Document of
The World Bank

FOR OFFICIAL USE ONLY

Report No: PAD567

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US$40.5 MILLION

TO THE

REPUBLIC OF MOLDOVA

FOR A

DISTRICT HEATING EFFICIENCY IMPROVEMENT PROJECT

October 30, 2014

Energy and Extractives Global Practice
Belarus, Moldova and Ukraine Country Unit
Europe and Central Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective September 24, 2014

Currency Unit = Moldovan Leu
US$1.00 = 14.35 MDL

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ANRE	National Energy Regulatory Agency
CHP	Combined Heat and Power Station
CHS	Central Heating Station
CMC	Chisinau Municipal Council
CPS	Country Partnership Strategy
DH	District Heating
ERR	Economic Rate of Return
GDP	Gross Domestic Product
GHS	Group Heating Stations
GoM	Government of Moldova
HIS	Individual Heating Substations
HoB	Heat-only Boiler
IHS	Individual Heating Stations
IFR	Interim Financial Report
IPF	Investment Project Financing
MEPIU	Moldova Energy Project Implementation Unit
MoE	Ministry of Economy
NDS	National Development Strategy
O&M	Operations and Maintenance
POM	Project Operational Manual
PPP	Purchasing Power Parity
PwC	PricewaterhouseCoopers
SCADA	Supervisory control and data acquisition
SH	Space Heating
SIMF	Social Impact Mitigation Framework
SIMP	Social Impact Mitigation Plan
TA	Technical Assistance
TPES	Total Primary Energy Supply

Regional Vice President:	Laura Tuck
Country Director:	Qimiao Fan
Senior Global Practice Director:	Anita Marangoly George
Practice Manager:	Ranjit J. Lamech
Task Team Leader:	Shinya Nishimura

MOLDOVA
District Heating Efficiency Improvement Project

TABLE OF CONTENTS

Page

PAD DATA SHEET

Moldova

District Heating Efficiency Improvement Project (P132443)

PROJECT APPRAISAL DOCUMENT

EUROPE AND CENTRAL ASIA

GEEDR

Report No.: PAD567

Basic Information		
Project ID P132443	EA Category B - Partial Assessment	Team Leader Shinya Nishimura
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints [ ] Financial Intermediaries [ ] Series of Projects [ ]	
Project Implementation Start Date 01-Jun-2015	Project Implementation End Date 30-Jun-2020	
Expected Effectiveness Date 01-Jun-2015	Expected Closing Date 30-Jun-2020	
Joint IFC No		

Practice Manager/Manager	Senior Global Practice Director	Country Director	Regional Vice President
Ranjit J. Lamech	Anita Marangoly George	Qimiao Fan	Laura Tuck

Borrower: Ministry of Finance			
Responsible Agency: Ministry of Economy			
Contact:	Mr. Valeriu Triboi	Title:	Deputy Minister
Telephone No.:	37322250554	Email:	valeriu.triboii@mec.gov.md
Responsible Agency: CHP-2			
Contact:	Mr. Anatolie Lichii	Title:	Director General
Telephone No.:	37322476061	Email:	cet2@mdl.net
Responsible Agency: Moldova Energy Projects Implementation Unit (MEPIU)			
Contact:	Ms. Ludmila Burlui	Title:	Executive Director
Telephone No.:	37322496796	Email:	mepiu@mepiu.md
Responsible Agency: CHP-1			

Contact:	Mr. Tudor Moiseev	Title:	Director General
Telephone No.:	37322475253	Email:	anticamera@cet-1.md
Responsible Agency: Termocom			
Contact:	Mr. Veaceslav Eni	Title:	Liquidator
Telephone No.:	37322495097	Email:	eniv@mail.md

Project Financing Data(in USD Million)

[X]	Loan	[ ]	IDA Grant	[ ]	Guarantee
[ ]	Credit	[ ]	Grant	[ ]	Other

Total Project Cost:	61.10	Total Bank Financing:	40.50
Financing Gap:	0.00		

Financing Source	Amount
Borrower	20.60
International Bank for Reconstruction and Development	40.50
Total	61.10

Expected Disbursements (in USD Million)

Fiscal Year	2015	2016	2017	2018	2019	2020	0000	0000	0000	0000
Annual	4.50	5.50	10.00	10.00	5.00	5.50	0.00	0.00	0.00	0.00
Cumulative	4.50	10.00	20.00	30.00	35.00	40.50	0.00	0.00	0.00	0.00

Institutional Data

Practice Area / Cross Cutting Solution Area

Energy & Extractives

Cross Cutting Areas

[X] Climate Change

[ ] Fragile, Conflict & Violence

[ ] Gender

[ ] Jobs

[ ] Public Private Partnership

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Energy and mining	Energy efficiency in Heat and Power	40		100

Public Administration, Law, and Justice	Public administration-Energy and mining	40		
Energy and mining	Thermal Power Generation	20		
Total		100		

☐ I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

Themes

Theme (Maximum 5 and total % must equal 100)

Major theme	Theme	%
Urban development	Urban services and housing for the poor	40
Economic management	Debt management and fiscal sustainability	30
Financial and private sector development	Corporate governance	30
Total		100

Proposed Development Objective(s)

The objective of the proposed project is to contribute to improved operational efficiency and financial viability of Newco and to improve quality and reliability of heating services delivered to the population of Chisinau.

Components

Component Name	**Cost (USD Millions)**
Component 1: Investments for the District Heating System	33.30
Component 2: Support for Streamlining Operations	5.60
Component 3: Project Management and Technical Assistance	1.50

Compliance

Policy

Does the project depart from the CAS in content or in other significant respects?	Yes [ ]	No [X]
Does the project require any waivers of Bank policies?	Yes [ ]	No [X]
Have these been approved by Bank management?	Yes [ ]	No [ ]
Is approval for any policy waiver sought from the Board?	Yes [ ]	No [X]
Does the project meet the Regional criteria for readiness for implementation?	Yes [X]	No [ ]

Safeguard Policies Triggered by the Project	**Yes**	**No**
Environmental Assessment OP/BP 4.01	**X**	
Natural Habitats OP/BP 4.04		**X**

Forests OP/BP 4.36		**X**
Pest Management OP 4.09		**X**
Physical Cultural Resources OP/BP 4.11		**X**
Indigenous Peoples OP/BP 4.10		**X**
Involuntary Resettlement OP/BP 4.12	**X**	
Safety of Dams OP/BP 4.37		**X**
Projects on International Waterways OP/BP 7.50		**X**
Projects in Disputed Areas OP/BP 7.60		**X**

Legal Covenants

Name	**Recurrent**	**Due Date**	**Frequency**
Section I.F.1 (a) of Schedule 2 to the Loan Agreement	**X**		Yearly

Description of Covenant

Except as the Bank shall otherwise agree, the Borrower shall cause Newco to produce funds from internal sources equivalent to not less than 25% of the annual capital expenditures incurred for the fiscal year.

Name	**Recurrent**	**Due Date**	**Frequency**
Section I.F.2 of Schedule 2 to the Loan Agreement	**X**		Yearly

Description of Covenant

Except as the Bank shall otherwise agree, the Borrower shall cause Newco to not incur any debt, unless the net revenues of Newco for the fiscal year immediately preceding the date of such incurrence or for a later twelve-month period ended prior to the date of such incurrence, whichever is the greater, shall be at least 1.2 times the estimated maximum debt service requirements of the Borrower for any succeeding fiscal year on all debt of Newco, including the debt to be incurred.

Conditions

Source Of Fund	**Name**	**Type**
IBRD	Incorporation and Registration of Newco	Effectiveness

Description of Condition

Newco has been duly incorporated and authorized to operate pursuant to the Borrower's laws and regulations, all in manner acceptable to the Bank.

Source Of Fund	**Name**	**Type**
IBRD	Execution of Newco Implementation Agreement	Effectiveness

Description of Condition

The Newco Implementation Agreement has been executed on behalf of the Borrower and Newco.

Source Of Fund	**Name**	**Type**
IBRD	Adoption of the Project Operational Manual	Effectiveness

Description of Condition		
The Project Operational Manual has been adopted by the Borrower.		
Source Of Fund	**Name**	**Type**
IBRD	Preparation and adoption of SIMP	Disbursement
Description of Condition		
No withdrawal shall be made under Category 2 (Severance Payments and Training) unless the SIMP has been prepared and adopted by the Borrower, acceptable to the Bank, pursuant to Section I.A.2 of Schedule 2 to the Loan Agreement.		

Team Composition

Bank Staff

Name	Title	Specialization	Unit
John R. Butler	Lead Social Development Specialist	Social Safeguards	GSURR
Arcadii Capcelea	Senior Environmental Specialist	Environmental Safeguards	GENDR
Kashmira Daruwalla	Senior Procurement Specialist	Procurement	GGODR
Oxana Druta	Financial Management Analyst	Financial Management	GGODR
Alica Dzelilovic	E T Consultant	Operations	GEEDR
Sandu Ghidirim	Senior Operations Officer	Operations	GEEDR
Gabriela Grinsteins	E T Consultant	Legal	LEGLE
Elina Kaarina Hokkanen	Jr Professional Officer	Operations	GEEDR
Tural Jamalov	Financial Management Specialist	Financial Management	GGODR
Irina L. Kichigina	Chief Counsel	Legal	LEGLE
Tae Hwan Kwak	Financial Analyst	Financial Analysis	GEEDR
Klavdiya Maksymenko	Social Development Specialist	Social Safeguards	GSURR
Shinya Nishimura	Senior Energy Specialist	Team Lead	GEEDR
Ruslan Piontkivsky	Senior Economist	Economist	GMFDR
Monica Teresa Restrepo	Senior Counsel	Legal	LEGSO
Pekka Kalevi Salminen	Senior Energy Specialist	Operations	GEEDR
Robert Schlotterer	Senior Infrastructure Finance Specialist	Financial Analysis	GEEDR
Luis M. Schwarz	Senior Finance Officer	Disbursement	CTRLA
Elena Segura Labadia	Senior Counsel	Legal	LEGLE

Rozena Serrano	Program Assistant	Operational Support	GEEDR
Iuliana Stratan	Program Assistant	Operational Support	ECCMD

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Moldova	Chisinau	Municipiul Chisinau	**X**		Civil works and construction will be implemented in various locations within the city.

1. STRATEGIC CONTEXT

A. Country Context

1. Moldova has made significant strides in its economic and political transition, but much remains to be done. Moldova lags behind the rest of the region as a small domestic market with limited competition. European integration anchors the Government's policy reform agenda, but periodic political tensions pose risks to reforms**.** An Association Agreement and a Deep and Comprehensive Free Trade Area (DCFTA) between Moldova and the European Union (EU) were signed on June 27, 2014. Yet, there are differing views among government and stakeholders on the appropriate direction, pace and depth of reforms.

2. Moldova's economy has recovered from the 2008-09 global economic crisis, but growth has been volatile reflecting vulnerability to global economic and climatic conditions. In 2010–11, growth of remittances, investment fueled domestic demand and exports were strong but in 2012, GDP contracted by 0.7 percent, as the economy was hit by both a slowdown in external demand due to the Eurozone crisis and the drought-induced contraction in agriculture. In 2013 growth resumed, driven mainly by the recovery of agriculture (+41 percent), with GDP increasing by 8.9 percent. In the first half of 2014, GDP grew 3.9 percent. As a result, in comparison with neighboring countries, Moldova has managed to achieve the highest cumulative GDP growth relative to the pre-crisis year of 2008 (see Figure 1), which drove Moldova's recent economic performance, reduced poverty and promoted shared prosperity. The national poverty rate fell from 30.2 percent in 2006 to 12.7 percent in 2013. During 2006-13 extreme poverty fell from 4.5 percent to 0.3 percent (see Figure 2). This performance has positioned Moldova among the world's top performers in poverty reduction. Despite a sharp decline in poverty, Moldova remains the second poorest country in Europe.

Figure 1: Real GDP indexes, 2007=100

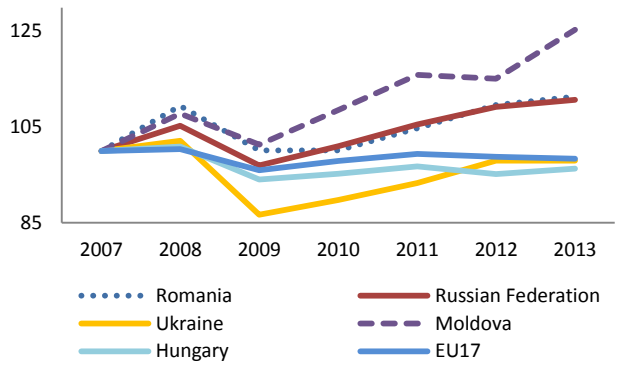
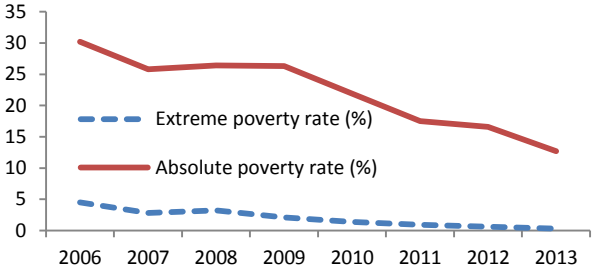


Figure 2: Moldova National Poverty lines, percent



Source: National authorities, World Bank staff calculations.

3. The Government's medium-term strategy is reflected in the National Development Strategy (NDS), approved by Parliament in 2012 and covering the period 2012-2020. The NDS calls for a shift from the current consumption-based growth model towards a growth model based on raising investments, increasing productivity and competitiveness, developing export industries, and promoting a knowledge-based society.

4. Investments in reducing energy consumption via energy efficiency and using renewable energy sources are listed as one of the eight national development priorities in the NDS. Currently, urban and rural infrastructure is in an advanced state of disrepair, and transforming the economy will require significant upgrades in infrastructure through public investments, particularly in transport, energy and agriculture. Since available fiscal space is a constraint, Moldova should first and foremost improve efficiency to better utilize existing resources and to be able to satisfactorily implement good projects when more resources become available.

B. Sectoral and Institutional Context

Energy Sector Overview

5. Moldova is dependent on imports to meet its energy demand. In 2011, 97.5 percent of total primary energy needs were met by imports. Total primary energy supply (TPES) was about 3.3 Mtoe. Natural gas dominates the primary energy balance at 68% of TPES (Table 1). Natural gas is imported from Gazprom of Russia. The gas is imported and distributed by Moldovagaz, with the Government of Moldova as a minority shareholder. About 75% of all electricity demand is also being met by imports from Ukraine and the Moldavskaya GRES Power Plant in Transnistria.

Table 1: Energy Supply and Use in Moldova (2010)

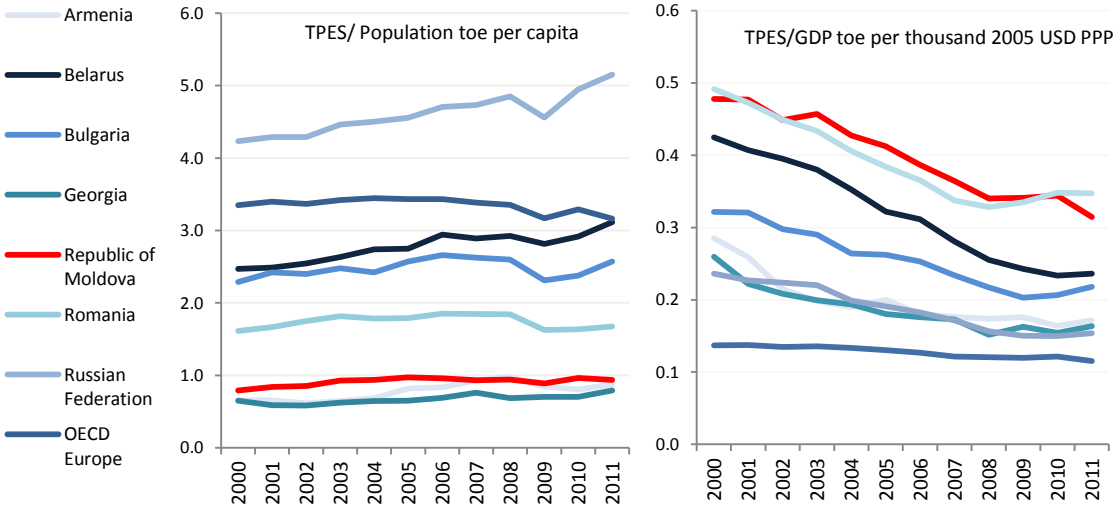
(000 toe)	Natural Gas	Oil Products	Electricity	Heat	Others	TOTAL
Supply						
Domestic					122	122
Imports	2,256	835	57		103	3,251
Total Primary Energy Supply (TPES)	**2,255**	**795**	**57**		**224**	**3,331**
(% in TPES)	67.7%	23.9%	1.7%	0.0%	6.7%	100%
Use						
Electricity Production	(1,385)	(14)	497		(30)	(932)
Heating	(91)	(1)		272	(10)	170
Total Final Consumption (TFS)	**739**	**787**	**403**	**232**	**168**	**2,329**
Industry	*375*	9	159	49	34	626
Transport	*2*	364	4	-	-	370
Residential	249	322	156	128	91	946
Others	113	65	83	55	44	360

Source: International Energy Agency, 2012

6. Inefficient energy use in Moldova is leading to higher energy cost for both industries and residents, posing a serious bottleneck to growth and competitiveness. Total fuel consumption (TFC) in 2010 was 2.3 Mtoe, with the residential sector consuming 41 percent of the energy supplied, the industrial sector 27 percent and transport about 16 percent. Despite the fact that energy intensity was almost halved since 1990 due to the decline of industrial production, Moldova remains one of the most energy intensive economies in the region. Measured at purchasing power parity (PPP), energy intensity in 2011 was 0.31 toe per thousand USD of GDP

(PPP year 2005), which is more than double the energy intensity of Romania (0.15) and OECD countries (0.12) (see Figure 3).[1]

Figure 3: Energy Intensity comparison during 2000 - 2010



Source: International Energy Agency

District Heating Sector

7. The electricity and heat generation infrastructure in Moldova are obsolete and deteriorating, leading to inefficiency and higher cost of energy supply. About 25 percent of domestic electricity demand is being met mostly by the three Combined Heat and Power Plants (CHPs); CHP-1 and CHP-2 in Chisinau, and CHP Nord in Balti. The CHPs produce both electricity and heat, both of which are consumed locally. All the CHPs are being operated well beyond their economic life; CHP-1 and CHP Nord were commissioned in the 1950's, while the newer CHP-2 was built in the mid-1970s. Without substantial rehabilitation or retrofits since their construction, the efficiency and availability of the CHPs have been declining steadily.

8. The dominant supplier of heating for Chisinau, the capital of Moldova, is District Heating (DH). With the large CHPs within the city limits, Chisinau and Balti are the only two cities that now have operating DH systems in Moldova. Termocom, the DH Company serving Chisinau, has a pipeline network of 711 km and serves a population of more than 500,000 or about 62 percent of Chisinau residents, for whom the DH system is considered to be the least cost option for heating.

9. Termocom has been financially bankrupt and under bankruptcy proceedings since 2001, after the company was transferred from state to municipal ownership in 2000. Due to the below cost-recovery level heating tariff that has been imposed by the municipality, Termocom 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

[1] International Energy Agency, "World Energy Statistics", 2013

burden to Moldovagaz (jointly owned by the Government of Moldova and Gazprom, Russia) and their distribution subsidiary Chisinaugaz. The debt stock to Moldovagaz accumulated to about US$220 million or 3.5 percent of GDP.

10. The inability of Termocom 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. Though improvements have been made over the last few years, the heat loss of Termocom's DH system is still 5 – 10 percent higher than in modern systems. In addition, the breakdown rate of 1.1 per km is an alarming sign, which indicates that the system is breaking down 10 times more often than its more modern counterparts in EU countries. Also, obsolete infrastructure has led to substantial disconnections from the centralized system, leaving the vulnerable to depend on the deteriorating DH system. Due to the poor quality of service and the high cost of DH services, many of the wealthier residents of Chisinau, who could afford to, have transitioned to individual boilers in their own buildings. Although the rate of disconnections has subsided in recent years, the current share of consumers of centralized heating consists of lower-income residents who have no other option for heating. Additional studies have shown that disruption in DH services will leave about 40 percent of current consumers, or about 160,000 households, with no alternative for heating in winter which averages a low temperature of – 6 degrees Celsius. 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.[2]

11. In addition, the inefficient and deteriorating system and services, and disconnections by wealthier consumers have led to high heat tariffs for the vulnerable population in Moldova. In a study commissioned by the Bank, the affordability of energy has emerged as a major concern, with surveys showing that heating expenses alone have taken up more than 10 percent of monthly expenditure for all income quintiles, a benchmark of affordability for energy expenditures, except for the highest income group (see Table 2). The lowest quintile spends up to 26 percent of their monthly expenditure on heating, which indicates that the tariff levels have reached the limit of affordability for almost all residents in Chisinau and are having a disproportionally high impact on the vulnerable population. Increasing the efficiency of heat generation and delivery would not only contribute to increasing energy security, but would also have a strong positive impact on the welfare of the vulnerable population in Chisinau.

Table 2: Affordability of Heating in Chisinau (2010)

Quintile	I	II	III	IV	V
Family Household Expenditure (MDL)	1,899	3,134	4,308	5,944	12,094
Monthly Heating Cost (MDL)	498	579	732	999	1,194
Proportion of Heating Cost in Expenditure (%)	26.2%	18.5%	17.0%	16.8%	9.9%

Source: ANRE, Termocom and Elena Gorelova/Anatolii Rojco (2010)

12. In November 2008, Moldovagaz halted gas supply to Moldova due to the inability of Termocom to pay for the natural gas supplied, which initiated energy sector reform and actions

[2]Economic Consulting Associates, "Chisinau Heat and Electricity Supply Institutional and Financial Restructuring Study", World Bank 2011.

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.

13. The Corporate Restructuring Plan, approved by the Cabinet on November 13, 2013, initially envisioned a merger of Termocom, CHP-1 and CHP-2 into a new corporate entity (or Newco) based on the asset valuation of each company. In March 2014, the liquidation procedure was initiated against Termocom. As a result, based on the Government Decision, dated May 7, 2014, CHP-1 will be absorbed by CHP-2 which will subsequently take over the core assets of Termocom. On September 22, 2014 the Creditors' Committee of Termocom approved sales of Termocom assets to CHP-2 to form Newco. The draft law on approval of Termocom core assets sale to CHP-2 was approved by the Government on September 25, 2014.

14. The Project will aim to improve the operational efficiency and financial viability of Newco, through investments to improve reliability and efficiency and support to streamline operations and the corporate structure of Newco. The Project will fund investments aimed at ensuring continued provision and increased efficiency of the district heating services in Chisinau. The support of the Project to streamline operations will include cost for closing of operations at CHP-1, streamlining of personnel, and environmental audit for CHP-1 site to initiate the process of liquidating or reutilizing the assets.

15. The Bank may also consider providing support for the debt restructuring process with Moldovagaz at a later stage through a World Bank Guarantee**.** The Government, as a result of its discussions with Moldovagaz, is considering asset sales, debt asset swap and refinancing of the debt stock from external sources. While the debt restructuring plan is yet to be completed or agreed to, preliminary discussions with some financiers have indicated that the private sector financiers would require credit enhancement for Newco to have access to such financing, even with a guarantee as credit enhancement to allow access to the financial markets at that time. Such additional support could be made available under this Project as additional financing, which would be submitted separately for Board approval.

C. Higher Level Objectives to which the Project Contributes

16. The proposed Project would help implement the strategic objectives of the current World Bank Group (WBG) Country Partnership Strategy (CPS) with Moldova (September 2013). The Project supports the objectives identified under two main pillars of the FY2014-2017 CPS, specifically to address Pillar 3 "Support a green, clean and resilient Moldova", and Pillar 1 "Increased competitiveness". This will be done through: a) the increase of financial viability of fundamental infrastructures; and b) the reduction of the risk posed to the security of energy supply, which could hamper industrial development and foreign direct investments to Moldova.

2. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

The objective of the Project is to contribute to improved operational efficiency and financial viability of Newco and to improve quality and reliability of heating services delivered to the population of Chisinau.

B. Project Beneficiaries

17. The beneficiaries of the Project will be:

a) The population of Chisinau at large through: (i) increased efficiency of the district heating sector, and (ii) increased reliability of district heating services.
b) The Moldovan district heating sector stakeholders, including Newco, as well as Moldovagaz and Chisinau-Gaz through Newco's increased operational efficiency and improved corporate governance.

C. PDO Level Results Indicators

18. The PDO level indicators will be as follows:

a) Reduction in Network heat losses (GCal)
b) Debt Service Coverage Ratio
c) Projected lifetime fuel savings (MJ) (Core)
d) Projected lifetime energy savings (MWh) (Core)
e) Percentage of households that reported improved quality of service in buildings where Individual Heating Stations (IHSs) were installed (%)
f) Projected lifetime reduction in CO2 emissions due to investments financed under the project (tCO2)
g) District Heating Systems Breakdown rate (Number/km)

19. The intermediate results indicators are as follows:

a) People that gained access to more energy-efficient cooking and/or heat-generating facilities (Number) (Core)
    - Of which female beneficiaries (%)
b) Actual fuel savings (GCal)
c) Self-financing ratio (%)
d) Termination of CHP-1 operations (Date)
e) Reduction in heat consumption due to transition from Group Heating Substations to Individual Heating Substations (Gcal)
f) Government institutions reconnected to DH system (Number)
g) Staff who received re-training (Number)
    - Of which female beneficiaries (%)
h) Staff who got severance payments (Number)
    - Of which female beneficiaries (%)

3. PROJECT DESCRIPTION

20. The Project, proposed to be financed by an IBRD Loan of US$40.5 million, will comprise of three components, each focusing on the issues identified in the PDO:

A. Project Components

Component 1: Investments for the DH System (IBRD: US$33.30 million)

21. This component will support priority investments aimed at optimizing and modernizing the heat distribution network, with the objective of reduced heat losses, improved service quality, and increased efficiency and security of supply of heat and hot water to end-user consumers. The DH network operated by Termocom is old, worn-out, with large heat and water losses, and requires urgent rehabilitation and modernization. The low quality of service and lack of ability by the consumer to control their heat have resulted in significant disconnections from the DH system, mainly among the wealthy population who can afford to invest in individual boilers. Also a large number of public institutions (state and municipal) were disconnected from the DH system about 10 - 15 years ago. As a result, the vulnerable population of Chisinau will stand to be disproportionately affected should there be interruptions in the DH services. Therefore, the investments proposed under the Project will focus on ensuring the operational sustainability of Termocom's successor, Newco (new District Heating company to be established), as well as efficiency. Specifically, financing would be provided for: (a) modernization of selected pumping stations to reduce electricity consumption and provide for efficient variable flow operation mode of the DH system; (b) rehabilitation of selected segments of the distribution network to ensure continued secure DH service and reduction of losses of heat and hot water; (c) replacement of old and inefficient central heat substations (CHS) with modern fully-automated individual building level heat substations (IHS) for more efficient and secure heat supply to end-users; and (d) reconnection of about 40 public institutions, which were earlier disconnected, to the DH system to improve the usage of the DH system.

Component 2: Support for Streamlining Operations (IBRD: US$5.6 million)

22. This component will support the Government's decision to streamline operation and corporate structure of Newco, including closing down of the operation of CHP-1. The Plant is being operated inefficiently and well beyond the designed life. Closing down CHP-1 itself would have a net benefit of over MDL 8 million per year (close to US$619,000) for the energy consumers. In order to ensure the stability of DH operations after CHP-1 ceases its operations and ensure a smooth transition in the corporate restructuring process, the following programs will be supported under the component: (a) connection of an alternative heat distribution network and construction of new pumping stations to service the area supplied by CHP-1; (b) supporting the design and implementation of the Social Impact Mitigation Plan, which includes severance payments, retraining and placement services to provide new employment opportunities, and grievance mechanism; and (c) carrying out an Environmental Audit for CHP-1 site.

Component 3: Project Management and Technical Assistance (IBRD: US$1.5 million).

23. This component will provide technical and financial support for project management. The implementing agency for the proposed Project will be the Ministry of Economy (MoE). The Moldovan Energy Projects Consolidated Unit (MEPIU), which is directly subordinated to MoE, has more than 10 years of experience in implementing World Bank projects and will serve as a fiduciary agent for the implementing agency. This component will finance activities such as: (a) carrying out Project audits; (b) carrying out the financial management and procurement requirements under the Project; (c) monitoring and evaluation of Project activities; (d) providing capacity building and Operating Costs for the MEPIU; (e) carrying out public awareness campaigns for dissemination of the benefits of energy efficiency improvements and efficiently operating Chisinau's district heating system; and (f) providing technical assistance to Newco.

B. Project Financing

Lending Instrument

24. The proposed Loan will be an Investment Project Financing (IPF) in the amount of US$ 40.5 million denominated in US dollars with level repayment of the principal and variable spread. The Borrower may finance eligible project expenditures incurred up to 12 months prior to Loan Agreement signing date up to maximum US$7,500,000 provided that the payments are for items procured in accordance with procedures acceptable to the Bank.

Project Costs and Financing

Project Components	Project cost	IBRD Financing	% Financing
1. Investment for District Heating System	US$38.50 million	US$33.30 million	86.5%
2. Support for streamlining operations	US$10.1 million	US$5.6 million	55.4%
3.Project Management and Technical Assistance	US$2.9 million	US$1.5 million	51.7%
Total Baseline Costs Physical contingencies Price contingencies	US$51.50 million US$3.0 million US$6.5million	US$40.40 million	78.4%
Total Project Costs	US$61.0 million	US$40.40 million	66.2%
Front-End Fees	US$0.10 million	US$0.10 million	100.0%
Total Financing Required	US$61.1 million	US$40.5 million	66.3%

C. Lessons Learned and Reflected in the Project Design

25. The design of the Project draws upon lessons learned from the earlier restructuring efforts, originally undertaken by the Government when Termocom became bankrupt in 2001. Despite the efforts, the financial situation of Termocom did not improve and instead it has added US$150 million of additional debt stock since then. Through this experience, the following key lessons were drawn and applied to the design of this Project:

a) Corporate governance must be addressed. The original restructuring plan did not address the corporate governance structure of Termocom.
b) Operational improvements need to be made to address the inefficiency that originated from the heat production, i.e., CHPs.
c) The regulatory environment must be addressed. When the restructuring plan did not provide tariff setting authority to the independent regulator, it opened the door to politicization of the restructuring process.

4. IMPLEMENTATION

A. Institutional and Implementation Arrangements

26. The Ministry of Finance, as agent of the Government of Moldova, will be the Borrower of the loan. For purposes of Project implementation, the Borrower will enter into an agreement with Newco, which is established as effectiveness condition for this Loan. The agreement would state terms and conditions of the Newco's obligation to repay the disbursed funds under parts 1 and 2 of the Loan to the Borrower and its responsibilities for the technical implementation of the Project. The Ministry of Economy will take overall responsibility for project implementation delegating fiduciary responsibilities (disbursement, financial management, procurement, and monitoring & evaluation) to its Project Implementation Unit (MEPIU). MEPIU will carry out the fiduciary responsibilities under the Project in compliance with the requirements and safeguard policies of the World Bank, to be outlined in the Loan Agreement and Project Operational Manual. MEPIU will manage flow of funds on behalf of the Newco for the purposes of the project. Newco will be expected to provide technical and advisory assistance in the process.

27. MEPIU, as the fiduciary agent of the Ministry of Economy, has over 10 years of experience in implementing World Bank and other donors' projects. The unit is staffed with highly qualified and experienced professionals, both in technical, as well as in financial management and procurement aspects. It was also agreed that MEPIU will take on the reporting functions on behalf of the Government. Newco, as the successor to Termocom as DH system operator, is expected to have substantial experience and capacity in implementing investments in the DH system, as well as ensuring compliance with the required safeguards, with Termocom being the beneficiary of an earlier EBRD loan. Detailed implementation arrangements can be found in Annex 3.

B. Results Monitoring and Evaluation

28. The Project will be monitored by teams in Newco and the MEPIU/ Ministry of Economy, based on agreed monitoring arrangements and required reporting procedures. Newco has the capacity and experience to monitor investments from a technical and safeguard perspective, and MEPIU has gained significant experience in monitoring the implementation process and measuring outcomes. Progress will be reviewed using the PDO and intermediate results indicators, which are gender-disaggregated wherever possible.

C. Sustainability

29. Financial sustainability is expected to be established as a result of the new corporate governance, management structure, and streamlined operation of Newco. Environmental sustainability is expected to be maintained given that a majority of the investments are rehabilitations/replacements and not new investments. The implementation arrangement in place between MoE, MEPIU, and Newco will ensure that adequate documentation and supervision be provided, in consultation with the Bank's Safeguards Specialist during implementation. Social sustainability is expected due to the monitoring arrangements similar to environmental safeguards. In addition, the Social Impact Mitigation Plan, to be established and implemented under Component 2, will provide severance packages for staff of Termocom, CHP-1 and CHP-2 who may be impacted by the restructuring. The re-training opportunities and job placement service for impacted staff will ease some of the impact.

5. KEY RISKS AND MITIGATION MEASURES

A. Risk Ratings Summary Table

Risk Category	**Rating**
Stakeholder Risk	**High**
Implementing Agency Risk	
- Capacity	High
- Governance	High
Project Risk	
- Design	Substantial
- Social and Environmental	Low
- Program and Donor	Low
- Delivery Monitoring and Sustainability	Substantial
Overall Implementation Risk	**High**

30. The main stakeholders are MoE, Ministry of Finance, the Municipality of Chisinau, Termocom, CHPs, Moldovagaz, Gazprom, National Energy Regulatory Agency (ANRE), and end-users of heating services. While the Project is supporting the restructuring policies adopted by MoE, there is broad support for the Project from other key Government institutions such as the State Chancellery, Ministry of Finance, and the Chisinau Municipal Council. The team has also been in regular consultation with the donor community and there is consensus among development partners on the viability and support for the restructuring process and concept. All key stakeholders have been consulted on a regular basis and the Team will continue to do so throughout the implementation of the Project.

B. Overall Risk Rating Explanation

31. The preparation and implementation of the Project are complicated by the varied interests of the shareholders/stakeholders and various governance issues, which will test the corporate governance and management structure to be put in place within Newco. In addition, the streamlining of the operations, which include retrenchment of staff, may lead to tensions both within and out of Newco. Mitigation measures to these risks have been put in place during the preparation period such as the Social Impact Mitigation Framework, and the investment portion of the Project is expected to yield high returns in efficiency gain that will ensure a sustainable operation of the DH system in Chisinau. However, considering the uncertainty surrounding the operating environment, the Overall Implementation Risk is considered to be High.

6. APPRAISAL SUMMARY

A. Economic and Financial Analyses

Economic Analysis of the Investments

32. A cost-benefit analysis was performed for the proposed investment program, which resulted in an economic rate of return (EIRR) of 21% over a period of 15 years assumed for this analysis. The investment cost assumed for the calculations is US$36 million (without taxes). The model is based on today's fixed tariffs for heat procured and heat sold. The model assumes that no profit on capital tied up in the proposed priority investments will be charged. The incremental benefits expected are cost savings in gas, electricity, heated water, and heat. (details in Annex 6)

33. The total savings resulting from the proposed investments under the Project are about US$6.5 million per annum starting with the Year 3 of the Project. The estimated savings are for gas, electricity, water, O&M costs, and other, including savings of US$619,000 per annum starting with the 2015/2016 heating season due to the purchase of cheaper heat following the closure of CHP-1 in 2015. Energy savings constitute about 40% of the benefits of the Project. The replacement of GHSs with IHSs will result in energy savings of up to 20% in energy consumption at the apartment level, as demonstrated under similar investments on its own by Termocom.

34. As gas prices play a large factor in determining the magnitude of the energy savings due to the Project, a sensitivity analysis on the ERR by varying the price of gas has been carried out. Under a base case scenario, an economic gas price of US$422/1000 m^3 has been assumed resulting in an ERR of 21% for the entire Project. If the gas price increases by 5%, the ERR for the entire Project is 21.75%. However, according to data presented by consultants to the Government, future contracts for gas indicate a price declined by approximately 2-3% per annum. A 3% reduction in gas purchase price was assumed for the purpose of this analysis, which results in an ERR for the entire Project in 20%. The Project is also expected to reduce CO_2 emissions equivalent of 18,505 tons/year.

Financial Analysis of the Corporate Restructuring

35. The Government of Moldova will be 100% owner of Newco. The governance structure shall be separated into three layers: (a) Shareholder level, (b) Management Level (Board of Director), and (c) Management Level (Executive Management). The separation is to ensure a sound corporate governance structure, including internal control and auditing functions, and clear separation of ownership function and influence that the Government may exert through other functions. The Board of Directors shall represent the shareholders' interest, to the extent that it will be limited to the policy goal of providing stable and affordable heating services to the residents of Chisinau. The Executive Management will be responsible for the day-to-day operation of DH system. Appointments to key positions, including the General Manager, shall be based on expertise, experience and skills.

36. The financial situation of Newco will be closely monitored with two financial indicators included into the results framework of the Project: (a) debt service coverage ratio (≥1.2) and (b) self-financing ratio (≥25%). The financial projection of Newco shows that they will be vulnerable in the initial years. (see Table 3) Net losses are expected in 2015/2016 period, when most of the investments and restructuring measures are taken. The cash flow remains volatile until 2017 as well, though the cash balance is expected to remain positive throughout the projection period. The sensitivity analysis indicated that Newco's financial position is extremely sensitive to tariff changes and gas prices, and would need to be closely monitored. The projections do show that Newco can be expected to be in compliance with the two financial indicators that would be monitored throughout the project period.

Table 3: Income Statement and Cash Flow Projections

MDL 000	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Net Profit	(176)	(45)	4	42	66	91	123	153	184	213
Cash Flow Summary	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2023**
Net Cash Flow for the Period	(3)	39	(42)	(3)	3	(1)	(1)	9	24	55
Cash at the end of Period	7	46	4	1	4	3	2	12	35	90
Financial Indicators	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2023**
Debt Service Coverage Ratio (>1.2)	2.4	1.4	1.6	1.6	1.6	1.5	1.6	1.7	1.8	1.9
Self Financing Ratio (>25%)	51%	31%	104%	113%	113%	116%	130%	147%	182%	215%

Source: Price Waterhouse Coopers

B. Technical

37. A detailed feasibility study has been prepared by an international firm, Sweco of Sweden, describing the current status of the district heating operations in Chisinau, major operational issues and problems followed by proposed actions to improve the operations and efficiency of the Chisinau DH system. The feasibility study also includes a long-term strategic vision for the operation of the DH system. The proposed priority investment program is in line with the long term strategic development of the system.

38. Termocom has improved its operations during recent years under the bankruptcy administration by replacing the network sections which have been in the worst condition and it has also closed down some of the inefficient CHSs by replacing them with IHSs located in the

basements of buildings. The results from the improvements, especially the introduction of IHSs, demonstrate improved heat service and reduced energy consumption of buildings. Tenants in the buildings which are now served with IHSs are more satisfied with heating services than before the change.

39. The above mentioned experience of Termocom also demonstrated that Newco will be technically capable of providing adequate supervision to the proposed investments in pipelines, pumping stations and heat substations. The proposed investments are technically viable and similar to successful Bank financed district heating projects in other countries in the region.

C. Financial Management

40. The financial management (FM) assessment of the proposed fiduciary agency (MEPIU) was performed in accordance with FM guidelines and it concluded that MEPIU has satisfactory financial management arrangements in place: sound budgeting, financial reporting and internal control systems necessary to administer the Project efficiently. The FM assessment was undertaken in February 2014 as part of regular financial management implementation support of the Sida Trust Fund on Financing Energy Sector Reform and Efficiency Improvements Project managed by MEPIU. The information available from previous missions and past experience of interaction with this PIU was also used for this assessment. MEPIU employs an experienced financial management consultant and one assistant, who provide support to FM and procurement consultants on some routine tasks.

41. The previous audits of MEPIU under the projects it was implementing, never revealed any issues and the audit opinions were always clean. The past financial management reviews were also satisfactory with no major deficiencies. Under the proposed Project, MEPIU would be responsible for keeping adequate financial management arrangements, including budgeting, accounting, flow of funds, preparation of quarterly interim financial reports (IFRs) and organizing an annual audit of Project financial statements and entity audit for Newco.

42. Some elements of country systems will be used for the Project, particularly, country budgeting system and treasury system where the project Designated Account will be opened. Since Newco has not been established yet, during the project preparation the Government agreed to use MEPIU's existing capacity for managing Project flow of funds on behalf of Newco. If needed, the Bank would consider capacity building activities in the area of financial management for Newco when it is finally set up. The Project funds managed by the MEPIU would be channeled through the Central Bank of Moldova where a Single Treasury Account is held by the Ministry of Finance.

43. The adequacy of project FM arrangements will be constantly monitored by the assigned financial management specialist for the Project through regular implementation support, review of financial and audit reports, and withdrawal applications.

D. Procurement

44. Procurement for the Project will be carried out in accordance with the World Bank "Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans

and IDA Credits & Grants by World Bank Borrowers" published in January 2011, revised July 2014(Procurement Guidelines) and "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" published in January 2011 and revised of as July 1, 2014 (Consultant Guidelines) and the provisions stipulated in the Loan Agreement (LA). The World Bank's Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits, dated October 15, 2006 and revised in January 2011 (Anti-Corruption Guidelines) will apply to this Project.

45. An assessment of the capacity of MoE/MEPIU and Termocom/CHPs (Newco) to implement procurement actions, as well as a procurement risk assessment was carried out in April 2013. The assessment reviewed the organizational structure for implementing the proposed Project and the interaction between project staff responsible for procurement. The procurement risk assessment rated the overall MoE/MEPIU and Newco procurement as moderate, taking into account the discussed and agreed mitigation measures.

46. The Procurement Plan for the first 18 months of project implementation was developed by MEPIU, and provides the basis for the procurement methods. This plan will be available in the Project's database and on the Bank's external website. The Procurement Plan will be updated by the Project team, at a minimum, annually, or as required to reflect the actual project implementation needs and improvements in the implementing agency institutional capacity. Updated Procurement Plans will be submitted to the World Bank for its prior approval before any activity begins.

E. Social (including Safeguards)

47. The works planned under the Project will be performed within the existing areas used for heat distribution equipment in the buildings and heating stations. New pipes will be laid in the existing pipe locations thus will not require any land acquisition. The Social Assessment commissioned by the borrower identified that works on rehabilitation of the pipeline will cause temporary displacement of business activities. OP4.12 is triggered by the Project and an Abbreviated Resettlement Action Plan is prepared and disclosed in English and Romanian on the website of Termocom, Chisinau City Administration, and World Bank Infoshop.

48. Brief information on the Project will be placed on the websites of Termocom and MEPIU and will be made available in hard copy to all interested parties. The building managers in the areas covered by the Project will be duly informed. Brief information on the Project and the links to the document will be printed on the reverse side of the bills that is normally used for advertisement. Termocom had an established practice of informing the users on the expected works through official channels: TV, newspapers, and informal channels: posters on the front doors, oral information spread by the building managers. Termocom operated a telephone line functioning 24/7 that collects grievances and break-down reports and reacts to them. There is a practice of holding consultations with residents in case of persistent problems. Client satisfaction survey is being developed by the company as part of its compliance to ISO 9001. Newco will ensure that all good social accountability mechanisms run by Termocom are properly institutionalized and further supported. A more detailed assessment of social aspects is presented in Annex 2.

49. Corporate restructuring between Termocom, CHP1 and CHP2 will have social impact on the personnel of the enterprises concerned. The details of the corporate restructuring were not finalized during project preparation and therefore the Social Impact Mitigation Framework was prepared and disclosed in Chisinau on December 30, 2013. Upon finalization of corporate restructuring arrangements, the Borrower will prepare a detailed Social Impact Mitigation Plan that will take into account the principles laid out in the Social Impact Mitigation plan, which would include measures to ensure transparency of the process. The Plan will be duly disclosed and public consultations on it will be held at each of the enterprises involving Sector Unions and relevant Government Agencies and CSOs. The preparation and adoption of the Social Mitigation Plan by the Borrower, acceptable to the Bank, is established as a disbursement condition in the Loan Agreement.

50. **Gender Aspects:** The results framework includes a "Direct Project Beneficiary" indicator which is broken down to monitor percentage of female beneficiaries to monitor gender impacts of the Project. Additionally, in order to assess the distributional effects of the District Heating reform supported by the Project the District Heating and Electricity Tariff Affordability and Social Impact Analysis will be conducted in FY15 with the support of ESMAP funding. One of the aims of the study is to identify any disproportionate gender effects of the Project and ways to mitigate them. The results of the study will also inform government and Newco's communication strategy as to the reform and mitigation measures. In terms of corporate restructuring and its impacts upon staff gender dynamics will be taken into account when developing the SIMP in particular the fact that women are less represented in decision-making structures, women mostly hold the administrative positions that will have high redundancy rate, older men holding lower qualified technical positions might lack the necessary computer skills and thus will need more time to be retrained.

F. Environment (including Safeguards)

51. The Project will generate mostly positive socio-economic benefits due to the improvement of the population's hot water supply and heating services along with improved environmental conditions on the Chisinau Municipality territory. At the same time, it might also generate a series of adverse impacts: noise; impact on water quality and resources; impact on water by the construction run-offs; disturbance of traffic during construction and rehabilitation works; construction dust; and workers safety, etc. However, these impacts will be temporary and site specific and could be easily mitigated through implementing adequate avoidance and/or mitigation measures. The Environmental Impact Assessment (EIA) concluded also that no sensitive or protected areas will be affected during the proposed civil works, as well as no physical cultural resources will be involved or impacted.

52. The Project was assigned Category B for the purpose of its Environmental Assessment. Per World Bank safeguards requirements the client conducted the project EIA and prepared an Environmental Management Plan (EMP) which will be used for the project implementation. The project EMP includes, in addition to the World Bank safeguards policies applied to the current Project, a description of the policies, legal, and administrative framework in place in the Republic of Moldova regarding environmental management and the centralized heating sector. It also contains: (a) a series of activities targeted at mitigating identified adverse impacts; (b)

monitoring plan for EMP implementation; (c) implementing arrangements as well as a short analysis of the project beneficiary's (Termocom) EA capacity. The EMP provisions will form part of the design documents and will be included in construction contracts for proposed activities, both into specifications and bills of quantities. Furthermore the Contractors will be required to include the cost in their financial bids and required to comply with the EMP provisions while implementing the Project activities.

53. As the Project will include the closure of CHP1 operations, the EIA and EMP report contains the draft Terms of Reference (TOR)s for its environmental auditing focused on assessing the cost of "decommissioning, dismantling, and environmental remedial measures" for several alternative scenarios – starting from maintaining the site at present condition with minimal cleanup to meet environmental compliance and ensure safety and finishing with the full decommissioning (i.e., dismantle all equipment; demolish all buildings and structures; clean up entire site per required environmental standards).

Annex 1: Results Framework and Monitoring

MOLDOVA: District Heating Efficiency Improvement Project (P132443)

Project Development Objectives

PDO Statement

The objective of the proposed Project is to contribute to improved operational efficiency and financial viability of the new District Heating company and to improve quality and reliability of heating services delivered to the population of Chisinau, Moldova.

These results are at Project Level

Project Development Objective Indicators

Indicator Name (Unit)	Baseline	Cumulative Target Values					End target	Frequency	Data Source/ Methodology	Responsibility for data collection
		2015	2016	2017	2018	2019				
Reduction in Network heat losses (GCal)	360,000	360,000	355,000	347,000	339,000	332,000	**330,000**	Semi-annual	Newco. This indicator tracks the total heat loss reduction of the system based on equipment improvements/retrofits. Since long-term accurate estimates of percentage reduction of the whole system may produce biased estimates, results here are tracked in GCal losses from Project investments only. Years 3 and 4 are expected to generate the most savings.	Newco
Debt Service Coverage Ratio	2.45	2.45	2.4	1.4	1.6	1.6	**>1.2**	Semi-annual	This ratio will be calculated as the Earnings before Interest and Tax divided by the Debt Service.	Newco
Projected lifetime fuel savings (MJ) (Core)	0	0	110,371,131	220,742,261	331,113,392	331,113,392	**9,603,288, 368**	Annual	This indicator will be tracked annually from reports of Newco. This indicator is intended to track and calculate corresponding fuel savings as the decreased gas needs of the new utility for heat production in GCal, converted into MJ for official tracing purposes of Core Sector indicators, projected over a 30 year project lifetime.	Newco

Projected lifetime energy savings (MWh) (Core)	0	0	32,750	65,499	98,249	98,249	**2,849,208**	Annual	Newco. Current projected lifetime energy savings are estimated as electricity +gas savings (total energy savings) based on economic analysis of the Project over a 30 year project lifetime.	Newco.
Percentage of households that reported improved quality of service in buildings where IHSs were installed (Percentage)	0	0	Each year, we will have a target for at least 80% of the respondents reporting better quality of hot water services and of more comfortable temperatures in their households.				**80%***	Annual	There will be yearly DH quality of service surveys conducted in the municipality of Chisinau. The surveys will be part of the Technical Assistance Component of the Project.	Newco
Projected lifetime reduction in CO2 emissions due to investments financed under the project (tCO2)	0	0	7,877	15,754	23,631	23,631	**685,299**	Annual	Newco. Number tracked from reduction of CO2 emissions from Termocom pre- and post-project, based on economic analysis of the Project. End target is lifetime savings value projected over 30 years.	Newco
District Heating systems breakdown rate (Number/km)	1.36	1.36	1.3	1.2	1.1	1.0	**0.9**	Semi-annual	Newco. Indicator measures the frequency of breakdowns per km. The indicator tracks improvements in the whole system based on investments of the Project (pipes replaced, HIS, new pumping stations, frequency converters).	Newco

*: Target to be determined in consultations with the client – 80% would represent 80% satisfaction among all households surveyed. 80% target is based on targets from similar project in Ukraine using same instrument to measure quality of service

Intermediate Results Indicators

			Cumulative Target Values							
Indicator Name	Baseline	2015	2016	2017	2018	2019	**End Target**	Frequency	Data Source/ Methodology	Responsibility for data collection
People that gained access to more energy-efficient cooking and/or heat-generating facilities (Number) (Core) *Of which* **Female beneficiaries (%)**	27,000	27,000	45,000	63,000	86,000	109,000	**109,000**	Semi-annual	The indicator tracks the number of people who benefited from upgrades in more reliable and efficient heat supply through switches from GHS to IHS. Existing 182 IHS supply each about 50 apartments with 2-3 inhabitants in each (~27,000ppl). Additional 540 IHS installed by Project will improve heat efficiency for additional	Newco, semi-annual report.

	50	50	50	50	50	50	**50**		81,000 ppl (i.e., total number=109,000 ppl).	
Actual fuel savings (GCal)	0	0	26,379	52,759	79,138	79,138	**79,138**	Annual	This indicator will be tracked annually from reports of Newco. This indicator is intended to track and calculate corresponding fuel savings as the decreased gas needs of the new utility for heat production.	Newco
Self-financing ratio (Percentage)	55	55	51	31	104	113	**>25**	Semi-annual	Newco. This ratio will be calculated by the formula: (Net Cash Flow from Operations – Debt Service)/ Investment	Newco/ Ministry of Economy
Termination of CHP-1 operations (Date)	16 Feb. 2015	--	--	--	--	--	**31 Sept 2015**	Once	Ministry of Economy, stakeholders. The termination of all CHP operations will have to take effect by fall 2015 for the Project not to be postponed by one calendar year heating season.	Ministry of Economy
Reduction in Heat Consumption due to transition from Group Heating Substations to Individual Heating Substations (GCal)	0	0	0	0	500	700	**709**	Annual	Calculated as the difference between billed consumption in year t and year (t +1) adjusted by degree days. This is based on the current procurement plan and the estimated end schedule of the installation of the IHS, the benefits following afterwards with the consumption decrease.	Newco
Government institutions reconnected to DH system (Number)	0	0	22	22	0	0	**44***	Annual	Newco. Target set according to procurement plan of reconnections in 2015/16 and results in 2016/2017.	Newco, Ministry of Economy
Staff who received re-training (Number) *Of which* **Female staff**	0 50%	0	50 % of end target	50% of end target	0	0	**648**** **50%**	Annual	Number of staff impacted by restructuring based on estimates from PwC "Corporate Restructuring Options" report.	Newco, Ministry of Economy

*: This numbers represents about 10%+ of the number of institutions current JSC Termocom supplies.
**: Out of the 898, about 250 staff will retire, and the difference is our estimate for the ones re-training.
***: The number of affected staff is estimated by the PwC report to 898. It is expected by closure of CHP-1 (or end-2015) that a total of 488 staff will be considered redundant /retire and those staff will benefit from re-training or packages. The remaining 410 staff will be considered redundant or will retire between 2015 to end 2019. The total number of retirees over the 5-6 year period is estimated at 250, and the remaining number would be staff needing to retrain. We consider from a social mitigation perspective that completion of severance payments should be done early after the staff restructuring to ensure support to outgoing staff, thus targets are set in years 1-2.

Indicator Name	Description (indicator definition etc.)
Reduction in Network heat losses (%)	This indicator will report the reduction in heat loss of the system tracked annually resulting from investments done through the Project. This indicator will help track improvements in operational efficiency.
Debt Service Coverage Ratio (%)	This indicator will contribute to measuring improvements in financial viability.
Projected lifetime fuel savings (MJ)	This indicator projects lifetime fuel use that is avoided by energy efficiency measures. The baseline value for this indicator should be zero. This indicator will report improvements in financial viability and operational efficiency.
Projected lifetime energy savings (MWh)	This indicator projects lifetime energy savings directly attributable to the Project, converted to MWh. The baseline value is expected to be zero. Similarly, the indicator will track improvements in financial viability and operations efficiency.
Percentage of households that reported improved quality of service in buildings where IHSs were installed (Percentage)	This indicator will report on the improvements in the quality of service perceived by households that live for one full heating season in buildings where Individual Heating Stations (HIS) are installed as part of the Project. Usually after one heating season households notice general improvements in temperature and hot water.
Projected lifetime reduction in CO2 emissions due to investments financed under the project (tCO2)	This indicator tracked the reduction in emissions of CO2 due to the Project investments, calculated by conversion of the total energy savings (electricity and gas savings). This indicator will contribute to improvements in overall quality of the system with positive effects on clean air in Chisinau.
District Heating system breakdown rate (%)	This indicator will monitor the improvements of the reliability of the heating system, and track system breakdown frequency. The indicator measures the number of breakdowns per kilometers of network.
Indicator Name	Description (indicator definition etc.)
People that gained access to more energy-efficient heat-generating facilities (Number) (Core)	This indicator measures the number of people living in households that switched to more energy-efficient stoves or systems as the primary source of energy for cooking, space heating, or both. The baseline value for this indicator should be zero
Actual fuel savings (GCal)	Actual savings recorded after start of the project implementation on annual basis. Current projections are based on yearly gas savings estimated in the economic analysis of the Project.
Self-financing ratio	This indicator will track the provision of adequate cash flow for the investment plan of Newco. Besides tracking the financial viability, this indicator contributes to tracking the adequacy of the tariff methodology.
Termination of CHP-1 operations	Tracking one of the most important policy actions impacting both operational efficiency/financial viability.
Reduction in Heat Consumption due to transition from Group Heating Stations to Individual Heating Stations (GCal)	This indicator will track the reduction in heat consumption of residential buildings where IHSs are installed as part of the Project.
Government institutions reconnected to DH system	Number of institutions.
Staff who received re-training	Staff who was affected by the restructuring process that received retraining for re-assignment or as part of the severance package. The Project will track participation of female beneficiaries in the re-training.
Staff who received severance packages	Staff who was affected by the restructuring process that is retiring and therefore not retraining to re-enter the workforce. The Project will track number of female retirees as well.

Annex 2: Detailed Project Description

MOLDOVA: District Heating Energy Efficiency Project

Sectoral Context

1. District heating (DH) is the dominant form of residential space heating (SH) in Chisinau; where about 500,000 persons rely on it for their well-being and survival. The DH system is extensive with a total network (dual pipe) length of 711 km. Currently the main heat sources are combined heat and power (CHP) plants, CHP-2 (heat output about 1200 Gcal/hr) and CHP-1 (heat output about 390 Gcal/hr), and large heat-only boiler (HOB) plants, HOB West (heat output about 400 Gcal/hr) and HOB South (heat output about 200 Gcal/hr). Termocom also operates about 38 km of distributed DH network which is supplied from suburban HOBs.

2. The CHPs produce both electricity and heat, both of which are consumed locally. All the CHPs are being operated well beyond their economic life; CHP-1 and CHP Nord were commissioned in the 1950's, while the newer CHP-2 was built in mid-1970s. Without substantial rehabilitation or retrofits since their construction, the efficiency and availability of the CHPs have been declining steadily. The thermal efficiency for CHP-1 and CHP-2 are respectively 62% and 71%, which is considerably lower than thermal efficiency of modern CHP systems which is about 88%. The inefficiency of the plants also leads to higher energy tariffs. CHP-1 and CHP-2 produce electricity at 11.5 US cents/kWh and 8.4 US cents /kWh respectively, while the average import price of electricity was 5.5 US cents/kWh in 2010.[3]

3. As a result of many years of underinvestment in the system, much of it needs to be replaced and/or upgraded to decrease the cost of heat supply. More than 75% of the total heat supplied to the DH network is from CHP-1 and CHP-2, with the remainder being produced by large HOBs (South- and West HOBs), as well as 19 distributed suburban HOBs of smaller installed capacity. The HOBs and CHP plants are old and inefficient, especially CHP-1, operating well past their design life. As a result, the equipment needs to be upgraded and, in the longer-term, replaced.

4. Three significant problems with the distribution system that need to be solved are:

a) Much of the system is based on Group Heating Stations (GHSs), which provide heat at a city block level, rather than Individual Heating Stations (IHSs), which provide heat at building level. When heated by GHSs, some buildings in the group are overheated, while others are under heated. The quality of domestic hot water (DHW) is also insufficient. This results in some district heating customers switching from DH to individual gas-fired heat supply sources.

[3] Chisinau Heat and Electricity Supply Institutional and Financial Restructuring Study, 2011, Economic Consulting Associates.

b) Although, heat losses in the network have been reduced in recent years, they are still well above the level of about 5-10% prevailing in modern district heating systems of similar size.

c) The majority of the system has exceeded its expected operational lifetime. In 2009, the average specific number of breakdowns per km for the entire network was ca. 1.7 per km; this is about ten times higher than that of modern district heating systems in the EU.

5. The DH system is considered to be the least cost option for heating Chisinau, as the city has a high heat-load density - where higher density indicates a compact distribution network with relatively low distribution costs and higher efficiency in heat delivery. The benchmark for heat load density of an efficient DH system is 3 MWh/m length of the DH network[4], which the city of Chisinau surpasses. The system also supplies heat to many public institutions, including hospitals and schools.

6. A long-term vision for Chisinau's DH system, heat generation, transmission, and distribution is to change from a production-driven system to a demand-driven system by replacing the heat distribution from group substations to modern fully automated individual building level substations, replace severely damaged heat transmission and distribution pipes and upgrade the heat generation sources. In this long-term vision one heat generation source (CHP) shall be operated and optimized to produce base load heat at the lowest cost whilst HOBs in different areas of the city would operate for as peak load and reserve heat sources.

7. Also, the poor quality of district heating (DH) services due to obsolete infrastructure has led to substantial disconnections from the centralized system, leaving the vulnerable to depend on the deteriorating DH system. Due to the poor quality of service and the high cost of DH services, many of the wealthier residents of Chisinau, who could afford to, have transitioned to individual boilers in their own buildings (see Table 3). Although the rate of disconnections has subsided in recent years, the current share of consumers of centralized heating mainly consists of lower-income residents who have no other option for heating. Additional studies have shown that disruption in DH services will leave about 40% of current consumers, or about 160,000 households, with no alternative for heating in winter which averages low temperature of -6 degrees Celsius. Consequently, as a report commissioned by the Government has found, 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.[5] Increasing the efficiency of heat generation and delivery would not only contribute to increasing energy security, but also have a strong positive impact on the welfare of the vulnerable population in Chisinau.

Table 1: Disconnections from the centralized DH system in Chisinau

Time Period	2000 - 2002	2003 - 2005	2006 - 2008	2009 - 2011
Apartments disconnected	2,906	13,683	2,841	1,036
Disconnected heating load (Gcal)	11.947	38.576	7.649	1.7332

Source: Termocom

[4] Co-generation and District Heating. Energy Charter Secretariat, 2006.
[5] PricewaterhouseCoopers

8. In November 2008, Moldovagaz halted gas supply to Moldova due to the inability of Termocom 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. The Government of Moldova (GoM) initiated a series of reform measures to stop further accumulation of debt stock in the energy sector:

- To enable the heating tariffs to at least be at cost recovery levels, the Government transferred the heat tariff setting authority for Termocom from the municipality to an independent regulator, the National Agency for Energy Regulation (ANRE) on December 2009. ANRE promptly raised the DH tariffs to 699 lei/Gcal, increasing the tariff by 29%.
- To prevent further accumulation of arrears beyond normal trade terms, a Memorandum of Understanding (MOU), brokered by the International Monetary Fund (IMF), was signed between Termocom, CHPs, Moldovagaz, Municipality and the Government to remain current on all payment obligations from 2009 onwards.
- To discourage further disconnections from the DH system, the Government introduced punitive fees to DH consumers who wanted to disconnect from Termocom's DH system, and also charged a DH capacity fee to consumers already disconnected.

9. Recognizing that 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 sector reform as well as debt restructuring with Moldovagaz. At the Government's request, the Chisinau Heat and Electricity Supply Institutional and Financial Restructuring report was finalized in October 2011, funded by Sweden. Based on the input provided through the study, the Government issued a Cabinet Decision on November 2011 providing for: (i) a vertical integration of Termocom and CHPs, which includes the creation of a new corporate management; and (ii) the preparation of a debt restructuring plan with Moldovagaz, which includes transfer of state owned gas networks. In September 2012, the Municipal Council also approved the Corporate and Financial Restructuring Strategy adopted by the Government. With the consensus reached by all the major stakeholders, further support was provided by Sweden to the Government to prepare a corporate and financial plan to form a new integrated District Heating and Energy Company (Newco).

10. The Corporate Restructuring Plan, approved by the Cabinet on November 13, 2013, initially envisioned a merger of Termocom, CHP-1 and CHP-2 into a new corporate entity (or Newco) based on the asset valuation of each company. The Borrower passed a decision on May 7, 2014 to merge Termocom's assets with CHP-2 (which has completed its merger with CHP-1 on October 20, 2014) through liquidation of Termocom to complete the restructuring. Termocom's liquidation process was initiated at the Court of Appeals on March 18, 2014. Under this procedure, all shareholdings of Termocom will be liquidated and their assets to be distributed among the creditors by the court-appointed liquidator; where CHP-1 and CHP-2 hold majority of claim against Termocom. In parallel, the Government convened the General Shareholders' Meeting of CHP-1 and CHP-2, which approved the merger of CHP-1 into CHP-2 on June 27, 2014. The Creditors' Committee of Termocom has approved the valuation report of Termocom assets on September 12, 2014. The Committee convened and approved the sale of

assets from Termocom to CHP-2 on September 22, 2014, based on the draft special purpose law to be legislated by the Government. The draft law on approval of Termocom core assets sale to CHP-2 was approved by the Government on September 25, 2014.

11. The vertical integration of the generation and distribution of DH services was chosen as it is expected to increase operational efficiency, streamline the corporate structure, and provide a rationalization of investment plans. Based on the consultant's report[6] that provided detailed analysis on the restructuring options, the Government had chosen the integration of CHP-1, CHP-2, and Termocom for the following expected benefits:

a) *Increase in operational efficiency* – Rational use of energy production infrastructure is expected to be promoted, as it is operated as one system. Currently, 75% of heat generation is conducted by CHPs, who are reliant on 60 – 70% of their revenues on heat sales to Termocom. Since all heat and electricity generated by CHPs have purchased guarantee from the Government, Termocom was not able to procure and dispatch heat. As one system, the Newco will be able to dispatch heat from least cost sources.
b) *Streamlined corporate structure* – As one company, the Newco will be able to become more efficient as overhead functions (HR, Accounting, etc.) and other overlapping functions can be made redundant and streamlined.
c) *Rationalization of investment plans* – Currently, 75% of heat is produced by CHPs and the remaining 25% of heat demand is met by HOBs operated by Termocom. The integration will allow the company to rationalize its investment plans and optimize the DH system in Chisinau. The process will also allow for identification of redundant assets, which may be liquidated to support the repayment of accumulated debt stock.

12. The proposed Project shall finance the short-term priority investments in the Chisinau DH system. However, the proposed short-term priority investments are in line with the long-term vision.

Component 1: Investments for the DH system (IBRD: US$33.3 million).

13. This component will support priority investments aimed at optimizing and modernizing the heat distribution network, with the objective to achieve reduced heat losses, improved service quality and more efficiency and secure supply of heat and hot water to end-user consumers. Also a large number of public institutions (state and municipal) were disconnected from the DH system about 15-10 years ago. The Project aims also to reconnect most of these public institutions to DH system.

14. A detailed feasibility study has been carried out be an international consultant, Sweco of Sweden, financed by a grant from Sweden. The study describes in detail the current condition of the DH system, its weaknesses and needs for improvements and investments. The consultant has

[6] Chisinau Heat and Electricity Supply Institutional and Financial Restructuring Study, Economic Consulting Associates, 2011

prepared the investment proposal in close cooperation with Termocom's technical experts. The study uses the consultant's international experience applied in the conditions in Chisinau, analyzing different near-term investments from technical and economic viewpoints. The following priority investments are recommended for urgent implementations:

a. Modernization of selected pumping stations (pumping stations # 8 and 12). This sub-component will improve security of heat supply by replacing old inefficient, constant flow pumps with modern pumps which will be equipped with frequency converters to allow variable flow operation mode of the district heating system. The pumping stations are of great importance in Chisinau where the elevation difference between the lowest and highest location of the DH system is about 200 m. In addition to improved security of the DH system the modern pumping arrangements will also save elasticity used at the pumping stations.

b. Replacement of selected segments of the distribution network. This sub-component will replace the sections of the DH network, which are in worst conditions, and the estimated total channel length is about 20 km. These existing old pipelines have a large number of breakdowns, large heat and water losses. The pipelines shall be replaced with pre-insulated pipes. The direct benefits of the pipeline replacements will be improved security of heat supply and reduced heat and water losses of the DH system.

c. Replacement of central heat substations (CHS) with individual building level heat substations (IHS). During last 5 – 6 years Termocom has replaced old worn-out central heat substation, which were constructed during the Soviet time, with modern fully automated individual building level heat substations. The old central substations typically supply heat and hot water to 10 – 20 buildings. The distribution pipes from the central substations to buildings are in very bad condition, with large heat and water losses. The distribution pipelines include 4 pipes, heat supply and return, hot water supply and circulation pipes. The new individual substations shall be located in the basements of buildings and shall be connected to the DH primary network with pre-insulated pipes. The substations will have two heat exchangers, one for space heating and another one for hot water. The temperature regulation of the secondary system inside the building will be done automatically based on the outside temperature. Termocom has currently about 182 individual substations and has very positive results including: (a) improved customer satisfaction, (b) lower heat consumption of the buildings, and (c) reduced heat and hot water losses of the heat distribution. The investment plan under the Project includes installation of about 114 individual substations.

d. Reconnection of about 40 public institutions. A number of large public institutions were disconnected from the DH system 10-15 years ago when the DH service was poor and the gas price was below cost recovery level and thus attracted investments in gas boilers replacing the DH supply. These institutions include major governmental institutions, hospital areas, university areas, etc. The total estimated heat load of these institutions is about 60 MW. The government has agreed to reconnect the institutions

back to the DH system which will have a major demonstration effect of the image of the Project and the DH system. The institutions will be connected with individual heating substations to the DH system. The existing gas boilers shall remain as reserve heat sources.

Component 2: Support for Streamlining Operations (IBRD: US$5.6 million)

15. This component will support the Government's decision to streamline the operation and corporate structure of Newco once established, including closing down the operation of CHP-1. The Plant is being operated well beyond the designed life and being operated very inefficiently. The consultant report[7] indicated that CHP-1 is running at 63% thermal efficiency and producing electricity that is 80% more expensive than import price. Closing down CHP-1 itself would have a net benefit of over MDL 8 million per year for the energy consumers.

However, in order to ensure that the stability and service quality of the district heating sector, measures need to be taken to support a smooth transition:

a. Connection of DH distribution network to service area supplied by CHP-1 (US$2.6 million). Before closing operation of CHP-1, that are being serviced by CHP-1 needs to be connected to an alternative heating source to ensure continuity of DH services to the area. This requires a new DH pipe connection of about 350 m long and a new pumping station allow the DH system operation without heat generation from CHP-1.

b. Social Impact Mitigation Program for staff who may be affected by the restructuring (US$2 million) The Restructuring Report submitted by the consultant identified staff that will be impacted by the restructuring process who will be supported under the Project. The Social Impact Mitigation Program will be established during implementation and before finalization of the corporate restructuring. The Program will likely include:
    - Re-training to allow staff to be reappointed to other companies or utilities, and
    - Financing of severance package.

c. Environmental Audit for CHP-1 (US$1.0 million). As indicated earlier, the CHP-1 plant has been operating for more than 60 years. The plant site is within the city limits of Chisinau and is considered as a good candidate site for re-development to other usages, such as commercial or residential property. Considering the financial burden of the sector reform and debt restructuring, the Government is carefully assessing options on how to utilize this property after the operation has been ceased. In order for the site to be reutilized for other purposes, the site must be audited for any environmental impact that the power plant may have had on the land and its surrounding environment. The Bank and the Government have agreed

[7] Chisinau Heat and Electricity Supply Institutional and Financial Restructuring Study, Economic Consulting Associates, May 2011

that a TOR will be prepared before Appraisal to clarify the scope of work which will likely include the following:

- Current site assessment,
- Review of legislative and administrative requirement on environmental remediation and decommissioning,
- Review of various scenarios and strategies on decommissioning,
- Cost estimations for each strategy

Component 3: Project Management and Technical Assistance (IBRD: US$1.5 million)

16. Newco, as the implementing agency, is a new established entity with no track record of working with a lender. In addition, the company will be a result of corporate restructuring process involving three public utilities. In order to ensure the full compliance with all of the Bank requirements, the Government has proposed that the Borrower be the Republic of Moldova through its Ministry of Finance. Ministry of Economy is the Borrower's representative for purposes of Project implementation. For purposes of Project implementation, the Borrower will enter into an agreement with Newco, which is established as effectiveness condition for this Loan. The agreement would state terms and conditions of the Newco's obligation to repay the disbursed funds under parts 1 and 2 of the Loan to the Borrower and its responsibilities for the technical implementation of the Project. (see Annex 3 for details). In addition, the Ministry of Economy, as the responsible line ministry, proposed that the existing Moldova Energy Project Implementation Unit (MEPIU) support the Government in take on the fiduciary responsibility as the Borrower. The MEPIU is a PIU established by the Ministry and already administers all the funds and trust fund from donors and international institutions such as Sweden, EBRD and World Bank. They have a good track record in compliance and staff is well experienced in the safeguard and fiduciary policies of the World Bank.

17. The component will support the following activities (a) carrying out Project audits; (b) carrying out the financial management and procurement requirements under the Project; (c) monitoring and evaluation of Project activities; (d) providing capacity building and Operating Costs for the MEPIU; (e) carrying out public awareness campaigns for dissemination of the benefits of energy efficiency improvements and efficiently operating Chisinau's district heating system; and (f) providing technical assistance to Newco.

Annex 3: Implementation Arrangements

MOLDOVA: District Heating Efficiency Improvement Project

Project Institutional and Implementation Arrangements

1. The Ministry of Finance, as agent of the Government of Moldova, will be the Borrower of the loan. For purposes of Project implementation, the Borrower will enter into an agreement with Newco, which is established as effectiveness condition for this Loan. The agreement would state terms and conditions of the Newco's obligation to repay the disbursed funds under parts 1 and 2 of the Loan to the Borrower and its responsibilities for the technical implementation of the Project. The Ministry of Economy will take overall responsibility for project implementation delegating fiduciary responsibilities (disbursement, financial management, procurement, and monitoring & evaluation) to its Project Implementation Unit (MEPIU). MEPIU will carry out the fiduciary responsibilities under the Project in compliance with the requirements and safeguard policies of the World Bank, to be outlined in the Loan Agreement and Project Operational Manual. MEPIU will manage flow of funds on behalf of the Newco for the purposes of the project. Newco will be expected to provide technical and advisory assistance in the process.

Project administration mechanisms

2. The MEPIU will adopt the Project Operations Manual (POM) as a condition of effectiveness. This POM should detail the responsibilities of the MoE/MEPIU, Newco and MoF. Procurement and Financial Management assessments conducted during project preparation have identified the specific functions that each agency will need to play for each of the fiduciary requirements. The POM will include remedial actions to address any deficiencies.

Financial Management, Disbursements and Procurement

3. The financial management arrangements of MEPIU were reviewed and assessed as satisfactory. The FM assessment for District Heating Efficiency Improvements Project was undertaken in February 2014 as part of financial management implementation support to and supervision of on-going project administered by MEPIU (financing Energy Sector Reform and Efficiency Improvements). The information available from previous missions and track record of MEPIU accumulated over the years was also used for its assessment. As a result of the assessment, it was established that MEPIU has adequate FM arrangements in place, which are acceptable to the Bank for implementation of the Project.

4. No significant weaknesses were identified at MEPIU. Prior to the project implementation the PIU will need to update the current Financial Management Manual (FMM) to reflect Project's specific activities and controls.

5. The overall FM risk for the Project was assessed as Moderate, with Inherent Risk of the Project before and after mitigation measures rated as Moderate and the Control Risks is rated as Low.

6. The MEPIU has acceptable planning and budgeting capacity in place. The Project's plan and budget are prepared in cooperation with the Bank. The director, financial management

consultant and procurement consultant are involved in the preparation of the annual budget. The annual budget is based on the procurement plan, which is regularly updated by the procurement specialist. The annual budget is approved by Line Ministry (Ministry of Economy) and then submitted to the Ministry of Finance for their approval and inclusion in the state budget. In accordance with MoF requirements, the budget is classified by categories, components, and sources of funds.

7. MEPIU has experienced and knowledgeable FM staffing. It consists of financial management consultant and one assistant who provide support to FM and procurement consultants on some routine tasks.

8. The accounting system of MEPIU is maintained according to the requirements established by the Ministry of Finance for budgetary institutions. For the reporting purposes modified accrual basis is applied. MEPIU utilizes 1C accounting package, which is currently in use by a number of Moldovan agencies implementing WB-financed projects. The accounting system is found to be adequate and has functionality to generate IFRs. The monitoring of payments under each contract is done through the system. Backups of the accounting data are done on CDs on monthly basis.

9. The MEPIU's internal control system was found to be acceptable to the Bank and capable of providing timely information and reporting on the Project. The existing internal controls and procedures of the active project are documented in the FMM, which will be updated for this Project.

10. Project management-oriented IFRs will be used for the project monitoring and supervision. The active project's IFRs were always received on-time and were acceptable to the Bank. The format of IFRs includes: (a) Project Sources and Uses of Funds, (b) Uses of Funds by Project Activity, (c) Designated Account Statements, (d) summary of disbursements, and (e) contract monitoring status reports. The MEPIU will be producing a full set of IFRs every calendar quarter throughout the life of the Project. These financial reports will be submitted to Bank within 45 days of the end of each calendar quarter. The first quarter IFR will be submitted after the end of the first full quarter following the initial disbursement. MEPIU also submits monthly and quarterly reports to various government agencies by sources of funds showing Project financing and expenditures by categories.

11. The audit requirement under the proposed DHEI Project will include the audit of Project financial statements and the audit of the Newco financial statements. The audit of the Project and Newco financial statements will be conducted (a) by independent private auditor acceptable to the Bank, on terms of reference (TOR) acceptable to the Bank and procured by MEPIU, and (b) according to the International Standards on Auditing (ISA) issued by the International Auditing and Assurance Standards Board of the International Federation of Accountants (IFAC). MEPIU's current auditing arrangements are satisfactory to the Bank (no issues arisen in the latest audits of other projects managed by the MEPIU), and it has thus been agreed that similar audit arrangements will be adopted for the Project, to cover the project and Newco financial statements. Particularly, the sample audit TORs agreed with the Bank will be attached to the FMM, and the annual audited project and entity financial statements will be provided to the Bank within six months since the end of each fiscal year, and also at the closing of the Project. If the

period from the date of effectiveness of the loan to the end of the borrower's fiscal year is no more than six months, the first audit report may cover financial statements for the period from effectiveness to the end of the second fiscal year. The first entity audit for Newco will be carried out once the Company completes its first calendar year of operation. The audit reports are to be disclosed within one month of their receipt from the auditor, by posting the reports on the websites of MoE MEPIU and Newco respectively. Following the Bank's formal receipt of these reports from the Borrower, the Bank will make them publicly available according to World Bank Policy on Access to Information. The contract for the audit awarded during the first year of project implementation may be extended from year-to-year with the same auditor, subject to satisfactory performance. The cost of the audits will be financed from the proceeds of the loan.

Disbursements

12. The loan proceeds will be disbursed through transaction-based disbursement methods that include: reimbursements with full documentation, reimbursements on basis of SOEs for small expenditures with defined thresholds, payments against Special Commitments, direct payments to third parties, and payments through the Designated Account.

13. To facilitate flow of funds under the Project, a separate Designated Accounts will be opened through the national treasury system on terms and conditions acceptable to the Bank, for the loan. The Designated Account, which will be managed by the MEPIU, will be replenished on a quarterly basis, as needed, and its ceiling would be provided in the Disbursement Letter. Foreign currency amounts will be either paid directly to foreign suppliers or exchanged as needed in local currency, to cover eligible expenditures payments in local currency to suppliers, from the designated account into local current transfer account also opened by the Treasury. The daily closing balance on the local currency account will be insignificant to avoid unnecessary interest rate differences which are not covered by the project funds. The Ministry of Finance will give authorization to designated officials to withdraw funds from the project account. The Designated Accounts will be audited annually in conjunction with the audit of the project financial statements.

14. Disbursements will be made on the basis of full documentation for (a) contracts for goods costing more than the equivalent of US$200,000 each; (b) contracts for works costing more than the equivalent of US$1 million each; and (c) services under contracts of more than the equivalent of US$100,000 for each consulting firms and more than the equivalent of US$50,000 each for individual consultants. Disbursements below these thresholds and for expenditures against incremental operating costs and training would be made according to certified SOEs. For all expenditures financed under SOEs full documentation in support of the SOEs will be retained in the MEPIU for at least two years after the project closing date. This information will be available for review by Bank missions during project supervision and by the projects auditors. SOEs will be audited in conjunction with the annual audit of the Project. Further instructions on the size of the Minimum Application and on how funds will be withdrawn from this Loan will be provided in the Disbursement letter.

15. The withdrawal of proceeds from the loan will be made in accordance with the schedule in Table 1 below.

Table 1: Withdrawal of Loan Proceeds

Category	Amount of the Loan Allocated (Expressed in US$)	Percentage of Expenditures to be Financed (inclusive of taxes)
(1) Goods, works, Non-Consulting Services, consultants' services, Training and Operating Costs under Parts 1, 2(a), 2(c) and 3 of the Project	38,398,750	100%
(2) Severance Payments and Training under Part 2 (b) of the Project	2,000,000	100%
(3) Front-end-Fee	101,250	Amount payable pursuant to Section 2.03 of this Agreement in accordance with Section 2.07 (b) of the General Conditions
TOTAL AMOUNT	40,500,000	

16. **Retroactive Financing:** The Borrower may finance eligible project expenditures incurred up to 12 months prior to Loan Agreement signing date up to $7,500,000 provided that the payments are for items procured in accordance with procedures acceptable to the Bank.

17. **Borrower Counterpart Funding**. The Borrower will provide in-kind contribution to the Project as specified in the project cost table.

Procurement

18. An assessment of the capacity of MEPIU and Termocom's (Newco) to implement procurement actions was carried out in April 2013 using the Procurement Risk Assessment and Management System (P-RAMS) tool. The assessment reviewed the organizational structure for implementing the Project and the interaction between the project staff responsible for procurement and the relevant units in the implementing agency. The MEPIU has over 10 years of experience in implementing Bank-funded projects. Currently MEPIU is implementing the Energy Sector Reform and Efficiency Improvement Project (ESREI) and other TAs. The MEPIU staff will be selected on the basis of single-source selection as they are currently implementing the ESREI project. It is staffed with highly qualified professionals. It currently employs a full-time Procurement Consultant and one Assistant providing support to FM and procurement consultants on routine tasks. The Procurement Consultant has substantial experience in conducting procurements of different nature, size and complexity. However, Termocom (Newco) does not have any experience with the World Bank procurement processes and have no insight and familiarity with the Bank's procurement policy and procedures. The mitigation measures are (a) for MEPIU to agree on the selection criteria for members of the

evaluation committee, including technical expertise, and review Evaluation Committee formation on regular basis to avoid improper evaluation results which may lead to contracts not awarded to the best qualified consultants firms/lowest evaluated cost bidders and (b) both MEPIU and Termocom (Newco) to regularly attend training courses/seminars organized by the Bank in the region. As part of the assessment, the overall project risk for procurement was rated "Moderate".

19. The general description of various items under different expenditure categories is provided below. The procurement for works, goods and non-consulting services would be conducted using the Bank's Standard Bidding Documents (SBD) for all International Competitive Bidding (ICB) and an acceptable bidding document to the Bank would be used for all National Competitive Bidding (NCB). The standard NCB provisions for Moldova, as included in the Loan Agreement, would be applied to all the NCB contracts. Selection of Consultants: the proposed Project will finance consultant services by firms and individuals. Consultants will be hired by the Project to support the services reflected in the procurement plan. Consulting firms will be hired by the Project to support services reflected in the procurement plan. Consulting firms will be selected using the following selection procedures: quality- and cost-based selection (QCBS); Quality-Based Selection (QBS); Selection under a Fixed Budget (FBS) and Least-Cost Selection (LCS). The Selection Based on the Consultant's Qualifications (CQS) method may be used in assignments below US$300,000 equivalent. With justification satisfactory to the Bank, sole source selection can be used for hiring both firms (as in paragraphs 3.8-3.11) and individual consultants services, estimated to cost less than US$300,000 equivalent per contract, may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 in the Consultant Guidelines. A General Procurement Notice covering the project procurement activities will be prepared and published after Negotiations. Specific Procurement Notices will be published for all ICB and NCB procurement, as well as EOIs for consulting services contracts as required under the respective Guidelines published in January 2011, revised July 2014.

20. The following activities are planned under each component:

Component 1: Investments in the DH system. (a) Modernization of selected pumping stations; (b) Replacement of selected segments of the distribution network; (c) Replacement of central heat substations (CHS) with individual building level heat substations (IHS); (d) Reconnection of 44 public institutions to the district heating system.

Component 2: Support for streamlining operations. (a) Connection of DH distribution network to service area supplied by CHP-1, (b) Social Impact Mitigation Program (SIMP) for staff who may be affected by the restructuring, which include severance package and retraining/job placement services, and (c) Environmental Audit for CHP-1 (US$1 million).

Component 3: Project Management and Technical Assistance. (a) TA for Project Implementation; (b) Monitoring and Evaluation; (c) Public Awareness; (d) Communication activities; (e) Audit of project accounts; and (e) six MEPIU staff selected on a single source basis.

21. *Procurement Plan and Procurement Progress Report:* The Borrower will furnish to the Bank annually a procurement progress report which shall include inter alia (i) a description of issues arising during the full procurement cycle under the Project, from design through planning, bidding, contract implementation and completion developed a Procurement Plan which provides basis for the procurement methods and thresholds. This plan has been agreed at negotiations and will be published on the Bank's external web-site. The Procurement Plan will be updated on regular basis, at a minimum annually or as required, to reflect the actual project implementation needs. The Plan and all subsequent updates will be subject to Bank's prior review. Once agreed, each version will be published as required by the Bank Guidelines. A summary of the agreed procurement packages and their schedule are given below.

Procurement Packages and Time Schedule

Contract Package	Contract Description	Type	Procurement Method	Review Method	Expected Bid/RFP Announcement Date	Expected Contract Completion Date
C1.1	Supply and installation of an interconnecting pipe and pumping station in the return pipe between CHP-1/2	S&I	ICB	Prior	Dec 2014	Dec 2015
C1.2	Replacement of pumps and motors in pumping station (Lots 1 and 2)	S&I	ICB	Prior	Dec 2014	Nov 2015
C1.3	Reconnection of 44 public institutions including 114 new IHSs plus associated piping (IHS0)	S&I	ICB	Prior	Dec 2014	Oct 2017
C1.4	Supply and installation of pipes (Lots 1 and 2)	S&I	ICB	Prior	Dec 2015	Nov 2016
C1.5	Supply and installation of Pipe between SPRR N19 to C-319 to the area connected to HOB South (HP1a)	S&I	ICB	Prior	Dec 2015	Nov 2016
C1.6	Supply and installation of Individual Heating Substations (Lots 1,2,3 and 4)	S&I	ICB	Prior	Oct 2016	Oct 2019
C1.7	Replacement of heat distribution pipes in different areas (Lots 1,2,3,4 and 5)	S&I	ICB	Prior	July 2017	Oct 2019
C3.4	Technical Assistance / Training under the Staff Reduction Programme	CS	QCBS	Prior	Apr 2015	Dec 2015
C3.5	Environmental Audit of CHP-1 site	CS	QCBS	Prior	Apr 2015	Dec 2015

22. *Prior/Post Review:* It is recommended that the procurement methods and prior review thresholds are set in accordance with the latest ECA Regional Thresholds which are available on the Bank's internal website. All Terms of References shall be subject to prior review. Routine procurement reviews and supervision will be conducted by the Procurement Specialist. In addition, one supervision visit is expected to take place every six months during which ex-post reviews will be conducted. Given the "moderate" risk rating for procurement, the Bank recommends that at least 10 percent of the contracts subject to post-review are included in the review. Initially, procurement supervision will include prior review of contracts and

procurement implementation support missions (part of project supervision missions) once every six months. Procurement documents will be kept readily available for Bank's ex-post review during supervision missions or at any other point in time. A post-review report will be prepared, shared with the implementing agency and fiduciary agency and filed in the post-review system of the Bank.

Environmental and Social (including safeguards)

Environmental

23. *The scope of the project EA***.** The objective of the project Environmental Impact Assessment (EIA) was to analyze the potential adverse environmental issues related to the proposed activities and to ensure that these aspects will be adequately addressed and mitigated during the project implementation in full compliance with WB requirements and Moldovan environmental legislation.

24. *Potential environmental impacts and project environmental category*. Taking into consideration the character of potential impacts the Project was assigned as Category B for which it is necessary to conduct an EIA and prepare an Environmental Management Plan (EMP). Conducted project EIA concluded that the Project will generate mostly positive socio-economic benefits due to the improvement of population hot water supply and heating services along with improved environmental conditions on the Chisinau Municipality territory. At the same time it might also generate a series of adverse impacts: noise; impact on water quality and resources; impact on water by the construction run-offs; disturbance of traffic during construction and rehabilitation works; construction dust; and workers safety, etc. However, these impacts will be temporary and site specific and could be easily mitigated through implementing adequate avoidance and/or mitigation measures. It was also concluded that no impacts are expected on any sensitive or protected areas.

25. *EMP provisions.* The project EMP includes along the WB safeguards policies applied to the current Project a description of the policies, legal, and administrative framework in place in the Republic of Moldova regarding environmental management and the centralized heating sector. It contains also: (a) a series of activities targeted at mitigating identified adverse impacts; (b) monitoring plan for EMP implementation; (c) implementing arrangements as well as a short analysis of project beneficiary (formerly Termocom) EA capacity.

26. *Environmental mitigation measures.* The EMP stipulates all adverse environmental impacts associated with the Project will be prevented, eliminated, or minimized to an acceptable level. This will be achieved through the mechanism for the continuous refinement and effective implementation of the environmental mitigation measures, including careful selection of project sites; replacing of old pipes and pumps and conducting rehabilitation works in a way that would prevent as much as possible cutting of trees, destroying of landscape in parks, pollution of air and soil; ensuring labor safety and health impacts during welding operations etc.

27. *Environmental monitoring.* Environmental monitoring during project implementation will provide information about the project environmental impacts and the effectiveness of applied

mitigation measures. Such information enables the client and the Bank to evaluate the success of mitigation as part of project supervision, and allows corrective action to be taken when needed. The monitoring section of the EMP provides: (a) details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements; and, (b) monitoring and reporting procedures to (i) ensure early detection of conditions that necessitate particular mitigation measures, and (ii) furnish information on the progress and results of mitigation.

28. *Environmental supervision and reporting.* The EMP implementation will be supervised by MEPIU and former Termocom staff in Newco periodically (as per monitoring schedule), as well as by the WB (during its supervision missions) and by the local ecological and environmental construction inspectors. Furthermore, Termocom semi-annually will present short information about the EMP implementation as part of the Progress Reports to be presented to the WB by the client.

29. *Integration of the EMP into project documents*. The EMP provisions will form part of the design documents for the Project, and will be included in construction contracts for proposed activities, both into specifications and bills of quantities. Furthermore the Contractors will be required to include the cost in their financial bids and required to comply with the EMP provisions while implementing the project activities.

30. *Implementing arrangements.* The responsible line ministry (the Ministry of Economy) as well as the implementing unit (MEPIU) has good experience in successfully implementing safeguards issues within two World Bank projects (Energy II; and Competitiveness Enhancement Project). MEPIU is staffed with highly qualified and experienced professionals, both in technical and safeguards aspects, will ensure project implementation in accordance with the Operations Manual (OM), as well as that the EMP provisions are fully integrated into project implementation, conducting monitoring and reporting required by the World Bank. The main responsibilities with regard to day to day implementation of safeguards requirements are assigned to former staff of Termocom assigned by Newco, who are well prepared and have long time experience in this regard. Termocom had been currently certified under both ISO 14001 (Environmental Management) as well as under ISO 18001 (Operational Health and Safety Management System) and has in its structure three subdivisions responsible for the issues related to environmental safeguards (Chemical 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). These entities have very experienced staff with all necessary licenses and certificates. The proposed mitigation measures will be implemented by the Contractors, being monitored and supervised by Construction Supervision Company and former Termocom staff.

31. *Public consultation and information disclosure.* The draft EIA&EMP report was consulted with all key stakeholders. On November 8, 2013 Termocom disclosed the document on its website. On November 22, it conducted a public briefing on the document which concluded that the draft report covers practically all potential impacts and possible mitigation measures along with clear procedures from environmental screening and monitoring. The draft

document was revised after the meeting, taking into account outputs from the previous consultations. The final version of the EIA&EMP (in English and summary in Romanian) were posted on the Termocom website and submitted to the World Bank for its disclosure in Infoshop. The EMP will be used by the Termocom during the project implementation.

32. *CHP-1 closure environmental auditing.* As the Project will include closure of CHP-1 operation, the EIA and EMP report contains the draft TORs for its environmental auditing focused on assessing the cost of "decommissioning, dismantling, and environmental remedial measures" for several alternative scenarios – starting from maintaining the site at present condition with minimal cleanup to meet environmental compliance and ensure safety and finishing with the full decommissioning (i.e., dismantle all equipment; demolish all buildings and structures; clean up entire site per required environmental standards).

Social

33. Termocom will be in charge for implementing the ARAP as implementing agency, prior to start of project works related to the pipeline rehabilitation. The MEPIU will oversee the implementation of the resettlement instrument and report to the Bank on an annual basis.

34. Termocom ran a telephone line functioning 24/7 that collects grievances and break-down reports and reacts to them. In case of persistent problems that representatives of the Termocom's Quality Group set a meeting with the dwellers via the building manager and have a group discussion to find the solution. The information on the grievances and problems that arose during the heating season was collected and analyzed by the Termocom. After closure of the heating season company submits a report on problems that could not be resolved at its level to the municipality. As part of the corporate program for quality management the company's Quality Group is preparing to launch the first client's satisfaction survey after the end of the 2012-2013 heating season.

35. District Heating users are informed by the DH company through official channels: TV, newspaper and informal channels; posters on the front doors, information spread orally by the building managers are the main communication line for the DH system operator. They are supposed to consult with the apartment owners and/or inform them and provide consolidated feedback to the company. Termocom did not monitor whether it happened in practice or not. The MEPIU will ensure that all feedback channels for users and social accountability practices are properly institutionalized by Newco. Customer satisfaction surveys will be regularized as one of the main feedback channels on quality of services and satisfaction with interaction with the company.

36. Upon finalization of the restructuring arrangements the borrower in order to develop exact mitigation measures for social impact resulting from the Project and enhancement of the institutional performance on gender will hire a Consultant to conduct the skills inventory and prepare Social Impact Mitigation Plan (SIMP) based on it as well as on the results of the

consultations held on the Social Impact Mitigation Framework.[8] The SIMP will be properly disclosed on the web-sites of the MEPIU, Termocom, CHP-1, and CHP-2. MEPIU will be in charge of the SIMP implementation. The funding needed for implementation of the SIMP is included in the project budget.

37. Grievance Mechanisms -24/7 hotline with registered calls currently operated by the Termocom will continue to be supported by the Newco and is going to be used as a main entry point for the Project affected persons to receive the information on the Project and submit their grievances as to environmental and social aspects of the project implementation. The grievances and requests for information will be reviewed and analyzed by the MEPIU. Analysis of the grievances and actions taken or planned by the Project in response to them will be published on the web-site of the Newco and directly communicated to those concerned. There will be a dedicated telephone line operating at least 10 hours during working days with registered calls established for information provision and registering grievances during the process of the corporate restructuring. The MEPIU will analyze the requests for information and grievances and work on them with the relevant stakeholders. The results of the analysis will be directly communicated to those concerned.

38. Equal participation of men and women in the consultations on all aspects of the Project's social impact will be ensured, the time and place of the consultations will be chosen to ensure equal participation. Government and Newco's communication strategy as to the reform supported by this Project and mitigation measures will be taking into account the results of the District Heating and Electricity Tariff Affordability and Social Impact Analysis on gender impact of the reforms and suggested mitigation measures.

Monitoring & Evaluation

39. The Project will be monitored by teams in Newco and the MEPIU/ Ministry of Economy, based on agreed monitoring arrangements and required reporting procedures. Newco has the capacity and experience to monitor investments from technical and safeguard perspective, and MEPIU has gained significant experience in monitoring implementation and the outcomes. Progress will be reviewed using the intermediate outcome indicators. As the Project advances, monitoring will shift to the outcome indicators.

Role of Partners (if applicable)

40. Sweden has supported the Government's efforts in sector reforms and the World Bank assistance in this process. The Swedish Embassy in Moldova has been particularly proactive in providing not only financial support, but diplomatic support to encourage and promote the reforms that the Government is now implementing.

[8] The SIMP and social impact mitigation arrangements including severance packages and retraining for staff identified as redundant in the restructuring process will be financed by $2million under the Project (Memo to RVP on "Request for Approval of Financing for Severance Payments and Retraining Expenditures" approved September 11th, 2014

41. Sweden and the World Bank signed the Administrative Agreement for a trust fund to be provided to the Energy Sector Reform and Efficiency Improvement (ESREI) program in 2010. The program has funded the (a) identification of near-term priority investments and preparation of their technical specifications and tender documents, and the (b) implementation support for Corporate Restructuring of Termocom, CHP-1 and CHP-2 for the preparation of this Project.

Annex 4

Operational Risk Assessment Framework (ORAF)

Moldova: District Heating Efficiency Improvement Project (P132443)

Risks							
Project Stakeholder Risks							
Stakeholder Risk	Rating	High					
Risk Description: 1. Although the responsibility for the Chisinau DH sector institutional, corporate and financial restructuring lies with the Ministry of Economy (MoE), various stakeholders and interests may delay the restructuring process. 2. Merger of three companies and the rationalization of staffing that would inevitably follow could produce social tensions and could delay the creation of the Newco. 3. Continued disconnections may endanger the sustainability of the centralized DH system.	**Risk Management:** The creation in March 2012 of the restructuring Working Group chaired by the Ministry of Economy includes all main stakeholders. The WG was created with the agreement of all main under a MoU on the DH restructuring process and the merger of CHPs and Termocom, and following the approval by the Government in November 2011 of the Concept and Action Plan on Chisinau DH sector institutional, corporate and financial restructuring. The Working Group has the mandate to work out the structure of the new merged company among all stakeholders, and to finalize the corporate restructuring through drafting of the legal documents, including merger agreement.						
	Resp: Client	Status: Completed	Stage: Preparation	Recurrent:	Due Date: 23-Mar-2012	Frequency:	
	Risk Management: The Component 2 of the Project specifically addresses this issue by providing support to the impacted workers as retraining and /or enhancement of severance packages. The social accountability and transparency of the process will be addressed through compliance of the Social Impact Mitigation Framework included in the Operational Manual. In addition, a communication strategy would be formulated during the project implementation period by the Government and implementation agencies in the project management component.						
	Resp: Client	Status: Completed	Stage: Preparation	Recurrent:	Due Date: 23-Oct-2014	Frequency:	
	Risk Management: To discourage further disconnections from the DH system, the Government started to charge punitive fees to DH consumers who wanted to disconnect from Termocom's DH system, and also charged a DH capacity fee to consumers already disconnected.						
	Resp: Client	Status: Completed	Stage: Preparation	Recurrent:	Due Date: 29-Nov-2013	Frequency:	

Implementing Agency (IA) Risks (including Fiduciary Risks)												
Capacity	Rating	High										
Risk Description: 1. The MoE has limited personnel, in particular, to carry out the fiduciary obligations and limited experience with projects financed by the Bank. 2. Newco will have no experience in operating as a single corporate entity that would operate as vertically integrated electricity/district heating utility.	**Risk Management:** The Moldova Energy Projects Implementation Unit (MEPIU) direct subordinated to the ministry has considerable prior experience in implementing EB financed project, with staff and internal systems evaluated as generally capable of meeting the Bank's technical and fiduciary requirements.											
	Resp:	Client	Status:	In Progress	Stage:	Implementation	Recurrent: ☑	Due Date:		Frequency:	ContinuousS	
	Risk Management: The Team is now exploring south-to-south knowledge exchange arrangement with DH industry association in Romania, to provide study tours, trainings and knowledge transfer opportunities specifically on operational knowledge of integrated utility.											
	Resp:	Bank	Status:	In Progress	Stage:	Implementation	Recurrent:	Due Date:	31-Dec-2014	Frequency:	Continuous	
Governance	Rating	High										
Risk Description: The Newco will be transferred to the Government of Moldova from Chisinau Municipality, but if proper corporate governance and accountability structures are not introduced, political intervention may lead to similar issues in the future.	**Risk Management:** The new corporate and governance structure are designed to ensure that the adequate corporate governance structure and management capacity is installed in the Newco, through advisory activities envisioned under the Corporate Restructuring Implementation Support Project, supported by Sweden. The agreed structure should also be approved by the relevant authorities/parties to ensure the consensus and ownership, including the inclusion of various stakeholders.											
	Resp:	Client	Status:	In Progress	Stage:	Both	Recurrent:	Due Date:	28-Nov-2014	Frequency:		
Project Risks												
Design	Rating	Substantial										
Risk Description: 1. Formation of Newco may lead to operational efficiencies, but the issue of debt stock will remain. If the Newco cannot structure a debt restructuring plan or if the market sounding resulted in negative responses from the financiers.	**Risk Management:** The Newco's financial status during the implementation will be monitored through financial indicators, specifically Debt Service Coverage Ratio and Self Financing Ratio, which will ensure adequate financial management of the company. In addition, the Team will continue to provide support in structuring the debt restructuring plan, along with the Swedish funded consultants.											
	Resp:	Both	Status:	In Progress	Stage:	Implementation	Recurrent:	Due Date:	23-Oct-2019	Frequency:		
2. The streamlining of the Newco operation and corporate structure will impact the staff that is identified as being redundant. This will have negative impact on the families of staff and may also produce back lash towards the restructuring	**Risk Management:** Component 2 of the Project includes financing for severance package and retraining/job placement services for the impacted staff. The process of identifying redundancies will be required to follow the Social Impact Mitigation Framework, included in the Project Operational Manual. The Framework requires that the process be transparent and open, and based on clear selection criteria. The package is expected to mitigate some negative impact, especially retraining and placement services, and ease the transition process.											

<table>
<tr><td>process.</td><td>Resp: Both</td><td>Status: In Progress</td><td>Stage: Both</td><td>Recurrent:</td><td>Due Date: 23-Oct-2019</td><td>Frequency:</td></tr>
<tr><td>Social and Environmental</td><td colspan="6">Rating Low</td></tr>
<tr><td rowspan="5">Risk Description:

The potential environmental risks are related to: soil removal and destruction, construction and solid wastes, dust, noise, occupational hazards, traffic disruptions. Subject to the design of physical work, the need of acquiring land or removing assets might arise, although the rehabilitation and upgrading work planned under Component 1 is expected to take place on existing infrastructure, and land acquisition, physical displacement, loss of land/assets, or disruption of livelihoods is unlikely. Implementation of physical work during heating season could disrupt the operation of the heating system and have negative health and economic effects.</td><td colspan="6">Risk Management:

To address potential environmental impacts the client prepared an EMP which specifies necessary mitigation and monitoring measures. The main responsibilities with regard to its implementation are assigned to the MEPIU and Termocom which have good track record and capacity to adequately implement the EMP. The borrower and the WB will review the ownership of the sites of planned physical work, and if the possibilities of land acquisition or damage to assets remain, the Bank Policy on Involuntary Resettlement (OP4.12) will be triggered and a Resettlement Policy Framework will be prepared accordingly. Resettlement Actions Plans will be prepared as needs arise during the course of the project. . Physical work will be scheduled to avoid disruption of services during the heating season.</td></tr>
<tr><td>Resp: Both</td><td>Status: In Progress</td><td>Stage: Both</td><td>Recurrent: ☑</td><td>Due Date:</td><td>Frequency: Quarterly</td></tr>
<tr><td colspan="6">Risk Management:

Identified adverse environmental impacts will be addressed by applying avoidance and mitigation measures specified in the project To address these issues the borrower will prepare an Environmental Management Plan which will be based on WB and national EA rules and procedures. Such measures include: careful selection of project sites that would avoid or minimize potential adverse impacts; replacing of old pipes and pumps and conducting rehabilitation works in a way that would prevent as much as possible cutting of trees, destroying of landscape in parks, pollution of air and soil; ensuring labor safety and health impacts during welding operations etc. The day to day implementation of safeguards requirements are assigned to district heating company “Termocom” which has relevant capacities in this regard and can ensure project implementation in accordance with the EMP provisions. The EMP provisions will form part of the design documents for the project, and will be included in construction contracts for proposed activities, both into specifications and bills of quantities. Furthermore the Contractors will be required to include the cost in their financial bids and required to comply with the EMP provisions while implementing the project activities.
The EMP will be disclosed and publicly consulted in the city with participation of all involved stakeholders and local population before appraisal. For each Individual Heating Sub-station to be installed in the buildings the client will prepare a Checklist EMP. These EMPs will be used for project implementation.</td></tr>
<tr><td>Resp: Client</td><td>Status: In Progress</td><td>Stage: Both</td><td>Recurrent: ☑</td><td>Due Date:</td><td>Frequency: Quarterly</td></tr>
<tr><td colspan="6">Risk Management:

During the design stage the client have decided that no buildings which are specified in the list of national Physical Cultural resources will be included in the project. In the case such buildings would have been included or, if the project activities will be located in the proximity of physical cultural resources (monuments, churches,etc.), the EMP would have included a special section on avoiding and mitigating of potential impacts on those resources.</td></tr>
<tr><td>Resp: Client</td><td>Status: Completed</td><td>Stage: Preparation</td><td>Recurrent:</td><td>Due Date: 31-May-2013</td><td>Frequency:</td></tr>
<tr><td>Program and Donor</td><td colspan="6">Rating Low</td></tr>
<tr><td>Risk Description:

There is a risk of overcrowding or overlapping</td><td colspan="6">Risk Management:

Such risk, however, is relatively low thanks to regular (monthly or bi-monthly) donors’ coordination meetings and</td></tr>
</table>

of activities to enhance the institutional and capacity building of the implementing agency, as well as of the regulatory agency through the project, by the various donors active in Moldova, in particular Sweden and the EU.	consultations, and the active participation in donors' coordination efforts by MoE. Close coordination within the Bank and with other donors will be maintained during both preparation and supervision, as considerable cross-learning and synergies and complementarity can take place among the various projects. The Bank participates actively in the monthly joint donors-GoM energy sector coordination meetings.					
	Resp: Bank	Status: In Progress	Stage: Both	Recurrent: ☑	Due Date:	Frequency: Continuous
Delivery Monitoring and Sustainability	Rating	Substantial				
Risk Description: There is a risk that Newco will not have sufficient resources to sustain the project investments after project completion, either through unforeseen force majeure or political risk such as inadequate tariffs.	**Risk Management:** The project team will maintain a regular sector policy dialogue with the Government on ensuring the financial health of the sector. The team will also carry out regular dialogue with the energy regulator and continuous monitoring of full application of tariff methodology. The Government will be committing to do utmost in maintaining the financial health of the sector, as the Guarantor, and will be required to provide the adequate resources to the Newco.					
	Resp: Both	Status: In Progress	Stage: Both	Recurrent: ☑	Due Date:	Frequency: Semi-annual
Other (Optional)	Rating					
Risk Description:	**Risk Management:**					
	Resp:	Status:	Stage:	Recurrent:	Due Date:	Frequency:
Other (Optional)	Rating					
Risk Description:	**Risk Management:**					
	Resp:	Status:	Stage:	Recurrent:	Due Date:	Frequency:

Overall Risk

Overall Implementation Risk: **High**

Risk Description:

Mitigation measures to these risks have been put in place during the preparation period and the investment portion of the project is expected to yield high returns in efficiency gain and ensure sustainable operation of the district heating system in Chisinau. However, considering the uncertainty surrounding the operating environment and implementation capacity, the Overall Implementation Risk is still considered to be High.

Annex 5: Implementation Support Plan

MOLDOVA: District Heating Efficiency Improvement Project

Strategy and Approach for Implementation Support

1. The implementation support strategy was developed taking into account the risks and mitigation measures identified in the ORAF and targets the provision of flexible and efficient implementation support to the clients.

a) **Technical Support** – Implementation support missions will include an energy specialist throughout project implementation to help supervise the progress in investments and construction works. Financial specialists will also be included into the mission to provide advice and guidance on the corporate and financial management of the Newco.

b) **Financial Market** – The Team will also support the Government in accessing external financing for debt restructuring. Staff from Financial Solutions under the Energy and Extractives Global Practice group will be assisting the Government in this process.

c) **Procurement** – Procurement specialist will carry out ongoing supervision under the IBRD loan. The specialist will also participate in project implementation support missions and site visits, respond to just-in-time requests and provide ongoing guidance to the three FIs and MENR based on their procurement activities.

d) **Financial Management** – During project implementation, the Bank will supervise the project's FM arrangements as follows: (a) during the Bank's implementation support missions financial management and disbursement arrangements will be reviewed to ensure compliance with the Bank's minimum requirements; and (b) project's interim unaudited financial reports as well as the project's annual audited financial statements and auditor's management letter will be reviewed. A Bank-accredited FM Specialist, located in the WB Chisinau Office, is a core member of the project team and will supervise FM aspects during formal supervision visits and in-between as required. The specialist will also explore opportunities to obtain external funding or resources to build the corporate management capacity of the Newco.

e) **Safeguards** – Both of the implementing agencies in this Project, Newco and Ministry of Economy (MEPIU) can benefit from capacity building on safeguard compliance functions. However, Newco, as a newly established corporate entity, will require intensive capacity building in this regards. However, close implementation support will especially be needed to be provided by the Bank specialists on both Environmental and Social Safeguards. The social development specialist, located in Kiev, will also provide implementation support for Social Impact Mitigation Program under Component 2.

Implementation Support Plan

2. Implementation support is summarized below:

Time	Focus	Skills	Resource Estimate
Year 1	Task management	Project management (HQ based)	8 staff weeks (SWs)
	Technical reviews	Energy specialist (HQ based)	6 SWs
		Financial specialist (HQ based)	6 SWs
	Review of bidding documents and contracts, procurement support	Procurement specialist (HQ based)	3 SWs
	FM supervision	FM specialist (Chisinau based)	3 SWs
	Safeguards	Environmental specialist (HQ based)	2 SWs
		Social specialist (Kiev based)	3 SWs
Years 2-5	Task management	Project management (HQ based)	6 SWs per year
	Technical reviews	Energy specialist (HQ based)	4 SWs per year
		Financial specialist (HQ based)	4 SWs per year
	Review of bidding documents and contracts, procurement support	Procurement specialist (HQ based)	2 SWs per year
	FM supervision	FM specialist (Chisinau based)	3 SWs per year
	Safeguards	Environmental specialist (Ankara based)	3 SWs per year
		Social development specialist (Kiev based)	3 SWs per year

Annex 6: Economic and Financial Analysis

MOLDOVA: District Heating Efficiency Improvement Project

Economic Analysis

1. A cost benefit analysis was performed for the proposed investment program in Chisinau. The analysis compares the economic costs of the project scenario to the scenario without the Project. The investment cost assumed for the calculation is US$37 million (Moldovan Leu – MDL486.12 million at the average exchange rate of MDL12.4[9]/US$1). The above-mentioned investment costs do not include taxes. The estimated economic rate of return for the Project in Chisinau is 21%, justifying the Project's investments. For the purpose of calculations, an assumption has been made that the investments will be spread over a three years period – 2014, 2015, and 2016, in equal portions. The whole period covered by calculations is 15 years.

2. The analysis also takes into account the closing of CHP-1 in the second year of the Project and switch to purchase of CHP-1 heat generated capacity heat to CHP-2, but it does not provide for closing of Termocom's HOBs. The incremental benefits and the cost savings assumed are:

a) **Savings in fuel cost**: The reduction of energy losses is based on the rehabilitation program, which includes the replacement of GHSs by IHSs, replacement of old pipes and installation of new pre-insulated pipes, and renovation of pumping stations. The reduction of energy losses due to the Project are – 26 GWh (2014) and 79 GWh (2016), or ca. 19% reduction of today's gas consumption. An economic gas price of US$422/1000m³ has been assumed to estimate the fuel savings due to the reduction in energy loss;

b) **Savings in treated water cost**: Annual water leakage rate in Chisinau DH system is ca. 460 m³/km piping. A long term goal for the Chisinau DH system is to reduce its water losses to the levels experienced in the efficient Western DH systems where the annual make-up water rate is 0.6 to 1 times the system's volume, while in Chisinau this rate is more than 7 fold higher. The implementation of the proposed priority investments in Chisinau will result in a reduction of water loss in a range of 27,658 m³ in the year 2014 and 82,974 m³ in 2016, which is equivalent to ca. 16% of today's consumption. An economic price of MDL 12.84/m3 (US$1.04/m³) for chemically treated water has been used for the analysis.

c) **Savings in electricity cost:** Upgrading the equipment and installation of new pumps in the pumping stations included in the Project will bring up to 37% savings in electricity cost for selected pumping stations. As a result of the priority investments for the whole Project the reduction in the costs of electricity is – 2.14 MWh in 2014 and 6.43 MWh in 2016, or ca. 24% reduction in the electricity cost. An average

[9] An average exchange for 2012 was taken as basis for calculations. Official data by the National Bank of Moldova.

economic price of MDL 1.4/kWh (US¢0.11/kWh) for electricity[10] has been used for the analysis.

Sensitivity on Gas price

3. Energy savings constitute about 40% of the annual benefits of the Project. As gas prices play a large factor in determining the magnitude of the energy savings due to the Project, a sensitivity analysis has been carried out on the economic rate of return by varying the price of gas. Under such scenario, an economic price of US$422/1000 m3 has been assumed which results in an EIRR of 16.0% for the entire Project. This base price has been increased and reduced by 15% to show the impact on the EIRR. The table below summarizes the results.

Gas price	EIRR
Base case	21%
Increase by 5%	21.75%
Decrease by 5%	20%

Assumption on substituting heat purchase from CHP-1 with heat purchase from CHP-2

4. Based on the present low load (and therefore inefficient) operation of CHP-1 and CHP-2, both these CHPs being in the same circuit and CHP-1 being too small to take the full heat load from CHP-2 (especially looking in the long term and an increase in heat demand), all heat generation in CHP-1 should be moved to CHP-2. Because CHP-2 provides cheaper heat than CHP-1, it has been proposed that CHP-1 be shut down. This would require building an interconnecting pipe and pumping station in the return pipe to have sufficient flow from CHP-2, with an estimated total investment of about US$1.6 million. It has been agreed that the CHP-1 will be closed in the year 2015, which will bring savings of US$682,900 per annum starting with the 2015/2016 heating season due to the cheaper heat purchase. Savings by closing CHP-1 are presented in Table 6.1 below.

Greenhouse Gas Emission Reduction

5. The environmental benefits of the Project were not quantified in the above calculations. However, the environmental impact that arises from the operations of the Chisinau DH system is mainly related to the activities within the heat generation sources, but is to a high extent also related to the DH load demand. Implementation of the proposed priority investments estimated under the Project will result in a reduction in CO_2 emission of ca. 23,631 tones per year.

[10] The prices for electricity vary by level of voltage. Termocom's electricity consuming equipment is connected to 400V, 6 kV and 10 kV electricity lines, respectively.

Table 6.1: Cost saving generated by closure of CHP-1 (2013 Moldovan Leu).

COST BENEFIT ANALYSIS														
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
JSC Termocom's own gas consumption in HOBs	1000 MDL			18,689	37,378	56,067	56,067	56,067	56,067	56,067	56,067	56,067	56,067	56,067
JSC Termocom's water consumption in transmission and supply services	1000 MDL			339	677	1,016	1,016	1,016	1,016	1,016	1,016	1,016	1,016	1,016
JSC Termocom's electricity usage in transmission and supply services	1000 MDL			63	126	189	189	189	189	189	189	189	189	189
JSC savings from subtituting Heat purchase from CHP1 with heat purchase from CHP2	**1000 MDL**			**0**	**8,025**	**8,176**	**8,176**	**8,176**	**8,176**	**8,176**	**8,176**	**8,176**	**8,176**	**8,176**
O&M Savings	1000 MDL			5,920	12,019	18,368	18,368	18,368	18,368	18,368	18,368	18,368	18,368	18,368

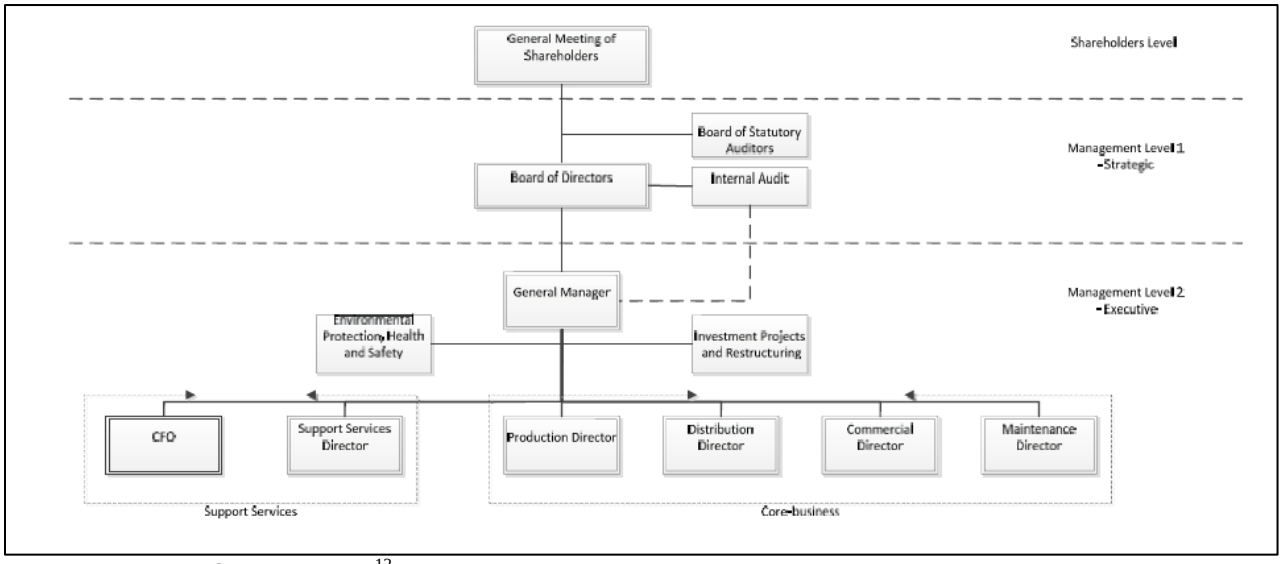
Financial Analysis of Newco

Corporate Restructuring Process and Corporate Structure of Newco

6. The Newco, under the new restructuring process, will be 100% state owned enterprise. The process will follow two parallel paths; (a) Merger of CHP-1 and CHP-2 – general shareholders' meeting approved on June 27, 2014; (b) Liquidation of Termocom and sale of asset to merged CHP Company – liquidation process initiated on March 28, 2014 and sale of Termocom assets to CHP-2 approved by the Creditors' Committee of Termocom on September 22, 2014. The draft law on approval of Termocom core assets sale to CHP-2 was approved by the Government on September 25, 2014. The contract for sale of assets is expected to be signed in November 2014, completing the transaction and followed by reporting and approvals from the bankruptcy court, and other relevant institutions. The new merged company (Newco) is expected to be registered and operational as a corporate entity by the end of 2014.

7. Price Waterhouse Cooper (PwC), the consultants hired by the Government and funded by Sweden, to assist in the restructuring process has recommended below corporate structure following principles laid out in the Organization for Economic Cooperation and Development (OECD) Guidelines to Corporate Governance of State-owned Enterprises[11];

Diagram 6.1: Proposed Newco corporate structure



Source: Price Waterhouse Coopers[12]

8. As indicated in the diagram, the governance structure shall be separated into three layers: (a) Shareholder level, (b) Management Level (Board of Directors), (c) Management Level

[11] Organization for Economic Cooperation and Development, "OECD Guidelines on Corporate Governance of State-owned Enterprises", 2005 (revisions to be made in 2014)

[12] Price Waterhouse Coopers, "Recommendation for the Institutional and Corporate Structure of the Company", August 2013

(Executive management). The separation of the three layers of management is recommended to ensure a sound corporate governance structure, including internal control and auditing functions, and to prevent politicization of Newco management. As the Government will become the sole shareholder of Newco, there needs to be a clear separation of ownership function and other State functions that may influence operations of the Newco as laid out in the OECD Guidelines. The Board of Directors shall represent the shareholder's interest, however, that is to be limited to the objective and mandate for Termocom to provide stable and affordable heating services to the residents of Chisinau. It is therefore recommended that Board composition shall also include stakeholders from outside the Government to balance out the interests within the Board.

9. As the executive management will be responsible for the everyday operation of CHP/DH system, the appointments to key positions, including the General Manager, shall be based on expertise, experience and skills. The Government is currently exploring options of holding an open competitive selection process for the General Manager position, and opening the position up for international hire. The other positions shall be appointed from the three companies, based on the skill auditing to be performed. The process will need to be based on clear and objective standards and transparent, as it would also lead to selection of staff to be on the redundancy list. The details of the process are provided in the Social Impact Mitigation Framework document, included in the Project Operational Manual for Newco and MEPIU. A preliminary analysis on synergies and optimization of operations has been completed.

10. Newco will be facing challenges such as merging of three separate corporate organizations, substantial retrenchment of staff, and integrated operation of DH and CHP systems. The key would be to take this opportunity to change the corporate culture of the staff to commercially focused operations. A department of client relations will establish a grievance mechanism and periodic consumer surveys will be conducted to solicit consumer feedback. The DH system itself will begin the process of transitioning from supply driven system to demand driven system, though investments converting GHS to HIS where consumer behavior will dictate the heat load as more control over their heating is provided. The resulting system will be more efficient and have higher quality of service. The Government is now exploring opportunities for a south-to-south knowledge exchange with Romania, which has similar systems in operations, to help in the transition to an integrated utility.

Financial projection of Newco

11. The biggest challenge of the Newco will be to rebuild its financial viability. PwC has produced the combined Balance Sheet of Termocom, CHP-1 and CHP-2 for 2011 and 2012, as the starting point of the analysis of the merged company (Table 6.2). The combined balance sheet shows a leveraged utility company (Debt-to Equity Ratio of more than 3) with has issues with liquidity and its ability to meet short term liabilities (Current ratio of less than 1):

Table 6.2: Proforma Combined Financial Position for Termocom, CHP-1 and CHP-2[13]

(MDL 000)	2012	2011
Intangible Assets	10,131	13,813
Tangible Assets	2,392,293	2,341,637
Financial Assets	1,426	362
Total Non-current Assets	**2,403,850**	**2,355,812**
Inventory	92,827	113,969
Receivables	1,276,339	1,152,071
Other Current Assets	4,522	5,488
Cash and equivalents	43,843	47,998
Total Current Assets	**1,417,531**	**1,319,526**
Total Assets	**3,821,381**	**3,675,338**
Share capital	725,321	724,152
Reserves	1,363,988	1,110,600
Accumulated Losses	(1,309,504)	(1,001,229)
Profit/Loss for the period	(42,324)	5,666
Revaluation Reserve	77,641	78,403
Total Equity	**815,122**	**917,592**
Bank loans and Advances received	109,596	100,255
Trade Payables	1,062,217	950,044
Other Liabilities	1,834,446	1,707,447
Total Liabilities	**3,006,259**	**2,757,746**
Total Equity and Liabilities	**3,821,381**	**3,675,338**
Financial Ratios		
Debt-to-Equity Ratio	3.7	3.0
Current Ratio	0.5	0.5

Source: Price Waterhouse Coopers, Staff calculations

12. In order to ensure discipline and control into the financial management of the Newco, there are two financial indicators which the Team will be monitoring throughout the project:

a) Debt Service Coverage Ratio (= Earnings before Interest and Tax/Debt Service) – The ratio is proposed to ensure that adequate profitability, including debt service, is being introduced in the tariff calculations for Newco. Newco will be required to maintain at least 1.2 throughout the Project implementation period.
b) Self-Financing Ratio (= (Operational Cash Flow – Debt Service)/ Investment) – The ratio is proposed to ensure that adequate cash flow is being generated, while discipline is introduced to investment planning. Newco will be required to maintain at least 25% throughout the Project period.

[13] Price Waterhouse Coopers, "Corporate Restructuring Options,", August 2013

The financial projections will be used to identify the necessary measures upfront for the Newco to be compliant with the indicators, including tariff increase.

13. PwC has conducted financial analysis and projection based on the merger scenario in 2013, which would provide us an indication of what the financial status of Newco may be. The analysis and projection was based on below key assumptions:

Table 6.3: Summary of key assumptions

Assumptions	Unit	2014*	2015	2016	2017	2018-2023
OUTPUT						
Total Heat produced	**Gcal**	1,538,462	1,588,313	1,671,875	1,651,235	1,774,634
Heat loss	**%**	22	21	20	19	18
Tariff Increase	**%**	0	10	1	1	1
Electricity produced	**Mwh**	642,177	677,395	762,349	762,349	762,349
INPUT						
Gas Prices	**MDL/1000M^3**	5,237	5,237	5,237	5,237	5,237
Collection rate on Heat	**%**	90	90	90	90	90
*2014 values estimates by PWC						

14. Based on the above assumptions (Table 6.3), projections on the agreed financial indicators were created based on 2012 financial data (Table 6.4). The projection indicates that the financial situation of Newco will be in fragile state during the initial years, when the efficiency gains from the investments are not yet realized. The analysis indicated that the company may have losses for 2015 – 2016, but as the cost savings brought on by the closure of CHP-1 operation and investments financed by the Project begin to materialize, their financial position strengthens. The sensitivity analysis indicated that the Newco's financial position is extremely sensitive to tariff changes and gas prices. The cash flow projection indicates the fragility but stabilizes after 2017, when most of the investments and restructuring measures are completed. The projections indicate that the Newco will be expected to be in compliance with both financial indicators, Debt Service Coverage Ratio and Self Financing Ratio, throughout the project period.

Table 6.4: Projection of financial indicators of Newco

Financial Indicators	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023
Debt Service Coverage Ratio (>1.2)	2.4	1.4	1.6	1.6	1.6	1.5	1.6	1.7	1.8	1.9
Self Financing Ratio (>25%)	51%	31%	104%	113%	113%	116%	130%	147%	182%	215%

Source: PricewaterhouseCoopers

Debt Restructuring

15. The accumulated payable to Moldovagaz is not only a Termocom issue, but a national issue considering the scale of the debt stock and the impact it already had on the energy supply security for the whole country. On the basis of the current status of due diligence, the three GoM entities in the district heating sector in Moldova have total payment arrears and outstanding long

term and short term liabilities of MDL 3,037.2 million (equivalent to US$257.4 million). The breakdown of the various arrears by CHP-1, CHP-2 and Termocom is summarized by the following table:

Table 6.5: Arrears restructuring

MDL million (US$ million equivalent)	TOTAL
Termocom	938.3 (79.6)
CHP-1	594.6 (50.6)
CHP-2	1,504.3 (127.2)
TOTAL	3,037.2 (257.4)

Source: Termocom, Ministry of Economy, Staff calculation

16. The main portion of the arrears currently relates to outstanding payments from the GoM entities to Moldovagaz, which is majority owned by the Russian company, Gazprom. The total arrears owed to Moldovagaz and Chisinau-Gaz, 100% owned subsidiary of Moldovagaz, currently amounts to MDL 2,607 million (equivalent to US$220.9 million). The current debt restructuring plan focuses on the restructuring of this Moldovagaz debt. It is currently assumed that the arrears to the other creditors will be paid by the GoM before the creation of Newco.

17. The Government has identified state owned gas distribution network as an asset that can be transferred in lieu of the debt stock (debt asset swap), as part of the repayment plan to Moldovagaz and Chisinau-Gaz. The other source that the Government is considering is to refinance the payable into long term debt from external financiers (Table 6.6):

Table 6.6: Arrears Restructuring Plan

MDL million (US$ million)	**Debt-Asset Swap**	**Remaining Balance**	**TOTAL**
Debt to be restructured	**1,180.3 (100)**	**1,426.9 (120.9)**	**2,607.2 (220.9)**

18. Debt-Asset Swap: GoM has been investing in gas distribution networks for municipalities under their state budget. The program has been ongoing for about 10 years (now closed). The gas pipelines built were not transferred to Moldovagaz, but to municipalities or remained Government assets. Therefore Moldovagaz was not allowed to include them into their regulatory asset base, preventing them from properly operating or maintaining their system. As one of the measures envisaged for the debt restructuring plan in the district heating sector, the GoM and Moldovagaz propose to transfer those distribution network assets to Moldovagaz in lieu of the debt repayment.

19. The working group under Ministry of Economy has completed the inventory list of applicable assets. A study on the applicable asset valuation methodology yet needs to be agreed with Moldovagaz. While some details on the evaluation methodology are yet to be agreed, it is currently expected that such a debt-asset swap could lead to a reduction in current debt owed to Moldovagaz of up to US$82.9 million.

20. Refinancing by external financiers: Assuming the proposed debt-asset swap would generate up to US$100 million in debt stock reduction, the Government is currently considering to refinance the remaining arrears of up to MDL 1,628.7 million (equivalent to US$138.0 million) as long term loan provided by external financiers. Initial discussions with potential financiers indicated that even with a sovereign guarantee, credit enhancement will be required to enable the financiers to provide the refinancing at the volume and maturity required. Once the Newco is operational, it is expected that the repayment plan will be structured and agreed with Moldovagaz. At that point, if the market sounding still indicate the need for credit enhancement, the World Bank may consider providing such support by providing World Bank Guarantee.

21. Newco assets: It is also expected that any redundant or overlapping assets identified during the operation optimization process may be liquidated. Proceed from such asset sale would also be considered as repayment source for the accumulated payable to Moldovagaz/ Chisinau-Gaz.


IBRD 33448R
MOLDOVA
UKRAINE
ROMANIA
TRANSNISTRIA
GĂGĂUZIA
Black Sea
CHIŞINĂU
Bessarabia
Bugeac Plain
Nistru
Prut
Mt. Balanesti (430 m)
0 10 20 30 40 Kilometers
0 10 20 30 Miles
This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.
MOLDOVA
SELECTED CITIES AND TOWNS
AUTONOMOUS TERRITORIAL UNIT CAPITALS
RAIONS OR MUNICIPALITIES CAPITALS*
NATIONAL CAPITAL
RIVERS
MAIN ROADS
RAILROADS
AUTONOMOUS TERRITORIAL UNIT BOUNDARIES
RAIONS OR MUNICIPALITIES BOUNDARIES
INTERNATIONAL BOUNDARIES
*Names of the raions or municipalities are identical to their capitals.
MAY 2007