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РЕФОРМА МІСЬКОГО
ТЕПЛОЗАБЕЗПЕЧЕННЯ

MHR Project in Ukraine Final Environmental Compliance Report

May 2013

1) Executive summary

Environmental assessment of energy efficiency (EE) demonstration projects was performed in the planning phase by the project designers. The pertinent section of the Initial Environmental Examination (IEE) was an integral part of every project's bid package and documentation. The evaluation or assessment was done in order to prevent or minimize impact on the environment that could arise during implementation of a demonstration project.

The IEE covered the following activities:

- Installation of metering and automatic control equipment;
- Reconstruction of boiler houses;
- Modernization of heating systems;
- Thermo insulation of buildings.

These measures were implemented in order to reduce the amounts of heat energy required in cold months and to reduce energy for cooling in hot months, to improve the living conditions (temperature) inside buildings, and to increase equipment operational efficiency.

Overall conclusions of the environmental impacts, mitigation measures and monitoring or prevention of these effects are stated below in Section 7. Activities that were implemented by the USAID Municipal Heating Reform (MHR) Project are considered in the IEE. The activities can all be classified as either *negative determination (no significant impact)* or *negative determination with conditions (no significant impact, but minor impacts addressed with appropriate mitigating measures)*. All of the activities are 'small scale projects' and are purely local in nature.

The main objectives of the IEE are:

- Preliminary analysis of environmental impacts and risks;
- Development of a plan to monitor the impact (EM);
- Development of a plan for mitigating the effects of actions (MP).

The resulting Environmental Monitoring and Management Plans (EM-MP) included adherence to the requirements of Ukrainian environmental laws and regulations for all activities funded by USAID MHR Project. To ensure Project compliance, the following environmental mitigation and monitoring procedures were followed:

- Environmental check lists were required for all grant applications submitted to the Project.
- The check list responses were checked against the IEE and EM-MP to verify that the funded activities are covered by the IEE.
- Environmental compliance clauses were included in all local purchase orders and grant agreements.
- Certification of environmental compliance was required of the project designer at the acceptance of project design.
- Certification of environmental compliance was required of the project implementer at the acceptance of project construction.

The Project Technical Expert conducted a number of field visits to assess and monitor environmental compliance and risk mitigation. Assessment reports were prepared and are available in the Project files.

2) Project descriptions.

The projects aim to improve living conditions and increase the efficiency of heat and electricity consumption. This will reduce overall fuel and electrical power consumption, increase the comfort level of inhabitants and visitors of the buildings and reduce overall CO₂ emissions.

List of demonstration projects:

#	Project description	Partners	City
1	“Reconstruction of a boiler room with the replacement of the “NIISTU” boilers, located at Revolutsii St. 61”	“Krymteplocomunenergo” (Yevpatoriya Branch)	Yevpatoriya
2	“Modernization of the Heating System in the 3 rd and 4 th Zones of Kramatorskteploenergo” and setup of heat and hydraulic operating modes”	“Kramatorskteploenergo” LLC	Kramatorsk
3	“Partial Modernization of heating system and insulation of common areas”	HOA "Pokolinnya", Kramatorsk City Council	Kramatorsk
4	“Modernization of multi apartment residential building using automated heating management system”	HOA "Vidrodzhenya", Lutsk City Council	Lutsk
5	“Installation of heat meters and weather-based control systems in 5 typical buildings”	Yevpatoriya City Council	Yevpatoriya
6	“Installation of heat meters and weather-based control systems in 5 typical buildings”	Lutsk City Council	Lutsk
7	“Installation of heat meters and weather-based control systems in 5 typical buildings”	Kramatorsk City Council	Kramatorsk
8	“Installation of heat meters and weather-based control systems in 5 typical buildings”	Lviv City Council	Lviv
9	“Measures aimed at improving energy efficiency in the Yevpatoriya General Hospital (communal health care facility) located at the address: 39 Nekrasova St, Yevpatoriya”	Yevpatoriya City Council	Yevpatoriya
10	“Reconstruction of boiler room, including boiler replacement and gasification, located at 1\2 Tuchina St, Yevpatoriya”	Yevpatoriya City Council, “Krymteplocomunenergo” (Yevpatoriya Branch)	Yevpatoriya
11	“Implementation of Energy Efficiency Measures for the kindergarten “Svetlyachok” located at Ozerna st. 71”	Myrhorod City Council	Myrhorod
12	“Installation of network heating water meters for city blocks”	“Skhidenergo” LLC, Kurakhove City Council	Kurakhove
13	“Implementation of energy-efficiency measures at kindergarten “Kazka”, located at Pushkina st. 4”	“Skhidenergo” LLC, Kurakhove City Council	Kurakhove
14	“Automation of fuel combustion regimes for the boilers located at Internatsionalnaya St. 135a.”	“Krymteplocomunenergo” (Yevpatoriya Branch)	Yevpatoriya
15	“Implementation of energy-efficiency measures at kindergarten “Kosmonaut”, located at Chapayeva st. 18B”	“Skhidenergo” LLC, Kurakhove City Council	Kurakhove
16	“Installation of weather based heating control system, insulation and replacement of pipes, energy efficient lighting”	HOA "Bilya Parku", Lviv City Council	Lviv
17	“Thermal insulation of external walls”	HOA "Kamenyar", Lviv City Council	Lviv

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18	“Thermal insulation of external walls, automated weather based heating control system”	HOA "Mariya", Lviv City Council	Lviv
19	“Thermomodernization and renovation of multistory residential building located at Peremogy st. 10, including installation of automated heating control unit”	ESCO Lutsk Communal Systems	Lutsk
20	“Implementation of EE measures in six public buildings”	Lviv City Council, NEFCO	Lviv
21	“Improvement of energy efficiency for the building of general education school #19, located at Pavlograd, Malinovskogo st. 2”	Pavlograd City council, PJSC “DTEK Pavlogradugol”	Pavlograd
22	“Increasing energy efficiency of the boiler station located at Rybalok St.1, Sevastopol”	Sevastopol City Administration, “Sevteploenergo”	Sevastopol
23	“Energy efficient renovation of the kindergarten #71 (including windows replacement, walls insulation and roof modernization) located at Chapayeva st. 6a, Chernihiv”	Chernigiv City Council	Chernihiv
24	“Implementation of energy efficiency measures in HOA “Vostok-2003”	HOA "Vostok 2003", Alchevsk City Development Fund, Alchevsk City Council	Alchevsk
25	“Implementation of energy efficiency measures including insulation of external walls and installation of individual heating sub-station”	HOA “Sharm-Kurakhove”, Kurakhove City Council	Kurakhove
26	“Implementation of energy efficiency measures including reconstruction of heating system and installation of individual heating sub-station”	HOA “Almaz-Kurakhove”, Kurakhove City Council	Kurakhove
27	“Implementation of energy efficiency measures including reconstruction of heating system and installation of individual heating sub-station”	HOA “Brigantina-Kurakhove”, Kurakhove City Council	Kurakhove
28	“Implementation of energy efficiency measures in the city of Dzhankoy”	Dzhankoy City Council	Dzhankoy
29	“Equipping heating systems of pilot buildings in Krasnoperekopsk with metering and heat supply regulation equipment”	Krasnoperekopsk City Council	Krasnoperekopsk
30	“Implementation of the energy-efficiency measures in the city of Kyiv”	Kyiv City Administration, DTEK	Kyiv
31	“Implementation of the energy-efficiency measures in the city of Dnipropetrovsk”	Dnipropetrovsk City Council, DTEK	Dnipropetrovsk
32	“Installation of individual heating water meters in private sector”	“Skhidenergo” LLC, Kurakhove City Council	Kurakhove
33	“Adjustment and Regulation of the heating networks”	“Skhidenergo” LLC, Kurakhove City Council	Kurakhove
34	“Developing an energy- and environment-efficient system of heat supply for the city of Kurakhove” and “Development of design documentation for the heat substations in Kurakhove”	“Skhidenergo” LLC, Kurakhove City Council	Kurakhove
35	“Replacement of windows with metal-plastic in educational establishments of Chernihiv”	Chernigiv City Council	Chernihiv
36	“Modernization of the heating system for the boiler house located at 104 Bahachanska st., , including installation of metering and regulation devices for the buildings”	Myrhorod City Council, “Myrgorodteploenergo”	Myrhorod
37	“Installation of the automated heating management and control system for the boiler house located at 104 Bahachanska st. 104”	Myrhorod City Council, “Myrgorodteploenergo”	Myrhorod
38	“Thermal insulation of external walls, roof and replacement of wooden windows”	HOA “Parus”, Yevpatoriya City Council	Yevpatoriya

3) Regulatory and approvals

For the implementation of the project involved a specialized contracting company. All work was performed in accordance with applicable laws. According to the contract award responsibility for the environmental impact, as well as development and implementation of measures to minimize or prevent this impact is executor of the contract work as a contractor undertakes to perform work in accordance with state standards, rules and regulations established by the legislation of Ukraine. The overall responsibility for implementation of mitigation measures and implementation of the monitoring plan is to grantees and contractors.

4) Evaluation of Environmental Impact

When performing work on the sites some impacts on the environmental components might occur. Through adherence to the plan mitigation negative impact on the environmental components was minimized.

Thus, the total material adverse effect on the environment as a result of the implemented activities was insignificant. Plan mitigation measures (actions) are presented in Section 6.

5) Analysis of alternative scenarios

Given the situation at the moment in Ukraine, taking into account the need to reduce environmental impact by reducing emissions of harmful substances into the air and reducing the consumption of heat and electricity, the proposed measures to reduce the load on the system is appropriate and acceptable. The alternative, which would be to maintain the status quo (a "non-project" scenario) seems inappropriate.

In preparation for the implementation of a range of demonstration activities, energy audits of district heating companies and typical buildings were carried out. The results of these audits were used to identify optimal sets of measures that could be implemented in the demonstration projects.

6) Environmental Management Plan

Mitigation Plan

Measures to implement the project "Municipal Heating Reform" have potential and not significant impact on the environment, but for this project mitigation plan was developed.

Activities of MHR Project	Type of environmental impact	Description of mitigation actions
<p>Demonstration projects in the following areas:</p> <p>Installation of measuring and controls equipment;</p> <p>reconstruction of the boiler houses;</p> <p>modernization of heating systems;</p> <p>thermo insulation of buildings.</p>	<p>Temporary dust pollution as a result of construction activities and movement of trucks</p>	<p>Reduce as much as possible, dust formation of transport. If possible, use a closed truck for transporting construction materials. Sprinkle about water to prevent the formation of dust, remove excess material and clean the area after work. Where possible, use protective covering with fabric or screens in the formation of dust</p>
	<p>Noise and vibration due to construction work</p>	<p>Limit time daytime work time intervals. Set the schedule and / or other limitations on the job. If necessary, use noise barriers and / or noise on the equipment</p>
	<p>Construction waste can cause pollution</p>	<p>All waste generated during construction, including hazardous waste, should be sent for recycling, exported to landfills or disposed of in accordance with the hazard class of waste (if necessary use the services of specialized firms utilization)</p>
	<p>Possible liquid spillage from grid to ground</p>	<p>Arrange collection spills in special containers with subsequent discharge to sewerage system</p>
	<p>Emissions from the equipment may influence the air quality</p>	<p>Use only equipment in good condition equipment. Time of construction should be limited defined period</p>
	<p>As a result of boiler houses (replacement equipment) there is a necessity in disposal of old equipment</p>	<p>Proper control of waste from, maximum use of non-working replacement metal structures as secondary raw materials (scrap for delivery). If possible repair and subsequent use of equipment - export it to a proper service area, to prevent its accumulation at the site of reconstruction / construction unassigned parking areas</p>
	<p>During thermo modernization of buildings can be formed waste of hazard class (fluorescent or asbestos)</p>	<p>Installer responsible for storing waste, determine the specific location of temporary storage (metal containers that are closed) to restrict the access of personnel to conclude an agreement for the disposal of a specialized company</p>

Monitoring Plan

Activities of MHR Project	Parameters to monitor	Monitoring type	Periodicity of monitoring. Legislation
Demonstration projects in the following areas: Installation of measuring and controls equipment;	Emissions of pollutants, dust formation	Instrumental control	According to DSP 201-97 State Sanitary Rules of atmospheric air of populated areas (pollution chemical and biological agents), ISO 4276:2004 system standards in the field of environmental protection and rational use of resources. Atmosphere. Standards and methods of measuring smoke exhaust emissions of cars with diesel or gas diesel, ISO 4277:2004 system standards in the field of environmental protection and rational use of resources. Atmosphere. Standards and methods of measuring carbon monoxide content and hydrocarbons in the exhaust gases of vehicles with engines running on petrol or gas fuel
reconstruction of the boiler houses; modernization of heating systems;	Noise and Vibration	Acoustic survey. (as an additional reason - complaints from neighbors or workers)	In accordance with State sanitary rules and planning of settlements (Ministry of Health of Ukraine from 19.06.96 № 173)
thermo insulation of buildings.	Solid waste management	Visual inspection, diary / Reg. book or receipts from landfills	Continuous daily monitoring. DSanPiN 2.2.7.029-99 sanitation. Soil, clearing settlements, domestic and industrial waste, sanitary protection of the soil. Hygienic requirements for the treatment of industrial waste and determine their hazard class health
	Leakage of water from the heating system	Control over performance	As the work progresses

7) Conclusions

The MHR Project followed the Environmental Monitoring and Management Plan (EM-MP), as developed in the Project's Initial Environmental Examination (IEE) Section 6, above.

The EM-MP includes adherence to the requirements of Ukrainian environmental laws and regulations for all activities funded by USAID. To ensure Project compliance, the following environmental mitigation and monitoring procedures were followed:

- Environmental check lists were required for all grant applications submitted to the Project. The check list responses were checked against the IEE and EM-MP to verify that the funded activities are covered by the IEE.
- Environmental compliance clauses were included in all local purchase orders and grant agreements.
- Certification of environmental compliance was required of the project designer at the acceptance of project design.

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- Certification of environmental compliance was required of the project implementer at the acceptance of project construction.
- The environmental status of Project-funded construction activities was monitored periodically during implementation during routine site visits by Project staff and reports from municipal partners.

All necessary environmental mitigation of project activities was accomplished in accordance with the EM-MP, which was implemented in each grant and demonstration activity funded by USAID, see table under Section 2) Projects description, above.

The Project did not undertake any activities that are not listed on the IEE.