

CTF-Minregion-CS-5

Program Level Environmental and Social Assessment





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CTF-Minregion-CS-5
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1 EXECUTIVE SUMMARY

This Program Level Environmental and Social Assessment (PLESA) is part of the Feasibility Study for the rehabilitation of district heating systems of six communal energy companies in the cities of Ivano-Frankivsk, Kamyranets-Podilskyi, Kharkiv, Kherson, Mykolaiv and Vinnytsia, among other locations, in Ukraine. The PLESA was carried out in September – October 2013 and encompassed site visits, meeting with the relevant subject cities authorities and the subject companies management, analysis of project's related information available, review of the pertinent Ukrainian legislation and public consultations on the PLESA findings.

The aim of the project is to improve efficiency of heat consumption in the cities included in the program. The elements of the program - constructing new boiler houses, modernizing old boiler houses with new boilers or burners, providing boiler houses with modern control systems, reconstructing heat pipelines, improving insulation of pipelines and equipping distribution system with individual heat substations - result in savings of fuel. Consequently, CO₂ and pollutant emissions are reduced. As the district heating systems in the six cities are mainly based on natural gas fueled boiler houses, district heating is not the main source of local air pollution. Thus, decreasing fuel use for district heating only has a minor but nevertheless positive impact on air quality. The quality and reliability of service will also improve and thus the program will improve social wellbeing in the subject areas.

During demolition/construction phase as well as during operation phase it is possible that the project may result in some adverse impacts on environment. A Framework Environmental Management Plan (Framework EMP) has been prepared to highlight, mitigate and monitor the project's adverse environmental impacts. The Framework EMP is general, giving an overview of environmental impacts of the proposed district heating rehabilitation program and their management. It serves as a base for more detailed site-specific EMPs that will be developed for each site, following detailed project planning studies.

The monitoring plan contained in this document is also general, prepared for the boiler houses; and it is expected that more detailed monitoring plans will be developed as part of preparation of site-specific EMPs and agreed by the responsible environmental authorities for each boiler house following detailed project planning studies.

Public consultation will be organized according to the requirements of the World Bank and Ukrainian legislation. The purpose of public consultation is to present the planned project, the results of ESA work, discuss positive and negative impacts of planned project, to review the draft ESA document to insure that the issues have been properly addressed and resolved to the satisfaction of locally affected groups and NGOs.

The following conclusions emerged from the environmental assessment of the proposed program:

- The environmental study confirms that the proposed program falls under the Category 'B' according to the provisions of the World Bank Operational Policy 4.01 'Environmental Assessment'.
- The program will have positive impacts on the environment and human health due to reduced levels of air pollution.



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- Neither human resettlement requirement (OP/BP 4.12) nor historic buildings or facilities (OP/BP 4.11) are involved in the program.
- The anticipated adverse environmental impacts will occur during both construction/demolition and operation stages. It is not expected that the project will involve significant conversion or degradation of natural habitats, or have significant negative impact on forest ecosystems. The proposed mitigation measures will reduce the adverse impacts and be readily designed.
- It is not expected that air pollution will increase. Also, according to the calculation exercises and technical assessments conducted for all the project sites, local air emissions will not exceed the established standards.



2 INTRODUCTION

The purpose of this document is to provide a Program Level Environmental and Social Assessment (PLESA) of proposed district heating infrastructure investments to be undertaken in selected Ukrainian cities. The ESA was carried out in September – October 2013 and encompassed site visits, meeting with the relevant subject cities authorities and the subject companies management (see Appendix 1 for a full list of persons consulted), analysis of project's related information available, review of the pertinent Ukrainian legislation and public consultations on the ESA findings.

Based on the assessment's results, a Framework Environmental Management Plan (EMP) and a monitoring plan have been prepared. The Framework EMP contains summary of the project's possible adverse environmental impacts along with measures proposed to mitigate these negative effects, and the monitoring plan describes monitoring activities for both construction and operation phases.

After the World Bank review of the program it was assigned the environmental screening Category B according to the provisions of the World Bank Operational Policy 4.01 "Environmental Assessment".

The Environmental and Social Assessment documents presented in this report have been prepared according to the World Bank environmental policies and procedures (i.e. OP/BP 4.01), and relevant regulatory requirements of Ukraine.

It should be noticed that this Project Level Environmental and Social Assessment is based on Feasibility Studies in six municipalities and the project will cover other municipalities at a later stage. For all sub-projects site-specific EMPs will be prepared, disclosed and consulted upon.



3 BACKGROUND

3.1 PROJECT DESCRIPTION

The proposed District Heating Energy Efficiency (DHEE) project would consist of two components: (i) energy efficiency investments component; and (ii) technical assistance and capacity building component. The description and objectives of each component are summarized below.

Ministry of Regional Development, Construction, Housing and Communal Services of Ukraine (Minregion), the grant executor, decided to use the project preparation grant to prepare a District Heating Energy Efficiency project. The World Bank assists the Ministry with this task.

Component 1: Energy Efficiency Investments (US\$ 346.5 million: US\$ 296.5 IBRD and US\$50 million CTF). This component will increase efficiency of participating utilities, reduce their costs, enhance reliability of their services and improve quality of heat supply. This component will cover rehabilitation of boiler houses; closing of redundant boiler houses; installation of small scale combined heat and power generation plants (mini-CHP's); replacement of network pipes with pre-insulated pipes; insulating of above ground pipes; installation of house level heat substations (ITPs) in residential buildings; installation of building-level heat meters and installation of supervisory control and data acquisition (SCADA) systems to optimize heat production and supply of participating utilities. This Component includes Clean Technology Fund (CTF) co-financing, that will cover installation of ITPs (together with connecting pipes), building-level heat meters and SCADA systems.

This Component will target district heating utilities in the following municipalities: Kharkiv, Mykolaiv, Ivano-Frankivsk, Kherson, Vynytsia, Donetsk, Kamyanyets-Podilsky, Dnepropetrovsk, Chernigiv and Kirovograd. The participating utilities and municipalities were selected competitively. Selection criteria included: cost recovery level of heating tariffs; collection rate; availability of boiler-level heat meters; prevalence of residential consumption-based billing (i.e., share of residential heat consumption which is billed according to readings of building-level meters); approval and readiness of the community to install ITPs. The location of the six cities studied for the PLESA is given in Figure 3-1.

Component 2: Technical Assistance and Capacity Building (US\$3.5 million). This component will finance technical assistance to Minregion. Technical assistance will support:

- (a) Supervision of Project implementation;
- (b) Guidance and training in project implementation, monitoring and evaluation to the participating utilities;
- (c) Capacity building workshops to the participating utilities;
- (d) Annual quality of service surveys among the consumers of the participating utilities;
- (e) Annual Project audits;
- (f) Preparation of new projects;



(g) Incremental operating costs related to all eligible expenses.



Figure 3-1 Map of Ukraine. The cities visited are marked with blue stars.



4 INSTITUTIONAL FRAMEWORK

4.1 BRIEF REVIEW OF THE PERTAINING ORGANIZATIONAL FRAMEWORK

Ministry of Regional Development, Construction, Housing and Communal Services of Ukraine (Minregion) is the head central public authority in implementation of the state regional policy and the policy in the field of building, architecture and city planning, improvement of administrative and territory system of Ukraine. One of the main tasks of Minregion is to provide state policy and regulation in the field of building, city planning, construction, preservation of historical areas and architectural monuments as well as housing and communal services..

Ministry of Ecology and Natural Resources of Ukraine (Minpryrody) is in charge of implementation of state policy in rational use and protection of natural resources (land, surface water, atmospheric air, forests, flora and fauna, resources of territorial waters, continental shelf and exclusive economic zone of Ukraine), waste management, environmental safety and environmental monitoring.

Within the limits of its authority, Minpryrody prepares proposals on setting out the standard fee for pollutants emission to the atmosphere and effluent discharge to the water and submits them for approval to the Cabinet of Ministers of Ukraine. Minpryrody is also responsible for preparation of proposals on the Procedure for establishment of use limits for natural resources, which is approved by the Cabinet of Ministers of Ukraine. In addition, Minpryrody prepares a list of hazardous facilities/installations (this list includes heat-generating facilities) which are subject to mandatory state environmental expertise.

During preparation of the state environmental expertise Minpryrody shall determine the following:

- Degree of environmental risk and safety for designed facility;
- Compliance of the examined facility with legal environmental requirements;
- Assessment of the examined facility impact on human health, environment and quality of natural resources;
- Assessment of efficiency, completeness, substantiation and sufficiency of environmental protection measures.

4.2 BRIEF REVIEW OF THE RELEVANT UKRAINIAN LEGISLATION AND PROCEDURES AND WORLD BANK POLICIES

Environmental issues arising from this project are regulated by numerous laws, legal acts and norms. The major laws and legal acts which regulate environmental issues are listed in the following chapters.



4.2.1 State level

- Subsoil code of Ukraine (issued on July 27, 1994).
- Water code of Ukraine (issued on June 6, 1995).
- Land code of Ukraine (issued on October 25, 2001).
- Law of Ukraine, "On environmental protection" (issued on June 25, 1991).
- Law of Ukraine, "On protection of atmospheric air" (issued on October 16, 1992).
- Law of Ukraine, "On environmental expertise" (issued on February 9, 1995).
- Law of Ukraine, "On population and territory protection from technogenic and natural disasters" (issued on June 8, 2000).
- Law of Ukraine, "On heat supply" (issued on June 2, 2005).
- Law of Ukraine "On Waste" (adopted on March 5, 1998).
- Decree of Cabinet of Ministers of Ukraine, "On the list of occupancies and facilities presenting extra hazard for environment" (No 554, issued on July 27, 1995).
- Resolution of the Cabinet of Ministers of Ukraine "On approval of the Regulations regarding the procedure for state recording in the field of air protection" (issued on December 29, 1993).
- Resolution of the Cabinet of Ministers of Ukraine "On approval of the Procedure for development and approval of the norms for maximum permissible levels of emission from the stationary sources" (issued on December 28, 2001).
- Resolution of the Cabinet of Ministers of Ukraine "On approval of the norms for maximum permissible impact levels of the physical and biological factors from the stationary sources upon the air" (issued on March 13, 2002).
- Order of the Ministry of Environmental Protection of Ukraine "On approval of the Guideline on procedure and criteria of taking registration those units, which have or may have harmful impact on human health and atmospheric air, types and volumes of pollutants emission into the atmosphere" (issued on May 10, 2002).
- Order by the Ministry of Environmental Protection of Ukraine "On approval of the List of equipment for which the norms for maximum permissible levels of emissions from the stationary sources are developed" (issued on August 16, 2004).
- Order by the Ministry of Environmental Protection of Ukraine "On approval of the norms for maximum permissible levels of emission from the stationary sources" (issued on June 26, 2006).
- Order by the Ministry of Environmental Protection of Ukraine "On approval of technological norms for permissible levels of emission from thermal power plants over 50 MW of nominal capacity" (issued on June 26, 2006).



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- Order by the Ministry of Environmental Protection of Ukraine "On approval of the Methodology for calculation of damages to the state caused by excessive emissions" (issued on December 10, 2008).
- Order of the Ministry of Environmental Protection of Ukraine "Guideline for integrated environmental assessment at the regional level" (issued on November 14, 2008).

The system of central executive bodies authorised to regulate natural resources utilisation, health and environmental protection, as well as to perform monitoring in these areas, includes:

- Ministry of Ecology and Natural Resources of Ukraine (Minpryrody);
- State Sanitary and Epidemiological Service (Gossanepidemsluzhba) of Ministry of Health of Ukraine;
- Ministry of Regional Development, Construction, Housing and Communal Services of Ukraine (Minregion);
- State Committee of Ukraine on Building and Architecture (Gosstroj);
- State Committee on Technical Regulation and Consumer Policy of Ukraine (Gospotrebstandart).

In its supervising role, Minpryrody develops programs, approves rules, issues permits, to ensure environmental safety:

- Develops and implements national and other programs on environmental protection and safety, participates in the development and implementation of national and other programs on renewal and protection of natural resources, facilitates development of regional programs in this area and co-ordinates their implementation;
- Approves (agrees) rules, norms, standards on environmental protection, environmental safety and waste management according to the established procedure and analyses their practical application;
- Undertakes control over observation of norms and standards, emissions and effluent limits, quotas on use and protection of natural resources, environmental safety requirements, waste management;
- Issues permits, limits, quotas for specific use of natural resources (except subsoil), emission and discharge of pollutants into environment according to the established procedure, as well as monitors observation of conditions of the issued permits, limits, quotas, decides on their suspension or termination;
- Develops standards on collection of fee for natural resources use and pollution of environment, as well as charge procedure;
- Approves draft land allocation projects for hazardous and other facilities;
- Maintains state register on flora and fauna, participates in maintaining of water register;



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- Arranges and undertakes state environmental expertise;
- Arranges environmental monitoring, creation and operation of environmental information systems;
- Participates in improvement of accounting, reporting and statistics within the limits of its authority;
- Participates in standardisation, certification, accreditation, metrology works in environmental area and environmental safety.

The role of Minregion provide state policy and regulation in the field of building, city planning, construction, preservation of historical areas and architectural monuments as well as housing and communal services.

State Service for Technical Regulation (Gospotrebstandart):

- Implements state policy on standardisation;
- Establishes norms for development, acceptance, review and alternation of national standards;
- Co-ordinates development, acceptance, review, alternation and dissemination of national standards;
- Undertakes measures facilitating Ukraine to perform its obligations, arising from membership in international (regional) standardisation organisations;
- Forms and maintains the national fund of normative documents and National Center of international information network ISONET WTO.

Gospotrebstandart carries out work on standardisation of products, processes and services, and in addition materials, components, equipment, systems and their capability, regulations, procedures, functions, methods or certain type of activity. Standardization is aimed at safety assurance for human life and health, flora, fauna, as well as environmental protection and facilitation of rational use of all resources, including natural. In addition, one of the basic principles of standardization is outlined in the Law of Ukraine "On standardization", as compliance of standards to the legislative requirements, including environmental protection and safety.

According to the Law of Ukraine "On standardization", the central executive bodies are entitled to develop, adopt and implement standards, norms and procedures, regulating the relevant issues. For example, Minprirody according to the Article 20 of the Law of Ukraine, "On environmental protection", takes part in the development of environmental standards, and Gosstroï according to the Article 16 of the Law of Ukraine, "On fundamentals of town planning", develops and establishes standards, norms and regulations. Ministry of Health Protection by the Law of Ukraine "On sanitary and epidemiological well-being of the population", is authorised to establish sanitary norms and regulations. However, adoption of standards in various activity areas are based on the uniform principles - safety assurance of industrial construction projects, human life and health, and environmental sustainability.



4.2.2 Regional level

Territorial bodies of Minprirody were closed down according to the Decree of Cabinet of Ministers of Ukraine No 159 (issued on March 13, 2013). Now, for the realization of earlier regional functions of ministerial bodies, special departments (Departments of Ecology and Natural Resources) of regional and city administrations are created. Main functions of liquidated territorial bodies of MinPrirody (local governmental environmental control, issuing of permits and limits for activities connected with negative ecological impacts etc.) are moved to newly formed departments.

- New permit and limit issuing procedure (for air emissions, water use, water discharge and waste dumping) is illustrated by the example of procedure of issuing of permit and limit for waste dumping (see Figure 4-1).
- At the first stage enterprise (for example DH Company) sends to Minprirody and local (regional or city) state administration (newly formed department of ecology and natural resources) the project of limit with supporting documents. If these authorities don't have any comments/remarks they issue permits for the activity (waste dumping). The permit comes into force only after approving of limit.
- At the second stage of procedure enterprise sends to Minprirody and local (regional or city) state administration the corrected project of limit. Minprirody checks this document and agrees it (of course, in case of absence of comments/remarks). Minprirody sends the agreement of the corrected project of limit to the local state administration.
- Local state administration also checks the corrected project of limit and in case of absence of comments or remarks as well as after obtaining of agreement from Minprirody, this authority (local state administration) approves the limit.

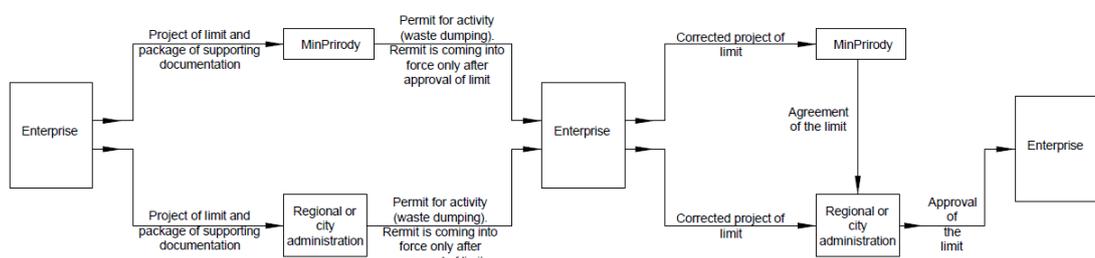


Figure 4-1. Permitting procedure.

Regional (interregional) departments of State Sanitary and Epidemiological Service undertake state supervision within the respective administrative territories.



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State Sanitary and Epidemiological Service within the respective administrative territory is responsible for the following:

- Development (revision), expertise, approval and publication of sanitary norms;
- Carries out hygienic regulation and state registration of habitation factors, harmful for human life and health;
- Performs sanitary and epidemiologic expertise;
- Approval of draft documents on land allocation for construction, location of water supply and waste water discharge points, location of industrial and manufacturing facilities;
- Harmonisation of design and technical documents on construction, renovation, commissioning of new and rehabilitated industrial facilities, sanitary protection zones;
- Inspection of construction sites and issuing conclusions on their compliance with the sanitary norms upon commissioning;
- Issuing permit for special water use.

4.2.3 World Bank policies and procedures

The World Bank Safeguard policies and procedures to be applied in the context of this project are as follows:

- The World Bank Operational Manual, Operational Policies, OP 4.01, 1999.
- The World Bank Policy on Access to Information.

Wherever there are gaps between Ukrainian legislation and World Bank Safeguard policies, the Framework EMP presented in this document will include information about the responsibilities concerning e.g. the preparation of the site-specific EMPs which will be based also on the general level ESAs prepared by the Consultant, as part of the Feasibility Study, for each of the city included in the program.



5 DESCRIPTION OF PROCESSES, FACILITIES AND ASSETS

The district heating systems in the cities studied consist of several separate networks instead a centralized system. As a result, the installed capacity exceeds the connected load 1.5 – 3 times. The systems are old, partly in poor condition, and generally they are manually operated.

Summarizing overview of the district heating systems in these six cities is presented in Table 5-1.

Table 5-1 Overview of the cities' DH system

	Ivano-Frankivsk	Kamyanets-Podilskyi	Kharkiv	Kherson	Mykolaiv	Vinnytsia
Number of inhabitants	226 000	103 000	1 451 000	299 000	496 000	372 000
Number of boiler houses	35	9	251	37	123	39
Number of boilers	140	36	564	156	386	114
Number of customers with DH						
- residential	568			43741	86536	70467
- budgetary	229			172	284	247
- others	273			348	574	376
-altogether	1063	498	8890	44261	87394	71090
Installed capacity, Gcal/h	347.1	259	4 539	563	627	740.4
Connected load, Gcal/h	205.5	98	3 827	170	348	457.3
Length of network, km	130.99	117.35	1 600.2	96.6	209	206.4



6 DESCRIPTION OF DISTRICT HEATING SYSTEM REHABILITATION MEASURES FOR SELECTED MUNICIPALITIES

The following issues were considered during selection of priority investment components: On the basis of the strategic long-term investment plan developed by the Client, and based on the least cost analyses, a draft Priority Investment Programme (PIP) was prepared by the Consultant team.

PIP supports the objectives and goals of the long term plan, while providing first aid for the most urgent modernization demands. Many of the strategic objectives of the long term plan will be achieved through implementation of the priority investments since:

- Feasibility of these investments tends to be highest;
- Savings are measurable;
- Installation time is short;
- Saving impact is immediate.

Key types of investments for improving the condition of the district heating systems include:

- Reconstruction of Boiler Houses;
- Construction of new Boiler Houses;
- Reconstruction of existing CHP;
- Reconstruction of existing Central Heat Substations;
- Installation of remote control system/SCADA;
- Replacement of DH pipelines;
- Installation of new connection pipelines;
- Improvement of thermal insulation of DH pipelines;
- Installation of Individual Heat Substations;
- Installation of mini-CHP's;
- Installation of heat meters;
- Reconstruction of pumping station;
- Modernization of maintenance machinery and equipment.

A summary of the priority investment plans of some of the selected program cities is presented in Table and tentative description of planned investments in selected municipalities is provided for illustration purposes in sections 6-1 ... 6-6 below.



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Table 6.1 Summary of priority investment plans

	Ivano-Frankivsk	Kamyanets-Podilskyi	Kharkiv	Kherson	Mykolaiv	Vinnitsia	In total
Reconstruction of boiler houses	1 boiler house	4 boiler houses	58 boiler houses	6 boiler houses	36 boiler houses	9 boiler houses	114
New boiler houses		8 boiler houses					8
New heat recovery units for flue gas			4 units				4
New burners for boilers				6 boiler houses			6
New main district heating pumps with frequency controller			will be added	6 boiler houses			6 +
New control system for district heating water temperature				6 boiler houses			6
New remote readings system for gas, electricity and water meters							
New remote control system/SCADA			1181 units	192 units			1373 units
Closure of Boiler house				8 boiler houses	16 boiler houses	2 boiler houses	26
Purchasing maintenance equipment				cars, cranes and excavators -11 units			11
Modernization of central heat substations				39 units			39
Installation of new DH pipeline			31 places	8 places	13 places	2 places	54
Installation of new stack				6 units			6



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	Ivano-Frankivsk	Kamyanets-Podilskyi	Kharkiv	Kherson	Mykolaiv	Vinnytsia	In total
Replacement of pipelines	total replacement of four networks			12 km		total replacement of one network	5 networks + 12 km
Replacement of thermal insulation of pipelines					30 km, 21 places		30 km
Installation of new HV cable				1 km			1 km
Installation of mini CHP			1 unit		2 units		3 units
Reconstruction of CTP's		19 CTPs			5		24
Closure of CTPs	4						4
Installation of ITPs	3 areas		600 units				3 areas + 600 units
Reconstruction of pumping station						1 feedwater pumping station	1
Heat meters			600 units				600

6.1

IVANO-FRANKIVSK

City of Ivano-Frankivsk is the regional center, located in the area between Nadvirnianska Bistricha and Solotvynska Bistricha Rivers on Pokutska plain in the southwest Ukraine at a distance of 150-300 km to border of Poland, Romania, Hungary and Slovakia (Figure 6-1). The city occupies 83.73 sq. km and accommodates 226 000 inhabitants. Five villages around Ivano-Frankivsk are within its jurisdiction. They are as follows: Vovchynets', Uhornyky, Mykytyntsi, Krykhivtsi, and Khryplyn.

The city is connected with all regional centers of Ukraine, some cities of Russia, Moldova, Belarus, Poland, Slovakia and Czech Republic by air, rail and road. Ivano-Frankivsk has a radial road system. The city has an international airport. Industrial enterprises are located along the perimeter of the city, and social and cultural institutions, administrative and banking institutions - in its central part. Today the city has over 400 streets, 56 factories, are more than 500 organizations and institutions.



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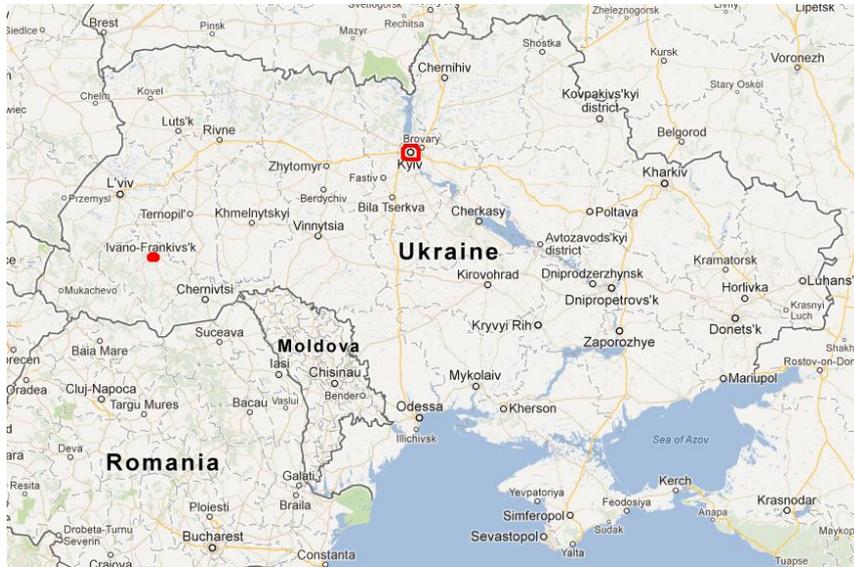


Figure 6-1 Ivano-Frankivsk on the map of Ukraine (Source: Wikipedia)

On the basis of the strategic investment plan, and based on the least cost analyses, a draft priority investment programme was developed by the Client. The Consultant team has analyzed proposed components. Based on this review, the Company in cooperation with the Consultant has selected the priority investment areas shown in Table .



Table 6.2 Priority investment areas in Ivano-Frankivsk

Component	Summary	Priority
COMPONENT NO 1		
Кот.Симоненко 3	Boiler house reconstruction	1
COMPONENT NO 2		
DH network in area of Кот.Симоненко 3	Full network replacement	1
ITP installation in area of Кот.Симоненко 3	ITP's installation	1
Closure of СТП	СТП closure	1
COMPONENT NO 3		
Extension of DH network supply area	Full network replacement	2
ITP installation in area of extension	ITP's installation	2
Closure of СТП	СТП closure	2
COMPONENT NO 4		
Кот. Тролейбусна 40	n.a.	1
DH network in area of Кот. Тролейбусна 40	Full network replacement	1
Closure of СТП	СТП closure	1
COMPONENT NO 5		
Кот.Федковича 91а	n.a.	1
DH network in area of Кот.Федковича 91а	Full network replacement	1
ITP installation in area of Кот.Федковича 91а	ITP's installation	1
Closure of СТП	СТП closure	1



6.2 KAMYANETS-PODILSKY



Figure 6-2 Map of Kamyanets-Podilsky (Source: Wikipedia)

Kamyanets-Podilsky is the administrative center of the Kamyanets-Podilsky area within the Khmelnytskyi Oblast (region). Kamyanets-Podilsky is located in the southern portion of the Khmelnytskyi Oblast, located in the southwestern part of Ukraine. The Smotrych River, a tributary of the Dniester, flows through the city. The total area of the city comprises 27.84 km². The population of Kamyanets-Podilsky on 1st January 2013 was 103 000 people.

On the basis of the strategic investment plan, and based on the least cost analyses, a draft priority investment programme was developed by the Client. The Consultant team has analyzed proposed components. Based on this review, the Company in cooperation with the Consultant has selected the priority investment areas shown in Table .



Table 6.3 Priority investment areas in Kamyanets-Podilsky

Investment component	Summary	Priority
COMPONENT NO 1 / CHP closure and replacement with new capacities		
Кот. Ценського	New boiler house	On-going
Кот. Праці	New boiler house	On-going
Кот. Воззальная 83а	Reconstruction	On-going
Кот. Поликлиники, Ул.Франко	New boiler house	1
Кот. Грушевського 31	New boiler house	1
Кот. Кн.Кариатовичив 56	Reconstruction with full replacement of boilers and auxiliary systems.	1
Кот. Шевченко 41	New boiler house	1
COMPONENT NO 2		
Котельня Тімірязєва,123	Reconstruction with full replacement of boilers and auxiliary systems.	2
Кот.Шевченко 13	New boiler house	2
Кот. Тимирязєва 86	New boiler house	2
COMPONENT NO 3		
Чернеховкого 56	New boiler house	4
COMPONENT NO 4		
Кот. Жукого 2	Reconstruction with full replacement of boilers and auxiliary systems.	3
COMPONENT NO 5		
СТР reconstruction	19	1
COMPONENT NO 6		
ITP components	67	1

6.3

KHARKIV

Kharkiv is the regional centre of Ukraine, one of the major educational and cultural centres and a large transportation centre of Ukraine. The city is located in north-eastern part of Ukraine, on the border of two landscape zones — forest-steppe and steppe, where two rivers — Uda and Lopan – flow into the river Seversky Donets.



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Figure 6-3 Map of Ukraine with Kharkiv highlighted (Source: Wikipedia)

Currently, it is the administrative centre of the Kharkiv Oblast as well as the administrative centre of the surrounding Kharkiv Raion (District), while the city itself has a special status within the region.

By population, Kharkiv is the second city in Ukraine with the population of 1 451 000 people. $\frac{2}{3}$ of the total region's population and over $\frac{4}{5}$ of its urban population live in the Great Kharkiv (i.e. including the suburban area).

Despite its size, the area of the city is characterized by compactness. Extensive network of city transport (metro, tram, trolley, bus, taxi) provides access to any part of the city.

Kharkiv is one of the biggest industrial centres of Ukraine. Main branch of industry is precision machinery. There are hundreds of industrial companies in the city. Among them "flagships" of Soviet space, military and nuclear programs like: the Morozov Design Bureau and the Malyshev Tank Factory (leaders in world tank production in the 1930s through 1980s); Khartron (aerospace and nuclear electronics); and the Turboatom (turbines producer).

On the basis of the strategic investment plan, and based on the least cost analyses, a draft priority investment programme was developed by the Client. The Consultant team has analyzed proposed components. Based on this review, the Company in cooperation with the Consultant has selected the priority investment areas shown in Table 6.4.



Table 6.4 Priority investment areas in Kharkiv (to be completed)

Component	Units
Boiler house reconstruction	
Modernisation of Central Heat Substations	
Installation of DH connection pipeline	
Replacement of insulation of above ground DH pipes	
Installation of mini CHP	
Purchase of maintenance equipment	
Remote Control system, Construction of control room	
Installation of biomass boiler	
Installation of electric boiler	

6.4

KHERSON

City of Kherson is a regional capital, as well as an industrial and cultural centre of Kherson region, which is situated in the South of Ukraine on the right bank of the Dnieper River, 26 km from the Dnieper Estuary and 90 km away from the Black Sea. Kherson inhabits the population of 299 000 people (status on 1 January 2013) belonging to more than 18 nationalities.

Modern Kherson is the city with the developed industry. The industry sector of Kherson includes 100 large and middle-sized production enterprises engaged in 12 sectors of industry. Major sectors of industry in the city are represented by shipbuilding, mechanical engineering, processing, and chemical and food industry.

The city has a branched system of educational, cultural, sport and healthcare institutions. More than 40,000 students study at 28 higher educational establishments to learn one of 50 professions; 12 vocational training schools educate over 4,000 vocational students.

Kherson nature reserve fund is represented by protected objects of local importance, among which there are nature sanctuaries, in particular, the botanic garden of Kherson State University.

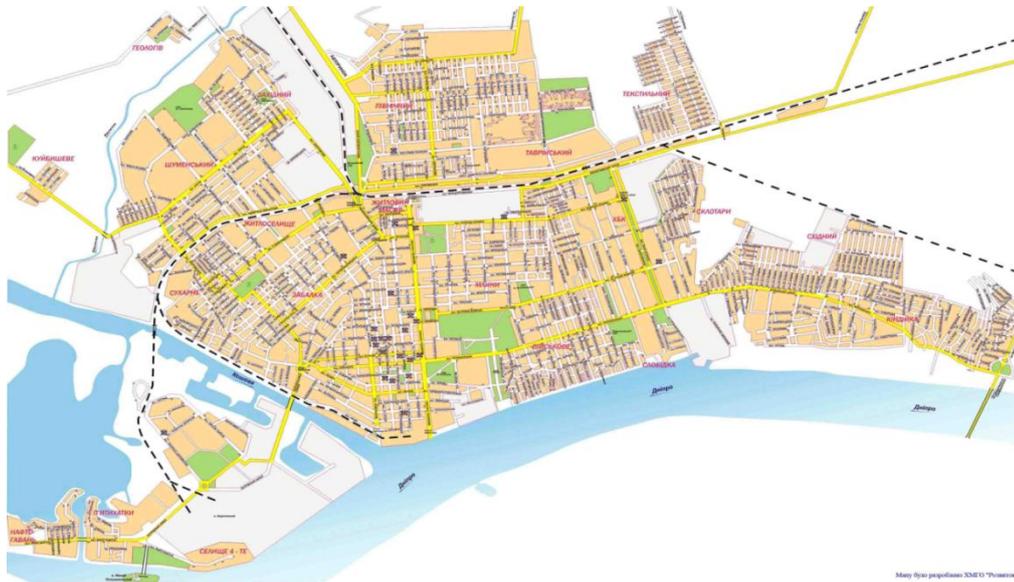


Figure 6-4 Kherson city map (Source: Wikipedia)

On the basis of the strategic investment plan, and based on the least cost analyses, a draft priority investment programme was developed by the Client. The Consultant team has analyzed proposed components. Based on this review, the Company in cooperation with the Consultant has selected the following priority investment areas:

- Renovation of Boiler-house Schumenska 95 (Шуменська кот. Ілліча, 95)
- Closure of Boiler-house at Makarova St. 161 (Кот.Макарова, 161)
- Closure of Boiler-house Pionerska 3 (Кот .Піонерська, 3)
- Renovation of Boiler-house Komunarov 17 (Кот. Комунарів, 17)
- Closure of Boiler-house Gorgogo 25 (Кот., Горького, 25)
- Renovation of Boiler-house Uschakova 12 (Кот. Ушакова, 12)
- Closure of Boiler-house Suvorova 4 (Кот. Суворова, 4)
- Renovation of Boiler-house Кот. 40 років Жовтня, 17
- Closure of Boiler-house Кот. 40 років Жовтня, 3
- Closure of Boiler-house Кот. 40 років Жовтня, 25
- Renovation of Boiler-house Кот. Кіндійське шосе, 32
- Closure of Boiler-house Кот. Кіндійське шосе, 32а
- Renovation of Boiler-house №1 с.Степанівка, Говарда, 65
- Closure of Boiler-house №2 с.Степанівка, Говарда, 65



6.5 MYKOLAIV

The city of Mykolaiv is an important business, political and cultural centre of Southern Ukraine. The city is located 490 km South-East from Kyiv, 120 km from Odesa and 60 km from the Black Sea, at a point where the estuary of Southern Bug and Ingul River meet. Today, Mykolaiv is the ninth largest city in Ukraine with 496 000 inhabitants (status on 1 January 2013) and covering an urban area of 260 km².

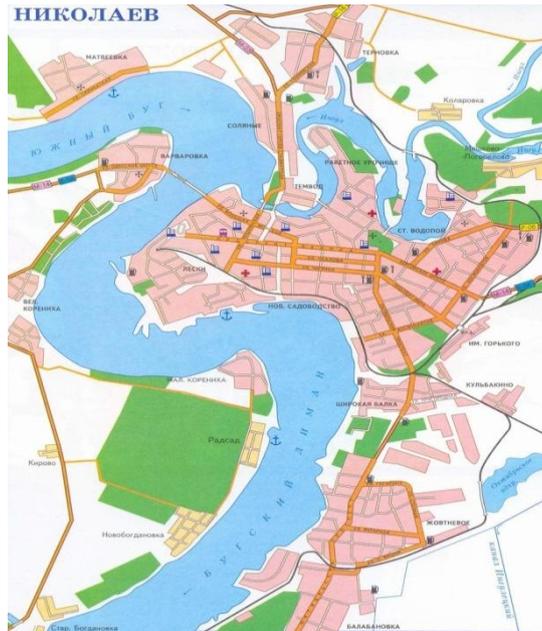


Figure 6-5 Mykolaiv city map (Source: Wikipedia)

On the basis of the strategic investment plan, and based on the least cost analyses, a draft priority investment programme was developed by the Client. The Consultant team has analyzed proposed components. Based on this review, the Company in cooperation with the Consultant has selected the following priority investment shown in Table 6.5.

Table 6.5 Priority investment areas in Mykolaiv

Component	Units
Boiler house reconstruction	35
Modernisation of Central Heat Substations	7
Installation of DH connection pipeline	6 658,5 m
Replacement of insulation of above ground DH pipes	25 607,0 m
Installation of mini CHP	2
Purchase of maintenance equipment	3
Remote Control system, Construction of control room	1
Installation of biomass boiler	1
Installation of electric boiler	1

6.6

VINNYTSIA

Vinnytsia is located in central Ukraine, 260 km southwest from Kiev, on the banks of the river Southern Bug. Distance from Odessa is 430 km, from Lviv 370 km and from Kamyanets-Podilskyi 210 km. Vinnytsia is the administrative center of the Vinnytsia Oblast. The population of the city is 372 000 inhabitants (status on 1 January 2013).



Figure 6-6 Map of Ukraine with Vinnytsia highlighted (Source: Wikipedia)

On the basis of the strategic investment plan, and based on the least cost analyses, a draft priority investment programme was developed by the Client. The Consultant team has



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analysed proposed components. Based on this review, the Company in cooperation with the Consultant has selected the priority investment areas shown in Table 6.6.

Table 6.6 Priority investment areas in Vinnytsia

Investment component	Summary	Priority
COMPONENT NO 1		
Кот. 600-річчя,13 ПТВМ-30	reconstruction	1
COMPONENT NO 2		
Кот. 600-річчя,13 ПТВМ-50	reconstruction	1
COMPONENT NO 3		
Кот. М.Кошки,12/1	reconstruction	1
Кот. М.Кошки,12/2	reconstruction	1
Кот. Свердлова,143	closure	1
Кот. Пирогова,107	closure	1
Connection pipelines	new connections (ring boiler house together)	1
COMPONENT NO 4		
Кот. Блюхера,20	reconstruction	1
Кот. Немирівське шосе,78	reconstruction	1
COMPONENT NO 5		
Кот. Маяковського,132	regional DH network replacement	1
COMPONENT NO 6		
Кот. Немирівське шосе, 26 ТЕЦ-1	boilers reconstruction	1
COMPONENT NO 7		
1-го Травня, 2 ТЕЦ-4		
COMPONENT NO 8		
Кот. Громова,1	connection pipeline	2
Кот. Тарногородського,9	reconstruction	2
Кот. Парижської Комуни,18	reconstruction	2
COMPONENT NO 9		
DH network of 1-го Травня, 2 ТЕЦ-4	DH transmission pipeline reconstruction	3
COMPONENT NO 10		
Full reconstruction of river water pumping station for feed water of the network	New pumping station	1



7 POTENTIAL ENVIRONMENTAL IMPACTS

7.1 ENVIRONMENTAL BENEFITS

The aim of the project is to improve efficiency of heat consumption in the cities included in the programme. The elements of the programme - constructing new boiler houses, modernizing old boiler houses with new boilers or burners, providing boiler houses with modern control systems, reconstructing heat pipelines, improving insulation of pipelines and equipping distribution system with individual heat substations - result in savings of fuel. Consequently, CO₂ and pollutants emissions are reduced. As the district heating systems in the selected municipalities are mainly based on natural gas fueled boiler houses, district heating is not the main source of local air pollution. Thus, decreasing fuel use for district heating only has a minor but nevertheless positive impact on air quality. The quality and reliability of service will also improve and thus the programme will improve social wellbeing in the subject areas.

7.2 ADVERSE ENVIRONMENTAL IMPACTS

The main adverse impacts on environment of the proposed investments are described below in summary form, and also in the EMP presented in Section **Error! Reference source not found.**

7.2.1 Construction and demolition phases

If not properly addressed, impacts during the construction and demolition phases of the project may include the following.

Noise pollution

The main sources of noise during construction and demolition work are traffic, use of machinery, handling of materials, assembling of new boilers, pipelines etc and demolishing of old infrastructure (i.e. boiler houses and other facilities). Noise may affect construction workers if they are not using proper individual protective gear thus causing occupational health risks. Noise may also disturb people living and working near the sites. Especially hospitals, schools and other sensitive objects are of particular concern.

Temporary air pollution

Air pollution will temporarily be increased locally due to machinery used at the sites. Also increased traffic as well as traffic slowdowns caused by construction and demolition sites located on the roads will – to a certain extent - increase the amount of air pollution. However, the increase of air pollution is temporary and will not exceed the established standards. Main pollutants are dust, NO_x and CO. Negative impacts on ambient air quality take place mainly in the vicinity of the construction and demolition sites and along the roads leading to these sites.



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Pollution of soil, ground water and surface water at the construction and demolition sites through oil and/or fuel spillages

Soil and ground and surface water can be polluted by accidental spillages and leakages from temporary oil and fuel storage and leakages from machinery.

Improper storage of construction and demolition waste at the sites

In case construction and demolition waste is stored improperly at the work sites, it may cause contamination of soil, ground water and surface water. Improper storage of waste may also cause injuries to workers and people visiting sites as well as to passers-by and traffic.

Injuries to workers and visitors

Workers and visitors at the construction and demolition sites may be injured if applicable safety and occupational health standards are not followed.

Damage to human health due to exposure to asbestos containing materials

Old boiler and pipe insulations may contain asbestos which may affect the workers especially during demolition activities and also during construction works. The Contractor will make sure that: (a) temporary on-site storage for asbestos-containing waste will be arranged on the construction site to prevent improper handling or use of the material and respective information signs will be put in place, (b) the asbestos-containing material will be disposed to a legal disposal site and mitigation measures to prevent further use or potential pollution (i.e. waste material should be covered by layers of soil at the landfill) are taken, and (c) necessary personal protection gear (i.e. respirator masks, protective glasses, clothing etc.) are provided.

Increased risk of traffic accidents

Intensified traffic of heavy machinery and trucks to and from the construction and demolition sites increases the risk of traffic accidents. Poor site arrangements may also cause traffic accidents.

Risk of fires and explosions

Risk of fires and explosions can increase especially if applicable safety standards and regulations are not followed. This may lead to injuries to workers and people visiting or passing-by site and to properties.

Landslips and erosion

Improper supporting structures of deep excavations may lead to landslips thus causing risks to workers and nearby structures. Bare ground is prone to soil erosion in case of heavy rainfalls occur during the works.

Pollution caused by poor transport and disposal of waste materials

In case construction and demolition waste is not properly transported and disposed, it may cause soil, ground water and surface water pollution at the disposal sites and health hazards along the transport route.

Impacts on historical, cultural or religious places or monuments



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It is not expected that the project will affect any historical, cultural or religious places or monuments. At the same time, in case some sub-projects will have an impact on the sites of cultural heritage, the procedures described in the Law of Ukraine "On Cultural Heritage" No 1805-III from 08.06.2000 will be followed and special mitigation measures (i.e. Physical Cultural Resources Action Plan) developed to avoid or minimize potential negative impacts. In case of chance finds, appropriate mitigation measures will also be applied.

7.2.2 Operation phase

If not properly addressed, impacts during the operation phase of the project may include the following.

Air pollution

It is not expected that local air pollution will increase or exceed established standards. The total amount of air pollution caused by heat generation facilities in programme cities is expected to be lower than current level due to better pollution control equipment of new installations and improved energy efficiency.

Noise

Noise levels are not expected to increase.

Risk of fires and explosions

Risk of fires and explosions can increase due to increased amount of gas, oil and fuel, especially if applicable safety standards and regulations are not followed. This may lead to injuries to workers and people visiting or passing-by site and to properties. On the other hand new equipment and pipes will improve current situation.

Soil, ground water and surface water pollution and risks to human health from accidental spills and leakages

Accidental spills and leakages of fuels and transformer oil during transport, storage and use can cause risks to environment and human health.

Improper waste management

Improper handling and disposal of hazardous waste may cause risks to soil, ground water and surface water as well as to human health.

7.3 PROPOSED MITIGATION MEASURES

The mitigation measures outlined in this section should be undertaken as part of the project implementation process to mitigate potential impacts from construction, demolition and operating activities. The Framework EMP in Section **Error! Reference source not found.** summarizes the impacts and mitigation measures, as well as monitoring and supervisory responsibilities.

Key mitigation measures include the following:

- Preparation of subproject site-specific Environmental Management Plans at detailed design phase which would identify potential environmental issues and specific



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mitigation measures based on Framework EMP presented in Section **Error! Reference source not found.**of this report.

- A requirement from contractors at contract tendering stage to include in their proposals the measures to mitigate adverse environmental impacts based on Framework EMP presented in Section **Error! Reference source not found.**of this report.

The main mitigation measures proposed for the project include the following (Sections 7.3.1-7.3.2).

7.3.1 Construction and demolition phases

Noise pollution

Works are performed strictly during normal weekday working hours. In case there is a need in carrying out works causing higher noise levels at night time, the residents living nearby are notified 10 days in advance. Noise barriers should be installed where appropriate. Workers will be provided with individual protective gear to be used when performing high-level noise works.

Temporary air pollution

Dust and traffic emissions will be minimized by good operation management and site supervision. Unnecessary traffic will be minimized. Dust suppression measures (e.g. water sprinkling) will be applied during long dry periods. Open surfaces at the site and nearby will be cleaned from dust regularly. Workers will be provided with protective masks when necessary.

Pollution of soil, ground water and surface water at the construction and demolition sites through oil and/or fuel spillages

The risk of oil/fuel pollution will be minimized by good operation management and site supervision. Machinery will be checked regularly to find out possible leaks. Washing of machinery at the sites is not allowed. Waste oil will be collected and stored in chemical containers located at a designated secure area until disposal. In case PCB containing oil is found, they are removed in full compliance with the respective national procedures. Transport and disposal of waste will be done by companies which hold license for such activities.

Improper storage of construction and demolition waste at the sites

Construction and demolition waste is stored in a secure, designated area before transport to a designated disposal site. Transport and disposal of waste will be done by companies which hold license for such activities. Temporary waste storage areas will be separated from the working area and non-working persons are not allowed to visit storage area.

Injuries to workers and visitors

Adherence to safety regulations and instructions, including use of individual protective equipment, will be enforced and constantly monitored by the construction or demolition site



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supervisor. Person responsible for Health and Safety issues at company level will take part in monitoring and random on-site checks on a regular basis.

Damage to human health due to exposure to asbestos containing materials

In case asbestos containing materials are encountered, workers must wear proper protective equipment, respirator masks being the most important. When asbestos containing structures are demolished, the working area will be isolated –where possible- from adjacent areas using e.g. plastic or fabric made covers. Transport and disposal of asbestos containing waste will be performed by an authorized organization in full compliance with the respective national and company level procedures.

Increased risk of traffic accidents

A traffic management plan will be developed for construction and demolition sites and followed. Management plans will include e.g. identification of optimal routes and time for construction materials delivery, transportation of construction and demolition waste to disposal sites and so on. If found necessary, traffic will be temporary diverted and safe speed limits will be established and enforced during the working period. Site will be clearly marked and separated from public areas. Safe passageways will be organized and marked for pedestrians.

Risk of fires and explosions

Respective fire protection standards and instructions have to be observed. Regular inspection of the boiler houses by the respective fire protection authorities will be conducted. Emergency plan in case of fires should be developed. Workers should receive regular training on fire situations and on the use of fire extinguishers.

Landslips and erosion

Walls of deep excavations should always be enforced/supported according to relevant technical requirements. Unnecessary removal of vegetation and pavement should be avoided and bare ground planted or paved as soon as possible after the closure of the construction or demolition site. Storm water drainage will be arranged before excavation works are commenced.

Pollution caused by poor transport and disposal of waste materials

Scrap metal will be separated from construction and demolition waste for re-use. Hazardous waste (i.e. asbestos-containing materials, mercury-containing bulbs) is also separated and managed properly according to regulations and instructions. Disposal of all types of waste will be done only at the appropriate disposal sites. Transport and disposal of waste will be performed by an authorized organization in full compliance with the respective national and company level procedures.

Impacts on historical, cultural or religious places or monuments

The district heating companies will ensure that an appropriate clause is included in Sub-borrower loan agreement obligating the Sub-borrower to exercise due diligence in implementing the mitigation, monitoring and reporting measures specified in EMP and strictly



follow the procedures according to Law of Ukraine "On Cultural Heritage" No 1805-III from 08.06.2000 in the event of chance finds of culturally significant artifacts or sites.

7.3.2 **Operation phase**

Increased local air pollution

Priority should be given to new low-emission equipment and technologies. New equipment should meet the established Ukrainian pollution emissions standards. This requirement should be included in bidding documentation/technical specifications.

Increased noise level

Workers who are exposed to noise will use personal protective devices according to appropriate Health and Safety regulations and instructions. Spreading of noise will be prevented as much as possible by using different kinds of structures together with noise suppression mats and fabrics at the source of the noise.

Risk of fires and explosions

Respective fire protection standards and instructions have to be observed. Regular inspection of the boiler houses by the respective fire protection authorities will be conducted. Emergency plan in case of fires should be developed. Workers should receive regular training on fire situations and on the use of fire extinguishers.

Soil, ground water and surface water pollution and risks to human health from accidental spills and leakages

Proper system to contain spill should be designed. Emergency response equipment to collect spilled material should be at hand. Appropriate emergency response procedures should be developed. Personnel should have adequate knowledge of how to act in case of oil or fuel spillages and leakages. Also the use and maintenance of emergency response equipment should be included in the training. Training and drills simulating emergency situations should be performed regularly.

Improper waste management

Waste management plan should be updated regularly. Waste should be separated as much as practicable. Waste collection, transport and disposal will be performed by an authorized organization in full compliance with the respective national and company level procedures.



8 FRAMEWORK ENVIRONMENTAL MANAGEMENT PLAN (EMP)

8.1 FRAMEWORK EMP

The proposed Framework EMP for the rehabilitation program is presented in tabular form in Annex 1. The EMP consists of a mitigation plan, presenting possible impacts and proposed mitigation measures, and a monitoring plan dealing with monitoring and supervisory responsibilities.

The Framework EMP is general, giving an overview of environmental impacts of the proposed district heating rehabilitation programme and their management. It serves as a base for site-specific EMPs which will be prepared for each site, following detailed project planning studies.

The mitigation plan below provides a description of proposed measures to abate the anticipated impacts of the project during the construction and operation stages. The plan also indicates responsibilities with respect to mitigation measures application.

8.2 MONITORING PLAN

In order to ensure efficient implementation of the mitigation measures proposed, including the respect of environmental obligations during the construction stage, a program of monitoring activities has been developed and presented below in a tabular form. This monitoring plan is general, prepared for the boiler houses and other types of investments (e.g. networks); and it is expected that more detailed monitoring plans will be developed and agreed by the responsible environmental authorities for each boiler house following detailed project planning studies.

A regular local monitoring will be conducted by boiler house owners and contractors during the construction phase; and by a boiler house operator during the operation stage. Local environmental authorities will also perform regular inspections of the boiler houses during the construction and operation phases. It should also be noted that according to the Ukrainian legislation, it is a facility operator and the environmental authorities who bear the cost of local environmental monitoring.

Detailed Monitoring plan is presented in Annex 2.



9 SOCIAL ASSESSMENT

Besides environmental impacts, any construction works may result in disturbance of everyday life, such as temporary or permanent land accession, traffic disturbances or access restrictions. Large-scale activities may cause temporary or permanent resettlement of population.

Main items of proposed measures for improving the condition of the district heating systems in the six cities consist of the following:

Within boiler houses or on boiler house sites:

- Renovation of Boiler Houses;
- Construction of new Boiler Houses;
- Closure of Boiler Houses;
- Installation of mini-CHP's;
- Constructing new smokestacks.

Along networks:

- Reconstruction of existing Central Heat Substations;
- Installation of remote control system/SCADA;
- Reconstruction of DH pipelines;
- Installation of new connection pipelines;
- Improvement of thermal insulation of DH pipelines;
- Modernization of Central Heat Substations.

Within consumer buildings:

- Installation of Individual Heat Substations;
- Installation of heat meters.

Elsewhere:

- Modernization of maintenance machinery and equipment.

The activities of the proposed district heating rehabilitation program do not include any greenfield activities, all construction takes place within existing urban areas. Most activities are confined within existing boiler house sites and buildings. The closure of some of the existing boiler houses with concurrent connection of existing separate heating networks requires building new heat transmission pipelines. The pipelines are usually placed along streets. In urban areas, most of the lines are placed underground and no permanent land occupation is caused. The proposed activities are described in more detail in Chapter 6 of this report.

The main activities of the proposed program causing disturbance in everyday life are:



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- Renovation of boiler houses, replacing burners or control equipment within boiler houses, installation of mini-CHP's – temporarily increased traffic;
- Construction of new boiler houses within present site areas - temporarily increased traffic;
- Constructing of new district heating pipelines or electricity transmission lines: underground – temporary land occupation; aboveground – land occupation; in both cases temporary traffic increase and possible temporary traffic disruption. The RPMU will ensure that temporary land occupation for replacement of pipelines and transmission lines does not cause any physical or economic displacement.
- The Grievance mechanism operated by the utilities will be used to register and address grievances that may arise as the result of project works including temporary land use. The Project specific EMPs will contain the provision for grievance mechanism to be established by the contractor in charge of the works;
- Reconstructing district heating pipelines or improvement of thermal insulation of existing pipelines – temporary land occupation, possible temporary traffic disruption (in that case the alternative routes and sufficient information on them will be coordinated with the municipality), temporary traffic increase. The RPMU will ensure that temporary land occupation for replacement of pipelines and transmission lines does not cause any physical or economic displacement;
- Modernization of Central Heat Substations - temporarily increased traffic; and
- Installation of Individual Heat Substations and installation of heat meters within existing buildings – minor traffic increase, it may also raise questions as to the need for dwellers participation in maintenance, noise level, potential air pollution and safety of the IHS installation. These questions need to be addressed by the utility when preparing site-specific project description.
- Major concerns that will need to be addressed are (i) whether the billing for the buildings with IHS will be different as compared to the others, (ii) whether installation of building –level heat meters will decrease or increase the heating bill, and (iii) whether and how the project investment is going to affect the tariff.

9.1 DISTURBANCE OF TRAFFIC

Traffic disturbances are expected to be temporary and limited to short periods of time only at any one construction site. Where the construction works require excavating across streets, temporary alternate routes need to be arranged or temporary bridges constructed.

If the works will affect routes of the public transport, the utility has to coordinate with the municipality and the traffic operator the alternative route of transport and inform the population in advance, for example in buses, bus stops, on the route affected, on company website and in public media.



9.2 ACCESS RESTRICTIONS

As the works will mostly be conducted at utility-owned sites, access restrictions to public services and institutions will be limited. Minor temporary restrictions may be caused where the construction works require excavating across streets. In such cases the temporary routes must be arranged and the safety of the public be ensured by protective fences and other guidance as needed.

9.3 DISTURBANCE OF BUSINESS

The works may cause disturbance to normal business or other services operations by causing temporary traffic or access restrictions or requiring utilization of alternative routes. As the works will mainly be conducted on utility sites, no major disturbance is expected.

The utility has to coordinate with the affected business and service operators to limit the disturbance by, where possible, choosing most suitable time for conducting works to minimize losses.

Where the alternative routes are required, information needs to be given on websites of the utility and affected companies and in public media.

9.4 RESETTLEMENT

None of the proposed activities of the proposed program require or cause temporary or permanent physical resettlement of people. Moreover, whenever possible, the works will be conducted outside the heating season and thus will cause only limited nuisance for living conditions. Construction works will take place mainly within existing boiler house sites and thus will minimise economic displacement. Construction of new district heat pipelines or electricity transmission lines do not require dismantling apartment buildings.

The program is not expected to have any adverse economic or social impacts. The project may require permanent acquisition of the municipal land area rented out for business activities. In such cases relevant substitute land or monetary compensation for the losses will be provided to tenants. However, there may exist cases where project works will temporarily occupy areas used for commercial purposes by informal vendors or for parking boxes installed unofficially causing need of temporary relocation. Only temporary effects are expected and they will be easily mitigated by either providing the compensation for the period of disturbance or alternative place for trade or parking. The period of displacement is supposed to be short.

In such cases, according to the Bank's OP 4.12, a resettlement plan needs to be drafted by the borrower. Such plan shall as minimum include the following elements:

- (a) a census survey of displaced persons and valuation of assets;
- (b) description of compensation and other resettlement assistance to be provided;
- (c) consultations with displaced people about acceptable alternatives;



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- (d) institutional responsibility for implementation and procedures for grievance redress;
- (e) arrangements for monitoring and implementation; and
- (f) a timetable and budget.

Resettlement planning includes early screening, scoping of key issues, the choice of resettlement instrument, and the information required to prepare the resettlement component or subcomponent. The scope and level of detail of the resettlement instruments vary with the magnitude and complexity of resettlement. In preparing the resettlement component, the borrower draws on appropriate social, technical, and legal expertise and on relevant community-based organizations and NGOs. The borrower informs potentially displaced persons at an early stage about the resettlement aspects of the project and takes their views into account in project design.

The project shall not be considered complete until the objectives of any of the site specific RAPs produced are considered complete and have been verified by the World Bank Task Team and the borrower.

The draft Resettlement Policy Framework (RPF) for this project is to be found in Annex 4 of this document. It shall be disclosed prior to project appraisal as a stand alone document through the same channels as this PLESA.



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10 PUBLIC CONSULTATION

The Need for Public Consultation

According to the requirements of the World Bank and Ukrainian legislation, it is necessary to consult project-affected groups and other project stakeholders about the project's environmental and social aspects and to take their views into account when performing Environmental and Social Impact Assessment (ESA) of an investment project.

Organization of Public Consultations

According to the Terms of References, the Consultant will assist the client to organize the public consultation process in the following way:

The purpose of public consultation - is to present the planned project, the results of ESA work, discuss positive and negative impacts of planned project, to review the draft ESA document to ensure that the issues have been properly addressed and resolved to the satisfaction of locally affected groups and NGOs.

The main objectives of public consultations are as follows:

- To make the ESIA open for the public;
- To discuss various issues and concerns with project-affected groups, to familiarize public with potential negative impacts and problems during realization of investment projects;
- To have feedback from competent bodies and local project-affected groups during the ESA process on potential positive and negative impact and proposed mitigation measures.

To invite local stakeholders, the places and dates of the public consultations will be announced in local/oblast newspapers, TV and radiop stations followed by the telephone and fax communications. Key participants are:

- Loan Recipients (Municipal Utilities);
- Local residents;
- All persons, whose land and/or properties, and businesses are impacted;
- Key research organizations and organizations performing Environmental and Social Impact Assessment;
- Local state administration;
- State authorities (environmental authorities and sanitary epidemiological service);
- NGOs.

Responsible persons (representing Consultant and Grant Recipients) will be appointed for each location.

The district heating companies will call for written comments as well as will provide both postal and email address for sending comments and suggestions. All written comments and



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questions raised in the public consultation will be addressed, summarized and attached to PLESA as annex. Only then can the PLESA be considered finalized. PLESA will be disclosed on the district heating companies website both in English and Ukrainian, followed by disclosure on World Bank InfoShop. When site-specific EMPs will be finalized they will also be disclosed by the district heating companies.

The summaries of the public consultations (minutes of the meetings) and lists of persons participated are presented in Annex 3 (to be added later).

11

CONCLUSIONS

The anticipated adverse environmental impacts will occur mainly during construction/demolition stage and these impacts are likely to be site-specific. It is not anticipated that Safeguard Policy Physical Cultural Resources OP/BP 4.11 applies to this programme because proposed investments are not expected to affect historic buildings or sites with physical cultural resources.

The program does not involve significant conversion or degradation of natural habitats, or have significant negative impact on forest ecosystems. Hence, the program will not trigger Safeguard Policies 4.04 Natural Habitats and 4.36 Forests. Therefore, the Environmental Impact Study confirms that the proposed program falls under the Category B according to the provisions of the World Bank Operational Policy 4.01 "Environmental Assessment".

The program may in some instances cause relocation of commercial activities. In such cases, according to the bank's policy concerning Involuntary Resettlement (OP/BP 4.12), resettlement plan needs to be prepared by the borrower in consultation with the people affected and duly disclosed in the respective locality in local language.

ANNEX 1: FRAMEWORK EMP FOR SELECTED MUNICIPALITIES

Schedule	Impacts	Mitigation Measures	Expenditures	Responsibility
Construction/demolition stage				
Year 1 Months 1-2	All impacts	Preparation of Construction/ Demolition Site Environmental Management Plan. Draft plan submitted not later than 1 month after contract notification. Final plan before end of month 2. Review by PMU.	Not high	Contractor
During the whole construction/ demolition stage	Noise pollution	Works are performed strictly during normal weekday working hours. In case there is need in carrying out works causing higher noise levels at night time, the residents living nearby are notified 10 days in advance. Noise barriers should be installed where appropriate. Workers will be provided with individual protective gear to be used when performing high-level noise works.	Not high	Contractor
	Temporary air pollution	Dust and traffic emissions will be minimized by good operation management and site supervision. Unnecessary traffic will be minimized. Dust suppression measures (e.g. water sprinkling) will be applied during long dry periods. Open surfaces at the site and nearby will be cleaned from dust regularly. Workers will be provided with protective masks when necessary.	Not high	Contractor
	Pollution of soil, ground water and surface water through oil or fuel spillages	The risk of oil/fuel pollution will be minimized by good operation management and site supervision. Machinery will be checked regularly to find out possible leaks. Washing of machinery at the sites is not allowed. Waste oil will be collected and stored in chemical containers located at a designated secure area until disposal. In case PCB containing oil is found, they are removed in full compliance with the respective national procedures. Transport and disposal of waste will be done by companies	Not high	Contractor



		which hold license for such activities.		
Schedule	Impacts	Mitigation plan	Expenditures	Responsibility
During the whole construction/demolition stage	Soil and water pollution, injuries to contractor's workers and other persons from improper storage of construction and demolition waste	Construction/demolition waste is stored in a secure, designated area before transport to a designated disposal site. Transport and disposal of waste will be done by companies which hold license for such activities. Temporary waste storage areas will be separated from the working area and non-working persons are not allowed to visit storage area.	Not high	Contractor
During the whole construction/demolition stage	Injuries to workers and visitors	Adherence to safety regulations and instructions, including use of individual protective gear, will be enforced and constantly monitored by the construction or demolition site supervisor. Person responsible for Health and Safety issues at company level will take part in monitoring and random on-site checks on a regular basis.	Not high	Contractor, management of the construction site where works are carried out, Company level EHS-executive
	Damage to human health due to exposure to asbestos containing materials	In case asbestos containing materials are encountered, workers must wear proper protective gear, respirator masks being the most important. When asbestos containing structures are demolished, the working area will be isolated –where possible- from adjacent areas using e.g. plastic or fabric made covers. Transport and disposal of asbestos containing waste will be performed by an authorized organization in full compliance with the respective national and company level procedures.	Not high	Contractor and management of the construction site where works are carried out
	Increased risk of traffic accidents	A traffic management plan will be developed for construction and demolition sites and followed. Management plans will include e.g. identification of	Not high	Contractor

		optimal routes and time for construction materials delivery, transportation of construction and demolition waste to disposal sites and so on. If found necessary, traffic will be temporary diverted and safe speed limits will be established and enforced during the working period. Site will be clearly marked and separated from public areas. Safe passageways will be organized and marked for pedestrians.		
Schedule	Impacts	Mitigation plan	Expenditures	Responsibility
During the whole construction/ demolition stage	Risks of fires and explosions	Respective fire protection standards and instructions have to be observed. Regular inspection of the boiler houses by the respective fire protection authorities will be conducted. Emergency plan in case of fires should be developed. Workers should receive regular training on fire situations and on the use of fire extinguishers.	Not high	Contractor
	Landslips and erosion	Walls of deep excavations should always be enforced/supported according to relevant technical requirements. Unnecessary removal of vegetation and pavement should be avoided and bare ground planted or paved as soon as possible after the closure of the construction or demolition site. Storm water drainage will be arranged before excavation works are commenced.	Not high	Contractor
	Pollution caused by poor transport and disposal of waste materials	Scrap metal will be separated from construction and demolition waste for re-use. Hazardous waste (i.e. asbestos-containing materials, mercury-containing bulbs) is also separated and managed properly according to regulations and instructions. Disposal of all types of waste will be done only at the appropriate	Not high	Contractor

		disposal sites. Transport and disposal of waste will be performed by an authorized organization in full compliance with the respective national and company level procedures.		
	Impacts on historical, cultural or religious places or monuments	Exercise of due diligence in implementing, mitigation, monitoring and reporting measures specified in the site specific EMP and strictly follow the procedures according to related Ukrainian laws and regulations in the event of chance finds of culturally significant artifacts on sites. If any historical/archaeological artefacts are found, work will be stopped and the respective local authorities informed.	Not high	Management of the district heating company, contractor
Schedule	Impacts	Mitigation plan	Expenditures	Responsibility
Operation stage				
Year 1 Months 1-2	All impacts	Preparation of facility's environmental management plan. Review by PMU and the local environmental authorities. Consultations with stakeholders, including the public.	Not high	Facility operator, Company level EHS executive
During operation	Air pollution	Priority should be given to new low-emission equipment and technologies. New equipment should meet the established Ukrainian pollution emission standards. This requirement should be included in bidding documentation/technical specifications.	Variable	Management of the district heating company
	Noise pollution	Workers who are exposed to noise will use personal protective devices according to appropriate Health and Safety regulations and instructions. Spreading of noise will be prevented as much as possible by using different kinds of structures together with noise suppression mats and fabrics at the source of the noise.	Not high	Facility operator, Company level EHS executive

During operation, regularly	Risk of fires and explosions	Respective fire protection standards and instructions have to be observed. Regular inspection of the boiler houses by the respective fire protection authorities will be conducted. Emergency plan in case of fires should be developed. Workers should receive regular training on fire situations and on the use of fire extinguishers.	Not high	Facility operator, Company level EHS executive
During operation, regularly	Soil, ground water and surface water pollution and risks to human health from accidental spills and leakages	Proper system to contain spill should be designed. Emergency response equipment to collect spilled material should be at hand. Appropriate emergency response procedures should be developed. Personnel should have adequate knowledge of how to act in case of oil or fuel spillages and leakages. Also the use and maintenance of emergency response equipment should be included in the training. Training and drills simulating emergency situations should be performed regularly.	Not high	Facility operator, Company level EHS executive
Schedule	Impacts	Mitigation plan	Expenditures	Responsibility
During operation, regularly	Soil and water pollution, injuries to contractor's workers and other persons from improper waste management	Waste management plan should be updated regularly. Waste should be separated as much as practicable. Waste collection, transport and disposal will be performed by an authorized organization in full compliance with the respective national and company level procedures.	Not high	Facility operator, Company level EHS executive

ANNEX 2: MONITORING PLAN

Stage	Parameters	Place	How will monitoring be conducted	Periodicity	Costs	Responsibility
Construction/ demolition	<u>Noise pollution</u> Noise level	Monitoring points will be identified around construction/ demolition sites near sensitive areas (e.g. residential areas, schools, hospitals)	Measurements with noise meters, national standards for measurement methods will be followed	Random basis. When complaints are received	Not high	Contractor, Company EHS-executive
	<u>Air pollution</u> Fugitive dust from earth works and traffic, fumes from vehicles	Monitoring points will be identified around construction/ demolition sites near sensitive areas (e.g. residential areas, schools, hospitals)	Visually. Measurements of Total Suspended Particles in case of large-scale construction/ demolition sites and exceptional weather conditions.	Regularly. During dry periods. When complaints are received	Not high	Contractor, Company EHS-executive
	<u>Waste</u> Construction and demolition waste management plan	At construction/ demolition sites and at sites to which waste is disposed	Visual, landfill documentation review, monitoring the requirements of tendering documents	Constant monitoring by the contractor. Random basis for inspections by Company representative	Not high	Contractor, Company representative responsible for the site
	<u>Waste</u> Management of asbestos containing materials	At construction/ demolition sites and at sites to which waste is disposed	Visual, landfill documentation review, monitoring the requirements of tendering documents	Constant monitoring by the contractor. Random basis for inspections by Company representative	Not high	Contractor, Company representative responsible for the site

Stage	Parameters	Place	How will monitoring be conducted	Periodicity	Costs	Responsibility
Construction/ demolition	<u>Occupational and common health and safety</u> Adherence to safety regulations and safe working procedures. Working areas to be out of bounds to non-works personnel	At construction/ demolition sites	Inspections	Constant monitoring by the contractor. Random basis for inspections by Company representative	Not high	Contractor, Company representative responsible for the site
	<u>Increased risk of traffic accidents</u> Traffic management plan. Clearly marked and separated sites. Safe passageways	At construction/ demolition sites	Inspections	Constant monitoring by the contractor. Random basis for inspections by Company representative	Not high	Contractor, Company representative responsible for the site
	<u>Fires and explosions</u> Standards and instructions are to be followed. Emergency plans. Training	At construction/ demolition sites	Inspections	Constant monitoring by the contractor. Random basis for inspections by Company representative	Not high	Contractor, Company representative responsible for the site
	<u>Landslips and erosion</u> Supporting structures. Storm water drainage. Unnecessary removal of vegetation is avoided	At construction/ demolition sites	Inspections	Constant monitoring by the contractor. Random basis for inspections by Company representative	Not high	Contractor, Company representative responsible for the site

Stage	Parameters	Place	How will monitoring be conducted	Periodicity	Costs	Responsibility
Construction/ demolition	<u>Cultural heritage</u> Historical and archeological chance finds	At construction/ demolition sites	Inspections	Constant monitoring by the contractor. Random basis for inspections by Company representative	Not high	Contractor, Company representative responsible for the site
Construction/ demolition	<u>Resettlement plan</u>	At resettled population / newplace of activity	Survey	Periodical survey according to requirements	Not high	Company representative responsible for the site
Operation	<u>Air pollution</u> Emission concentration of NO ₂ , CO	Boiler house's stack. At separately defined air quality measurement locations near vulnerable areas (e.g. hospitals, residence areas)	Measurements	Regular measurements according to regulations	Not high	Facility management, Company EHS-executive
	<u>Noise</u> Noise level	Working places at boiler houses and other noisy facilities. Neighbouring sites in case noise level is high.	Measurements	Regular measurements according to regulations	Not high	Facility management, Company EHS-executive
	<u>Fires and explosions</u> Standards and instructions are to be followed. Emergency plans. Training	At the boiler houses and other facilities.	Inspections	Constant monitoring	Not high	Facility management, Company EHS-executive
	<u>Soil, ground water and surface water pollution</u> Spill management systems. Emergency response	At boiler houses where relevant (e.g. waste water discharge outlets, oil and gasoline storage areas)	Inspections	Constant monitoring	Not high	Facility management, Company EHS-executive

	equipment available and procedures developed. Training					
Stage	Parameters	Place	How will monitoring be conducted	Periodicity	Costs	Responsibility
Operation	<u>Waste</u> Waste management plan and practise	At boiler houses and other relevant facilities	Inspections	Constant monitoring	Not high	Facility management, Company EHS-executive

ANNEX 3. PUBLIC CONSULTATION

To be added

Annex 4

21 November, 2013

DISTRICT HEATING ENERGY EFFICIENCY PROJECT

Ministry of Regional Development, Construction, Housing and Communal Services
of Ukraine

DRAFT RESETTLEMENT POLICY FRAMEWORK

12 GLOSSARY OF KEY TERMS

Cut-off date Refers to a day on and beyond which any person who occupies land or assets on land, required for project use, will not be eligible for compensation. The date is often the day when the assessment of persons and their property in the project area commences.

Compensation means payment in cash or in kind of the replacement value of the acquired property and/or impacted assets.

Entitlements with respect to a particular eligibility category are the compensation and other forms of assistance provided to impacted persons in the respective eligibility.

Grievance procedure The processes established under law, local regulations, or administrative decision to enable property owners and other impacted persons to redress issues related to acquisition, compensation, or other aspects of resettlement

Involuntary land acquisition means the process whereby a person is compelled by government or a government agency to alienate all or part of the land he/she owns or possesses, to the ownership and possession of the agency, for public purpose in return for a consideration

Land acquisition means the taking of or alienation of land, buildings or other assets thereon for the purpose of the project

Market value means the most probable selling price or the value most often sought by buyers and sellers. It assumes buyers and sellers have reasonable knowledge, act competitively and rationally are motivated by self interest to maximize satisfaction and both act independently and without collusion, fraud or misrepresentation.

Project affected person (PAP): a person who loses assets and/or usage rights and/or income generation capacities (e.g. land, structure, crops, businesses) because these assets/rights/capacities are located in the land to be acquired or used, for needs of the project.

Relocation means the physical moving of PAPs from their pre-project place of residence, place of work or business premises.

Replacement value means the amount that will be paid to replace the value for the land and all assets on it, without any deductions for depreciation.

Resettlement Policy Framework (RPF) refers to the present safeguard instrument (document) which is the overall Policy Framework for Compensation, Resettlement and Rehabilitation of PAP for the project implementation. The Policy Framework describes the process and methods for carrying out resettlement under the project, including compensation, relocation and rehabilitation of Project Affected Persons.

Resettlement Action Plan (RAP) means resettlement action plans prepared for specific micro-projects.

Resettlement means all the measures taken to mitigate any and all adverse impacts for the Project on PAPs property and/or livelihoods, including compensation, relocation (where relevant), and rehabilitation.

Regional Project Implementation Team (RPIU) refers to the unit that each utility participating in the project has established, using their existing staff to prepare the tender documents, prepare technical specifications, lead procurement process according to the World Bank guidelines, lead FM according to the World Bank guidelines, supervise physical works, environmental and social assessment, monitoring and evaluation, prepare of the progress reports, etc.

PROJECT DESCRIPTION

At the time of preparation of the RFP, detailed technical plans for proposed district heating construction works have not been completed. The activities of the proposed district heating rehabilitation program do not include any greenfield activities, all construction takes place within existing urban areas. Most activities are confined within existing boiler house sites and buildings. The closure of some of the existing boiler houses with concurrent connection of existing separate heating networks requires building new heat transmission pipelines. The pipelines are usually placed along streets. In urban areas, most of the lines are placed underground and no permanent land occupation is caused.

The program is not expected to have any permanent adverse economic or social impacts. In Kamyanyets Podilsky the project may require permanent acquisition of the municipal land area rented out for business activities.

In Kherson, the rehabilitation of heating pipeline will temporarily occupy areas used for commercial purposes by informal vendors or for parking boxes installed unofficially causing need of temporary relocation.

OBJECTIVES AND BASIC TERMS OF PREPARATION OF THE RPF.

As part of the preparation of the project, the Government of Ukraine requires a Resettlement Policy Framework (RPF) to address the needs of Project Affected Persons. The RPF will be written to the standards of the Government's own policy on Resettlement and the policy of the World Bank, in its OP 4.12. The borrower will also be required to prepare one or several resettlement action plans (RAPs) upon availability of the detailed site-specific technical designs. The main purpose of this Resettlement Policy Framework is to describe and clarify the policies,

principles, procedures and institutional arrangements that will be followed in order to minimize and mitigate negative social and economic impacts that may be caused by this project. The RPF is formulated to establish and clarify the resettlement principles, organizational arrangements and design criteria to be applied to construction and rehabilitation works which will be implemented after project approval.

The resettlement action plans (RAPs) consistent with the RPF will subsequently be prepared and submitted to the World Bank for approval when relevant and specific information on the project activities becomes available. Such information includes the detailed technical design, which allows for the identification of the exact needs for land acquisition. The individual RAPs to be prepared will specify the case-specific procedures to be followed and the actions to be taken to properly compensate and/or assist affected people. The RAPs will identify the full range of people affected by the project and justify their displacement after consideration of alternatives that

would minimize or avoid displacement.

Involuntary resettlement can potentially cause severe long-term hardship, impoverishment, and environmental damage unless appropriate measures are carefully planned and carried out. For these reasons, the overall principles for this Resettlement Policy Framework on involuntary resettlement are the following:

- (a) Involuntary resettlement should be avoided where feasible, or minimized, exploring all viable alternative project designs.
- (b) Where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits. Displaced persons should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs.
- (c) Displaced persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.

PRINCIPLES GOVERNING RESETTLEMENT PREPARATION AND IMPLEMENTATION

A major principle of the RPF is to displace as few people as possible (minimizing resettlement). This principle is to be followed all project activities.

Land acquisition under the project may be needed for construction of the new objects needed for improvement of the district heating systems in some cities. Temporary use of land will be needed for heating pipelines rehabilitation.

Compensation will be governed by the following general principles:

- ✓ .All possible steps will be taken to minimize acquisition of privately owned land and to avoid acquisition of businesses, through careful selection of the needed plots.
- ✓ .Related to the above, the project will use municipally owned land as much as possible.
- ✓ .In case land acquisition is necessary, the property and inheritance rights of affected people will be respected and procedures specified in the RPF document and relevant RAP will be followed.
- ✓ .The preparation and implementation of the land acquisition and compensation plan will be done in a transparent manner with the participation of affected persons and relevant institutions.

- ✓ .Valuation of land, businesses, and other assets for which compensation is given will be based on full replacement cost ;
- ✓ . Any infrastructure facilities such as roads, water pipes, and communication networks disrupted by project activities will be replaced
- ✓ .Compensation, land registration and land transfer issues shall be resolved in mutual understanding with owners whenever possible without seeking court intervention.
- ✓ . Affected people will be provided replacement land or compensated at replacement value, without deduction for depreciation or for any other purpose, before construction begins in the area of the affected land.
- ✓ These principles apply to all affected persons regardless of the severity of impact and whether or not they have legal title to land or assets.
- ✓ Particular attention shall be paid to the needs of vulnerable groups among those affected.

RAP PREPARATION, REVIEW, AND APPROVAL.

Upon availability of the information on the exact amount and type of land to be allocated, and the number of people affected, the Resettlement Action Plans for the project sites will be prepared. Based on the presently available information, it appears that at least two RAPs will most likely be needed:

- a) For acquisition of the municipal land currently leased out for business activities in Kamyanskyi Podilsky.
- b) For temporary economic displacement of the informal vendors where heating pipeline to be rehabilitated is situated under their trading area in Kherson.

The steps to be undertaken for each individual Resettlement Action Plan include

- (i) Screening process. The goal of screening is to identify and consider resettlement issues as early as possible. The RAP will address in detail all compensation issues for PAPs.
- (ii) Identification of Project Affected Persons.
- (iii) Preparation of the Resettlement Action Plan per se.

The approval of each Resettlement Action Plan by the World Bank is required prior to initiation of works in the area of the affected land or people.

Public consultation and participation during RAP preparation and implementation will be carried out. The consultation will be conducted with the informal vendors and they will receive explanations on the proposed ways of compensation. The land lessees will be informed in written form and consulted individually to figure out the most appropriate way of compensation. The consultations will afford PAPs the opportunity to contribute to both the design and implementation of the project activities and reduce the likelihood for conflicts. For the project to be successful, effective and close consultation with local communities is essential. Besides broader public consultations with communities, particular attention will be paid to consultation with potentially affected individuals.

LAND ACQUISITION AND CATEGORIES OF AFFECTED PEOPLE.

Categories of affected persons may include (i) persons who have a legal title over land and property and those without it, and (ii) people temporarily losing access to land or assets (for example during the construction works) or those permanently losing access.

The land that may be needed for the project is divided into the following categories:

- Land not subject to compensation: municipal land, public use land on which no squatter or users are to be found;
- Land subject to compensation: land held fully or in part by private persons, commercial entities or institutions for commercial activities, or land being occupied or used by squatters or people with no title .

Based on the type of land that may be allocated for or temporarily used by the Project and data provided by participating municipalities on the current use of land, the following categories of affected persons and compensation measures were identified:

Category of affected persons	Compensation measures
Tenants of public/municipal land	The leasers e.g. commercial companies or other tenants losing their land will be notified by respective municipal administrations at the request of the utility, 3 months in advance to allow reallocating the activities if any or removal of the movable property to avoid income losses. Lease agreements will be modified according with the law to reflect area of land to be withdrawn for the project. Affected leasers, will be also provided with options for alternative land for lease.
Informal vendors temporary displaced as a result of project works	Will be provided with an alternative place for trade acceptable to them and supported in relocating in case of need or will be compensated for the loss of income and damages to the asset occurring as the result of displacement by project works and until their income is re-established . The period of displacement will be kept as short as possible.
Public owners (state, municipality)	Will transfer land with no compensation to the utilities for the purposes of the Project.

The budget for all resettlement expenses will be provided by the borrower.

LEGAL FRAMEWORK FOR RESETTLEMENT.

Land Acquisition and Resettlement

The following legal framework shall be used for the land acquisition purposes:

- The Constitution of Ukraine (Art. 13, 14, 41) stipulating that “no one shall be unlawfully deprived of the right of property. The right of private property is inviolable and “The expropriation of objects of the right of private property may be applied only as an exception for reasons of social necessity, on the grounds of and by the procedure established by law, and on the condition of advance and complete compensation of their value. The expropriation of such objects with subsequent complete compensation of their value is permitted only under conditions of martial law or a state of emergency” (Art. 41);
- Land Code of Ukraine (1 January 2002) (especially Articles 92,144-149)
- The Civil Code of Ukraine (16.01.2003, No. 435-IV), determining the procedure for termination of the ownership rights for immovable property due to the acquisition or alienation of lands on which the property is located for public needs; and regulating issues related to protection of ownership rights;
- The Code of Administrative Proceedings of Ukraine (06.07.2005), determining the way proceedings related to acquisition of land plots for public needs are conducted, e.g., legal courts make judgments about the cases of forced alienation of land plots, and other immovable property objects located on these plots, for public needs within two months from the moment of claim filing;
- Law of Ukraine “On allocation (condemnation) of plots of land, other objects of private estate property situated thereon, for public purpose” dated 17.11.2009 #1559-VI
- Law of Ukraine “On regulation of urban planning” dated 19.05.2011 #3395-VI
- Law of Ukraine "On Land Assessment (Valuation)"
- Law of Ukraine of 21.05.1997 No.280/97-BP "On Local Self-government in Ukraine”
- Law of Ukraine of 06.10.1998 No.161-XIV "On Land Lease"
- “Procedure for Calculation and Compensation of Losses to Land Owners and Land Users" approved by Regulation of the Cabinet of Ministers of Ukraine of 19.04.1993 No.284
- Regulation of the Cabinet of Ministers of Ukraine of 11.10.2002 No 1531 “On Expert Valuation of Land Parcels”
- Law of Ukraine “On Valuation of Property, Property Rights and Professional Assessment Activities in Ukraine”
- Word Bank Operational policy for Resettlement (OP 4.12)

Temporary Land Use during Construction

Compensation for the temporary use of land during construction is established in the following Regulations of the Cabinet of Ministers:

- “Procedure for Calculation and Compensation of Losses to Land Owners and Land Users" approved by Regulation of the Cabinet of Ministers of Ukraine of 19.04.1993 No.284

Gaps between Ukrainian legislation and the requirements of the Word Bank Operational policy for Resettlement (OP 4.12)

Ukraine Laws and Regulations

WB OP 4.12

Only registered structures/buildings are compensated for damages/ demolition caused by a project

All affected structures/buildings are compensated for damages/ demolition caused by a project at replacement cost

Only official land users are compensated for loss of income/business

Lease tenants whether registered or not are compensated for income/business losses regardless of the registration

No specific provisions for the process of resettlement planning and its specific tools including preparation of any plan related to land acquisition and resettlement

Time bound implementable Resettlement Action Plan needs to be prepared before the disbursement of compensation

No provisions for

- income/livelihood rehabilitation,
- allowances for severely affected or vulnerable PAPs

WB policy requires rehabilitation for income/livelihood, severe losses, and for expenses incurred by the APs during the relocation process.

Decisions regarding land acquisition and resettlement are discussed only between the landowners and the Land Acquisition Authorities.

Information on quantification of affected items, value of assets, entitlements, and compensation/financial assistance amounts are to be disclosed to the APs prior to project appraisal.

No specific plan for public consultation is provided under the Ukrainian laws.

Public consultation and participation is the integral part of WB's policy which is a continuous process at concept, preparation, implementation and finally at post implementation stage

No specific requirements to the grievance mechanism for out of court addressing of the concerns raised by the PAPs

Transparent and easily accessible to the PAPs mechanism with multiple information uptake channels and tracking system for the complaints received needs to be established and communicated to the PAPs.

In case the gaps identified above are affecting the processes described in this RPF the WB OP 4.12 provisions will be followed.

ELIGIBILITY CRITERIA FOR VARIOUS CATEGORIES OF AFFECTED PEOPLE

PAPs will be entitled to compensation based on the status of their occupation of the potential project area.

Under the WB's OP 4.12, PAPs are defined as those who are affected by project activities which result in:

- Relocation or loss of shelter
- Loss of assets or access to assets; and/or

- Loss of income source, business or means of livelihood, whether or not affected person must move to another location.

All PAPs irrespective of their status or whether they have formal titles, legal rights or not, or encroaching illegally on land, are eligible for some kind of assistance if they occupied the project area before the cut-off date. Persons who take occupancy in the area after the socio-economic study are not eligible for compensation or any form of resettlement assistance.

The World Bank's OP 4.12 guidelines require compensation for lost or impacted assets and replacement costs to both titled and non-titled landholders and resettlement assistance for lost income and livelihood. In this project, the absence of formal titles should not constitute a barrier to resettlement assistance and rehabilitation.

It will be important to set a cut-off date at an early stage of the preparation process in order to avoid speculation and illegitimate claims at a later stage.

An appropriate cut-off date will be the time when the assessment of persons and their property in the sections of the project is carried out.

The establishment of cut-off date is required to prevent opportunities invasions or migration into the chosen land thereby posing a major risk to the project.

The local authorities will play a crucial role in identifying users of land since most of them would have acquired the customary rights to use the land on their authorization.

Affected Parties and Entitlements

All persons, whose land and/or properties, and businesses are acquired for the project, are defined as project affected persons and are eligible for compensation (and/or alternative forms of assistance). They include the following categories:

- Tenants of private and public land.
- Those informally using or occupying land prior to the cut-off date that is required for project purposes.

Owners of public land e.g. municipal councils will not be eligible for monetary compensation from the project. Public land will be transferred to the utilities at no charge. The project will, however, identify significantly affected tenants and users of public land and offer alternatives for land use or lease by these groups. Based on current assessments, it is not expected that there will be significantly affected tenants/users of public land. Nevertheless, provisions for significantly affected users and tenants are included in the Entitlements matrix in the effect such groups are identified in the course of the project.

The Matrix of Entitlements appears as Annex B of this document. The precise number of affected persons (public owners, businesses and tenants) will not be known until the detailed technical design is completed.

It is expected that most affected persons will receive acceptable replacement land, which will be identified and made available before land acquisition occurs. All affected persons entitled to be compensated for land losses or damages and loss of income will be duly compensated before commencement of the project works on respective territories..

In the areas subject to informal occupancy or use the user would be supported in relocating or compensated for fixed assets, business losses or other damages

METHODS OF VALUING AFFECTED ASSETS/INCOME.

Each asset will be enumerated and inscribed on a register. Values for each types of asset will be pre-printed, shown to the affected person, and set against the type and number of such losses that the individual will sustain. The total compensation for that category of loss will be shown, and the total of all losses shown as well. The inventory and evaluation will be signed and a copy given on the spot to the affected person. The form will say, and the affected person will be notified, that the inventory will not be official until a second signed copy, verified by project supervisory staff, is returned to the affected person. At that time, a copy of the grievance procedure will also be given to the affected person.

Land users who are not satisfied with the result of the valuation can appeal to the court, following procedures set forth by Ukrainian law and WB policy OP 4.12. The ruling of the court also determines who pays the cost of litigation.

In case no alternative location could be provided prior to start of project works and impact is produced on the informal vendors' means of livelihoods, they are entitled to a compensation package. In case the compensation is not enough to rehabilitate for the income loss caused by the project other methods will be identified in course of the RAP reparation.

PROCEDURES FOR DELIVERY OF ENTITLEMENTS AND RESPONSIBILITIES OF EACH ACTOR

Each RAP will include detailed information regarding the amount of compensation and processes of compensation as described in this RPF. The utility will disclose the RAP through mass media and public authorities. Specialists from the regional project implementation unit (RPIU) will then directly contact land users whose plots are to be affected to inform them about the results of the evaluation, transfer of land and compensation procedures, and the construction process.

Following an agreement with the owner of the land plot to be purchased, the authority that took a decision on the land purchase for public needs will provide the owner either with another land plot of equal value to the plot within the same district that is taken or with monetary compensation at replacement value for the land (para 5 Clause 12 Law of Ukraine "On allocation of plots of land, other objects of private estate property situated thereon, for public purpose").

The amount of compensation is calculated separately for each specific plot of land according to the Regulation of the Cabinet of Ministers of Ukraine of 17.11.1997 No.1279, where on page 2 it gives a table with the prices paid per 1 hectare of land set for different regions on one side and for different land use purposes (building structures, etc.).

Land users are compensated in accordance with the "Procedure for Calculation and Compensation of Losses to Land Owners and Land Users" approved by Regulation of the Cabinet of Ministers of Ukraine of 19.04.1993 No. 284, which also specifies the rights and access to compensation of losses for land owners and users.

Relocation shall be managed by the local authorities and monitored by the borrower through the RPIU. Funding for monetary compensation will be provided by the utility, transferred to the local administration and paid by the local administration.

No construction will occur near the affected land plots if compensation for land acquisition or displacement has not been completed.

GRIEVANCE MECHANISM

It must be emphasized that the risk of complaints and grievances will be reduced to a minimum owing to the fact that affected persons to be displaced will be involved in the evaluation committee and will have an opportunity to reach consensus during joint discussion. Should such consensus not be reached, affected persons may submit prejudicial claims to local authorities against the decisions of the evaluation commission. If potentially affected persons oppose the location of the proposed land or structures, they can register an objection during the discussions and design plan. Once the Resettlement Action Plan has been adopted with respect to the relevant land plot, affected persons can negotiate with utility and local self-governments or executive a compensation for the lease of land prior to the commencement of civil works in the vicinity of the affected land plots.

Grievances related to any aspect of the project will be addressed through negotiation, which will aim at achieving a consensus settlement. PAPs may follow the procedures outline below:

- Grievance will be submitted by the affected person through one of the existing channels for grievances established by the utility (hot line, written grievance form delivered by post or in person to the office of the utility) and/or the municipality (call-centre, written grievance form delivered by post or in person to the office of the municipal administration);
- If no understanding or amicable solution is reached, or affected person does not receive a response, the affected person can appeal to the CPMU.

A person has been designated by CPMU to register claims and grievances and attempt to resolve them at the local level. Contact details for this person within CPMU will be shared with PAPs at public meetings and will be included in the RAP. Further record of the grievances shall be performed and submitted to the Bank at agreed timeframe.

- If an affected person is not satisfied with the decision received, he/she can as a last resort appeal to a court of competent jurisdiction.
- The grievance procedure shall be introduced at local level during the public hearings of RFP and further public hearings of the RAP.

BUDGET AND FUNDING ARRANGEMENTS.

As for now there is no possibility to estimate the budget of the resettlement due to the following reasons:

- there is no final data on the resettlement and land allocation required for the project;
- the losses of the livelihoods shall be compensated based on the most recent average daily rate that will be determined close to the expected displacement dates.

Utilities shall be responsible for resettlement and land allocation financing.

METHODS FOR CONSULTATION WITH, AND PARTICIPATION OF, AFFECTED PEOPLE.

Consultation is to be done for both for the Resettlement Policy Framework, which sets the key parameters by which resettlement will be carried out, and the individual RAPs which will be done for each subproject. The RPF will be disclosed and consulted on in the same way as PLESA (Section 10, p. 43) Annex 4 to which it comprises.

Resettlement Action Plans will be disclosed at public meeting with affected persons as well as through local media or utilities' websites.

Public consultation and participation is essential because they afford PAPs the opportunity to contribute to both the design and implementation of the project activities and reduce the likelihood for conflicts as well as increase benefits being realized by PAPs.

Stakeholders for this purpose of this project shall be defined as all those people and institutions that have an interest in the successful planning and execution of the project. This includes all persons and institutions positively and negatively affected by the project. Records of public consultations will be kept by the RPIU.

The consultation process shall ensure that all those identified as stakeholders are consulted. Information about the project will be shared with the public, to enable meaningful contribution by stakeholders and to enhance success of the project.

MONITORING ARRANGEMENTS.

The borrower shall designate a person in the CPMU to monitor land acquisition procedures and report to the World Bank any irregularities and shortcomings in implementation of the Resettlement Action Plans or any unexpected negative impacts on affected persons.

The RPIU will cooperate closely with municipal authorities monitoring resettlement and compensations of PAPs in their respective subprojects. For resettlement, each six months the CPMU will select a random subproject with resettlement, visit, and report on the progress of resettlement. The results will be summarized in a report to the Bank which uses key performance indicators selected by the project and agreed in the RAP as reporting topics. Qualitative comments on resettlement progress will also be provided.

TEMPLATE FOR SPECIFIC ABBREVIATED RESETTLEMENT ACTION PLANS

An abbreviated plan covers the following minimum elements:⁷

- (a) a census survey of displaced persons and valuation of assets;
- (b) description of compensation and other resettlement assistance to be provided;
- (c) consultations with displaced people about acceptable alternatives;
- (d) institutional responsibility for implementation and procedures for grievance redress;

<http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTOPMANUAL/0,,contentMDK:20066696~menuPK:4564185~pagePK:64709096~piPK:64709108~theSitePK:502184~isCURL:Y,00.html>

- (e) arrangements for monitoring and implementation; and
- (f) a timetable and budget.

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Entitlements Matrix

Element	Project Impact	Category of Project Affected Persons (PAP)s	Entitlement
Construction of the new boiler houses	Land withdrawal for permanent use;	Land users, including informal or illegal users	The leasers e.g. commercial companies or other tenants losing land will be notified by respective municipal administrations at the request of the utility, 3 months in advance. Lease agreements will be modified according with the law to reflect area of land to be withdrawn for the project. Affected leasers, losing their land, will be provided with options for alternative land for lease. The land needed for this type of project activities is not supposed to be informally or illegally used. If such case occurs however the user will be compensated for loss of structures or other fixed assets and business losses or other damages at replacement cost.
		Public Owner (State or Municipality)	Transfer the land, with or without compensation
Rehabilitation of the pipelines	Land withdrawal for temporary use.	Informal vendors temporary displaced as a result of project works	Will be provided with an alternative place for trade and supported in relocating in case of need or will be compensated for the loss of income and damages to the asset occurring as the result of displacement by project works. The period of displacement will be kept as short as possible. In case no alternative location could be provided prior to start of project works and impact is produced on the informal vendors' means of livelihoods, they are entitled to a compensation package