA support from the World Bank and Sweden, the GoM approved on November 13, 2013 the Concept and Action Plan on Chisinau DH sector institutional, corporate and financial restructuring. The document initially envisioned a merger of Termocom, 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, TC entered the liquidation procedure in March 2014 and in February 2015 was declared bankrupt. In June 2015 a new state-owned company was registered – “Termoelectrica” (TE), which was created through an extended process consisting of merger by absorption of CHP-1 by CHP-2 (heat and electricity generators), and the subsequent purchase by the newly merged CHP-2 of TC’s functional assets.

**Current situation in DH Sector in Chisinau**

12. **Termoelectrica is currently the main producer of electricity in cogeneration mode and the single DH producer, supplier and distributor in Chisinau and its suburbs.** TE covers about 20% of electricity demand on the Right Bank. In Chisinau, it provides DH to about 4,400 buildings, including 680 public institutions, 580 businesses, 320 single-family (individual) houses, and 2,860 apartment buildings including more than 209,000 apartments (housing units). TE also serves hot water to 4,461 apartment buildings, 208 public institutions and 302 commercial enterprises. Production of electricity and heat in cogeneration mode is carried out by two CHPs which could operate both separately and in a common circuit. 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 agreements and is operated only in summer load for DHW production due to economic reasons (as described in more detail in the following sections). Heat is also generated by two heat-only boiler (HOB) plants: HOB West and HOB South. TE also operates 19 small HOBs located in the suburbs.

13. **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 DH company and improving the quality and reliability of heating services delivered to the population in Chisinau. Effective since August 14, 2015, DHEIP has been supporting “no regret” priority investments, primarily on the network side. Scheduled to close in June 30, 2020 DHEIP achieved remarkable progress. In particular, it allowed the halt and reversal of a downward spiral in DH services in Chisinau and is helping generate sufficient funds for maintenance and investments, the lack of which were causing poor quality of service. As a result of the DHEIP’s supported investments, a new pumping station and main pipeline were constructed and three other major pumping stations (out of 17 in total) were rehabilitated 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 450 individual heating stations (IHSs) were installed. Success achieved in the recovery process also includes a completed corporate restructuring and staff optimization, the reduction of heat losses and electricity consumption, improvements in service and client-orientation (resulting in reconnections and increased sales) and return to profitability (thanks to continued policy dialogue with ANRE).

14. **DHEIP supported GoM’s decision to streamline operation and strengthen the corporate structure of Termoelectrica, including closing down of the operation of CHP Source-2 (formerly CHP-1), which operated inefficiently and well beyond its designed life.** DHEIP preparation analytics showed that closing down CHP-1 itself would have a net benefit of over MDL 8 million per year (close to US$619,000) for energy consumers. In order to ensure the stability of DH operations after CHP Source-2 closing and to ensure a smooth transition in the corporate restructuring process, the DHEIP supported the following programs: (a) construction of a new pumping station (new PS NO. 1) and a new connection pipeline to CHP Source-1 to service the area supplied by CHP Source-2; (b) implementation of a Social Impact Mitigation Plan, which included a staff optimization and severance payments, retraining and placement services to provide new employment opportunities to retrenched staff, and grievance mechanism; and (c) Environmental Audit for CHP-1 site providing scenarios for its decommissioning after shutdown. CHP Source-2 officially halted its operation in April 2016 at the end of 2016/2017 heating season. However, TE requested World Bank’s approval to continue operating CHP Source-2 in summer mode for DHW supply providing economic justification, and, base on the information provided the World Bank agreed to do so. The analysis showed that operation of CHP Source-1 in in summer mode to provide DHW would generate about MDL 16.5 million (equivalent of US$ 1 million) of financial losses to TE because it’s minimum output of 80 Gcal/day doubled the required maximum of 40 Gcal/day for DHW in summer, the rest heat had to be discharged in open air. CHP Source-2 will be therefore closed once the new GEs become operational and allowing the necessary summer load for DHW.

15. **TE has estimated that district heat consumption will slightly increase in the future as a result of connecting new buildings to the DH system.** However, the increase will be partly offset by more efficient use of heat through installation of Individual Heat Substations replacing inefficient district level heat substations and efficiency improvements in buildings although such improvements are expected to be made over a longer timeframe. Another factor is the reduction of heat losses in DH network as a result of continuing DH network rehabilitation program.

**Key challenges in DH Sector in Chisinau**

16. **Inefficient heat production.** While highly successful, the DHEIP Project has also revealed a significant need in investments on the heat production side of DH infrastructure, which is approaching the end of its operational life and may pose a threat to uninterrupted heat supply in Chisinau. Both CHPs fall short of modern efficiency standards (i.e. below 90%-rate), especially CHP Source-2 which was commissioned in the 1950’s and is operating at 62.3% average heat efficiency. In comparison, CHP Source-1, which was built in the mid-1970s operates at higher efficiency of 71% yet remaining well below modern efficiency standards. Operating without substantial rehabilitation or retrofit since their construction, the two CHPs have suffered from a gradual decline in efficiency, maximum output and reliability. Further underinvestment would bring the DH sector into a “death spiral” and would necessitate imposing higher tariffs while the quality of DH services would continue to decline, resulting in further disconnections and in reduction of generation volumes, which would be required to absorb the increasing fixed costs. The
Project will address those issues by supporting modernization of cogeneration assets and investing in the increase of the energy efficiency of public and residential buildings.

17. **Dependency on electricity imports.** Termoelectrica covers about 18% of the total demand for electricity on the Right Bank of the Nistru river, and the other sources of domestic generation have become marginal with the quasi-disappearance of DH outside of Chisinau. As a result, Moldova is dependent on imports of electricity for about 80% of its needs. Imports can originate from two sources: Ukraine and Kuchurgan power plant or Moldavskaya GRES (MGRES), a large power plant on the Left Bank of the Nistru river. In practice, over the last 5 years, annual imports to the Right Bank have come overwhelmingly from MGRES (at least 80% and currently 100%). Moldova’s power system was designed as part of the former Soviet Union’s IPS/UPS power system and is carrying its footprints to this date. MGRES plant was built in the 1960’s and operates at a fraction of its original nameplate capacity (originally 12 units with a total of around 2,500 MW). Originally some of the steam units operated on coal and heavy fuel, but the plant operates now solely on natural gas. The power generation efficiency of the plant is low, significantly below TE’s Source 1, and the plant operates in single cycle. The Left Bank has accumulated more than US$6.0 billion in arrears towards Gazprom, primarily because of the MGRES plant. It is unclear how MGRES ability to continue to use natural gas may be affected by the likely phase out of gas transit through Moldova (Left Bank and Right Bank). In any case, by creating additional electricity generation capacity, the Project will reduce dependence Moldova’s on imported electricity and increase country’s energy security.

18. **Financial sustainability of Termoelectrica.** Since 2016 Termoelectrica has significantly consolidated its operating profitability and financial capacity. This was possible due to efficiency gains, efforts to retain consumers and new connections, as well as the adoption of cost-recovery tariff in early 2017 by the national energy regulator ANRE, following a joint effort by the Bank, the IMF and the GoM in their dialogue with ANRE. However, TE’s financial viability is still a matter of concern, especially in the light of forthcoming investments. With the regulator’s approval, and due to improved generation of cash flow from operations, TE was able to increase significantly its annual investment program in the DH network, while paying in advance for current gas supply, and making some payments to Moldovagaz for the historical gas debt (about 10% of the MDL2.8 billion, equivalent to about US$160 at current exchange rate has been repaid by TE reducing the debt to MDL2.4 billion). TE’s increased managerial and financial discipline along with improved sector regulation have helped consolidate the position of DH in Chisinau and start to reverse the previous trend of erosion of its customer base. As a result, the total number of disconnections from the DH system reduced from 1,624 in 2011 to just 93 in 2019, while the new consumers’ base increased by about 5%. These achievements are however yet insufficient to ensure the long term technical and financial viability of DH in Chisinau. A renewal of infrastructure, especially CHP Source-1, which has a nameplate capacity of 240 MW, would involve large-scale investments, requiring considerable technical preparation. In addition, Termoelectrica is currently not able to mobilize financing for major investments under its current balance sheet position (characterized by an historical gas debt higher than the value of the regulatory asset base). The project will help improve the efficiency of DH service in Chisinau, in particular by paving the way for decommissioning of CHP Source-2 which would be replaced by gas engines with three times higher fuel efficiency for power generation, and therefore contribute to improving TE’s financial performance, as well as to strengthening its technical capacity.

19. **DH sector regulation lacks support for large investments in the sector.** The Bank’s analytical work confirmed the Moldova’s Energy Strategy 2030 statements about the inefficiency of DH regulation. New
tariffs applied in the environment of inefficient combined heat and electricity generation as well as ageing DH infrastructure did not make the DH system attractive for investments and led to the reduction of the accessibility of tariffs for the population. After repeatedly failing to adjust the DH tariff despite increasing fuel- and other costs, the situation gradually improved with ANRE approving a slight tariff increase in September 2016. However, that decision revealed important regulatory deficiencies by arbitrary interpretation by ANRE of the main cost elements of DH tariff provided by the methodology, such as regulated asset base and depreciation, level of losses, profitability, and WACC. The Bank, with IMF’s support, engaged with GoM, TE and ANRE to address those. Extensive technical discussions materialized in an MoU between TE and ANRE, which recognized the fair level of the costs and approved in March 2017 a cost-recovery tariff. The new tariff allowed TE to achieve annual financial profitability and increase significantly its capital investments from its own cash-flow, for the first time in history be current on its payments for gas, and even repay about 10% of its historical debt to Moldovagaz.

20. However, effective January 1, 2020 ANRE adopted a new DH tariff methodology going back on previous commitments and agreements with development partners. Furthermore, on March 1, 2020 ANRE approved a decision to reduce TE’s electricity tariffs by 31% based on the previous 2004 methodology, as well as on the recovery of positive financial deviations accumulated by TE in 2018/2019. The decision will adversely affect TE’s revenues in 2020 and 2021 and has prompted the company to significantly reduce its annual investment program to be able to remain current on its payments for gas. TE is also likely to be impacted by the consequences of the COVID19 global pandemic. The GoM has responded to the pandemic through the introduction of emergency state. The emergency action plan for the energy sector prevents the energy companies, including TE, to enforce payments on its consumers if the latter don’t pay (supposedly because of lockdown procedures). All together it could affect TE’s liquidity position, making it more difficult to conduct annual investments or pay timely for gas consumption. In case of durable disruption, this could lead to a deterioration of DH services quality and hence prompting consumers to leave the system. The new context of the energy sector, in particular the move towards a competitive gas market, with flexible market-based pricing, calls for a comprehensive review of tariffs regulatory methodologies and practices, which should allow for timely pass-through of gas prices in tariffs, while establishing more clarity and predictability regarding the recovery by the operators regarding other types of costs (asset bases, rates of return, depreciation). This comprehensive review should include gas tariffs, DH for which natural gas is the main cost-driver, but also electricity for which power generated by CHPs is a significant cost component. To address this question, the Bank will support TE through the Project and through sector policy dialogue in interaction with ANRE and other stakeholders, together with other development partners.

21. To address the challenges facing DH sector in Chisinau, the DH Optimization Study has identified priority high return investments in heat and electricity production. In 2018, the World 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). 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 well received by TE and GoM and helped TE with
the identification of a priority DH investment program to increase the efficiency and reliability of DH generation facilities. On the basis of this priority program, the GoM submitted to the Bank on September 23, 2019 a letter requesting funding support for a new DH operation in a total amount of US$100 million.

C. Proposed Development Objective(s)

Development Objective(s) (From PAD)
The Development Objective of the Project is to increase the efficiency of the District Heating system in Chisinau.

Key Results

- Projected lifetime energy savings due to investments financed under the project (megaJoules [MJ])
- Projected lifetime reduction in CO2 emissions due to investments financed under the project (metric tons)

D. Project Description

The proposed Project will finance the following activities:

Component 1. Optimization of Heat and Electricity Generation (US$91 million)

This component will finance modernization of Source-1 and installation of new cogeneration units based on gas engines (GEs), including electrical connections, to increase and optimize the efficiency of heat and electricity production in cogeneration mode by Termoelectrica. The Component will consist of two subcomponents:

1.1. Modernization of Generation at Source-1 (US$16.2 million), financing: (i) Reconstruction of Unit 2 (US$12 million), which will include reconstruction of steam turbine high-pressure equipment to extend its operational lifetime, retrofit of low-pressure equipment to increase electricity production capacity, power generator diagnosis, retrofit and 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 and (ii) major overhaul of turbine’s high pressure equipment and replacement of boiler’s heat surface and economizer at Unit 3 (US$4.2 million), to extend their operational lifetime.

1.2. Increasing Efficient Cogeneration (US$70 million). This sub-component will finance the installation of (i) efficient cogeneration modular units (GEs) at HOB West and CHP Source-3 [a new dedicated facility within the area of CHP Source-2] (US$63.7 million), and construction of new light facilities (sandwich panels) to accommodate the new GEs; and (ii) installation of power transformers and power facility/switch gears for GEs connection to the urban power grid (US$6.3 million).

1.3. Development and installation of a modern comprehensive Management Information System (Business and Operational Planning Management System) for Termoelectrica to improve its operational planning and control capabilities (US$3 million).

1.4. Development and installation of a modern interactive Hydraulic Simulation System (US$0.3 million).
1.5. Technical supervision and support in evaluation of bids for sub-component 1.2 (US$1.5 million).

**Component 2. Pilot Energy Efficiency Investments (US$7 million).**

This Component will finance energy efficiency investments by TE in selected public and residential buildings, including piloting of switch from vertical to horizontal inhouse DH heat and DHW distribution systems and thermal rehabilitation, such as:

(i) Installation of circa 140 IHSs and associated piping in selected residential and public buildings experiencing deficiencies with the quality of internal heating systems operation and/or where there’s no DH supply of DHW;

(ii) Pilot investments for reconstruction of internal heat and DHW distribution systems in circa 40 buildings by changing from vertical to horizontal distribution to allow heat consumption control at apartment level.

(iii) Pilot investments for thermal rehabilitation of 7 residential buildings which have already horizontal distribution systems.

The selection of buildings and corresponding energy efficiency investments will be based on several parameters, including (a) economic return for energy efficiency investment, (b) demonstrational impacts, (c) readiness for implementation regarding technical preparedness and homeowner’s willingness to participate; and (d) environmental and social implications. MEPIU will include the building selection criteria and implementation arrangement and steps in POM. A key objective of the component is to assess which approaches in terms of EE investments and financing mechanisms on the part of beneficiaries could be scaled-up in a financially sustainable manner.

**Component 3. Project Management and Technical Assistance (US$2 million):**

This component will finance:

(i) support to MEPIU for Project management activities such as fiduciary, safeguards, and project monitoring and reporting and Operating Costs, including provision of consulting services;

(ii) support to TE and MEPIU through the carrying out of training;

(iii) carrying out of TE’s Project audits.

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<td>Projects in Disputed Areas OP 7.60</td>
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**Summary of Assessment of Environmental and Social Risks and Impacts**

The proposed project activities will have moderate adverse environmental impacts and provide significant environmental benefits (reductions in local pollution such as dust and sulfur dioxide emissions; improving livelihoods...
by securing heat supply; etc.). Negative environmental impacts are primarily associated with small-scale civil works causing: (e.g. generation of dust, noise, and disposal of non-hazardous wastes; need to dispose and/or older replaced obsolete equipment; periodic traffic disruption (depending upon specific location); workers’ exposure to occupational risks safety (e.g. welding operations); increased CO2 emission due to installation of news gas turbines; etc. These risks and impacts (but CO2 emissions) will be minor, 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 and applying best housekeeping practices.

The project social risks are also moderate. No additional or private land acquisition are envisaged, and all the civil works confined to the existing lands of the TE and Buildings. However, there might be construction induced impacts to the residences during the construction period, such as temporary interruption of heating service, access to buildings etc. There will be no physical displacement or resettlement expected under the project. Overall 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.

E. Implementation

Institutional and Implementation Arrangements

**MoEI will oversee project implementation on behalf of the GoM.** MoEI’s role will be to ensure that the project is implemented in an efficient manner, consistent with the project objectives and legal agreement signed with IBRD and other development partners. Daily project implementation duties will be delegated by the MoEI to its MEPIU, established under the Government’s Decree No 1276 of December 21, 2000, as an independent legal entity, responsible for the day-to-day management of IFI-funded projects, with specific focus on procurement, contract administration, financial management, accounting, and reporting. MEPIU, as the fiduciary agent of the MoEI, has more than 20 years of experience in implementing World Bank and other donors’ projects (including Energy I, closed in 2003, Energy II, closed in 2012, and DHEIP (closing on June 30, 2020)). MEPIU is staffed with highly qualified and experienced professionals in technical, financial management, procurement, social, environment, and monitoring and reporting aspects. MEPIU will carry out its responsibilities under the Project (such as disbursement, financial management, procurement, environmental and social and monitoring & evaluation) in compliance with the requirements and safeguard policies of the World Bank, to be outlined in the Legal Agreement and Project’s Operational Manual. MEPIU will manage flow of funds on behalf of GoM for the purposes of the project.
Senior Energy Specialist
Fabrice Karl Bertholet
Senior Financial Specialist

**Borrower/Client/Recipient**
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State Secretary
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Republic of Moldova

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<th>Role</th>
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<td>Environmental and Social Standards Advisor:</td>
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<td>Country Director:</td>
<td>Anna Akhalkatsi</td>
<td>06-May-2020</td>
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