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MID-TERM PERFORMANCE EVALUATION OF THE MUNICIPAL HEATING REFORM (MHR) PROJECT IN UKRAINE

Final Report

September 19, 2012

This Final report was prepared for the Regional Mission to Ukraine of the United States Agency for International Development by Denzel Hankinson, Oksana Drannik, Anastasia Nekrasova, and Leonid Zhyvylo under Evaluation Services IQC task order Contract Number AID-RAN-I-00-09-00016, Task Order Number AID-121-TO-12-00002 awarded to International Business and Technical Consultants, Inc. (IBTCI). The authors' views expressed in this trip report do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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Prepared by

Denzel Hankinson, Team Leader

Oksana Drannik, Team Member

Anastasia Nekrasova, Team Member

Leonid Zhyvylo, Team Member

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GLOSSARY

District Heating:[1] The supply of heat to a number of buildings or homes from a central heat source through a network of pipes carrying hot water or steam. (http://www.decc.gov.uk/en/content/cms/meeting_energy/district_heat/district_heat.aspx)

Fast-Track Cities: The first cities to receive assistance under the MHR Project. Demonstration project were undertaken in each of the fast-track cities. Most of the other project activities were also implemented in these cities. The fast-track cities are: Kramatorsk, Kurakhove, Lutsk, Lviv, Myrhorod, and Yevpatoriia.

Global Development Alliance: A market-based business model for partnerships between the public and private sectors to address jointly defined business and development objectives. Alliances are co-designed, co-funded, and co-managed by partners so that the risks, responsibilities, and rewards of partnership are equally shared. (http://idea.usaid.gov/gp/about-gda-model)

Home Owners Association (HOA): a non-commercial legal entity formed by residents to make decisions regarding management and maintenance of the common parts and related infrastructure of a building and its surroundings. (http://www.inogate-ee.org/sites/default/files/news/Leaflet_EN.pdf)

Individual Thermal Point (ITP): Heating sub-stations which deliver steam or hot water used to heat buildings in a district heating system.

Tariff: The price of a utility service (for example heating or electricity).

ZHeK: A branch of the municipal government that is responsible for common services, such as maintenance and utilities, for some apartment buildings.

[1] Throughout this evaluation report, we use the terms "municipal heating" and "district heating" synonymously.

ACRONYMNS

AUC	Association of Ukrainian Cities
CMU	Cabinet of Ministers of Ukraine
CTF	Clean Technology Fund
CHP	Combined Heat and Power Plant
DAC	Development Assistance Committee
DH	District Heating
EECU	Energy Efficient Cities of Ukraine
ESCOs	Energy Service Company
EBRD	European Bank for Reconstruction and Development
FGD	Focus Group Discussion
GCCI	Global Climate Change Initiative
GDA	Global Development Alliance
GEF	Global Environmental Facility
GoU	Government of Ukraine
HOAC	Home Owner Advisory Centers
HOA	Homeowners Association
ITP	Individual Thermal Point
IBTCI	International Business & Technical Consultants, Inc.
IFI	International Financial Institution
IRG	International Resources Group (Consultants)
KIIs	Key Informant Interviews
MEC	Minister of Energy and Coal Industry of Ukraine
MoU	Memorandum of Understanding
MEPs	Municipal Energy Plans
MHR Project	Municipal Heating Reform Project
Minregion	Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine
NERC	National Energy Regulatory Commission
NURC	National Utilities Regulatory Commission
NEFCO	Nordic Environment Finance Corporation
NGO	Non-governmental organization
OECD	Organization for Economic Co-operation and Development
PMP	Performance Management Plan
SREP	Program from Scaling-Up Renewable Energy in Low Income Countries
RTCs	Regional Training Centers
SAEEEC	State Agency on Energy Efficiency and Energy Conservation
ToR	Terms of Reference

TBE	Theory Based Evaluations
TPP	Thermal Power Plant
USAID	United States Agency for International
ZHek	Zhilishno Ekspluatatsionnaia Kontora (Housing Maintenance Office)

EXECUTIVE SUMMARY[2]

Under Contract Number AID-RAN-I-00-09-00016, Task Order Number AID-121-TO-12-00002 International Technical & Business Consultants, Inc. (IBTCI) and its sub-contractor, IMEPower conducted a mid-term performance evaluation of the USAID funded Municipal Heating Reform (MHR) Project in Ukraine. This report presents the findings, analysis, conclusions and recommendations of a mid-term performance evaluation of the MHR Project. The purpose of the evaluation is to assess the relevance, efficiency, effectiveness, and sustainability of MHR Project activities, with a view to suggesting potential follow-on approaches and strategies.

Background and Context

District heating plays a critical role in meeting basic utility needs in Ukraine, but the sector is stuck in a cycle of financial and physical decay with acute and chronic consequences for service quality and reliability. As a result, it is difficult to justify the higher tariffs required for financial and ultimately physical sustainability of the system. The MHR Project (Task Order Number AID-EPP-I-09-03-00006) is implemented by the International Resources Group (IRG) with 27 implementing partners including ten subcontractors and seventeen grantees. It is implemented in coordination with the national government and municipal governments in 25 partner cities.

Purpose of the MHR Project

The purpose of the four-year, $18.5 million MHR Project is to help Ukraine break this cycle. The MHR Project assists the Government of Ukraine (GoU) and local governments to create a financially viable and sustainable municipal heating sector, able to deliver reliable, quality heating services to the population, public institutions, and local industries.

Evaluation Methodology[3]

The evaluation was conducted between April 19, 2012 and June 13, 2012 in four regions of Ukraine. Additional data was gathered between July 20 and August 17, 2012 in response to USAID comments and questions on a first draft of the evaluation report. The evaluation team reviewed project documents and third party research on municipal heating and energy efficiency in Ukraine and in the region in preparation for the field work, and in processing the findings from the field. A purposeful sample of six cities was selected to represent the geographic scope of the project, project activities, as well as city types, issues, and sizes: Kyiv, Yevpatoriia, Kramatorsk, Kurakhove, Lviv, and Lutsk.

The evaluation team visited project sites in each of the six cities, conducted 48 key informant interviews (KIIs), and a focus group discussion (FGD) in one city. Data requests were submitted before visiting, and responses were discussed and collected during and after the visits. Finally, an online survey was sent as a follow-up to some interviews, in an effort to triangulate the initial findings and to standardize responses to key questions.

As per the Statement of Work (SOW), the evaluators emphasized: (a) the effectiveness of regulatory reform activities, (b) the approach, quality and utility of energy audits, and (c) the quality of municipal energy plans as well as the degree of municipal buy-in to those plans. Where sufficient

[2] Appendix A contains a Ukrainian version of this executive summary.

[3] There are serious limitations to an evaluation of this type, of a project with such a broad geographic scope and broad scope of activities. One of the most limiting constraints was the time available for field work. In a project with 38 partner cities, a purposeful sample of six cannot be shown to be statistically representative of the total population of cities included under the project. Without a counterfactual, the evaluator is also unable to rigorously attribute outcomes or results to project activities. Finally, the use of semi-structured questionnaires made it difficult to standardize interviewee responses in a quantifiable way, and because the range of responses was unknown, the evaluation team had to use content analysis of qualitative responses instead of scales.

data were available, the team evaluated the efficiency of major project activities. Findings were sought in answer to the six evaluation questions in the SOW.

Analysis and Conclusions by Category of Project Activity

The evaluation team first assessed the relevance and effectiveness of each of the six categories of project activities, and used those assessments to answer the six evaluation questions.[4]

Legal, Regulatory and Institutional Reform Activities

The MHR Project supports legal, regulatory and institutional reforms in the development of a national heating strategy. The MHR Project also supports the creation of an independent regulator for heat tariffs to improve the regulation of tariffs and establish mandatory metering of heat consumption. These activities aim to improve the basis of district heating companies to attract investment, and assist the GoU to develop an effective social safety net, and create incentives to form homeowner associations (HOAs). Our analysis of findings includes the following:

- These activities are relevant to the MHR Project's objectives to help create a financially viable and sustainable municipal heating sector. The sustainability of Ukraine's municipal heating sector depends on its financial viability, and its financial viability depends on: (i) increasing tariffs to levels that recover the full costs of service, and (ii) reducing system losses through improvements in energy efficiency in buildings. Financially viable companies are better able to: (i) attract financing for new capital expenditures, and (ii) maintain existing infrastructure.
- These activities have been effective in drafting a number of policies and laws that support the overall objective of the MHR Project—in particular, the Law of Ukraine "On State Regulation of Public Utilities" which created a new independent regulator, the National Utilities Regulatory Commission (NURC). However, several other major laws and policy documents drafted with support of the MHR Project have not been approved, but we do not view this as a sign of the Project's ineffectiveness. We view it as a function of political factors beyond the control or influence of the Project.
- There is not yet evidence that the legal, regulatory and institutional reform activities have been effective in improving the sustainability and financial viability of municipal heating companies.
- NURC has not yet been effective in raising tariffs nor has a social safety net program been implemented, but the legal framework established has made it more likely that such measures will be adopted in the future.

Energy Audits, Investment Catalogs, and Municipal Energy Plans

These activities support local and regional governments of 25 cities to develop long-term Municipal Energy Plans (MEPs), as well as energy audits for public, residential, and municipal heating networks. The MHR Project trained energy professionals on EU Energy Auditing of Buildings methodology (EAB) and hired these EAB specialists to perform energy audits of buildings, which were used as inputs to MEPs. The energy audits and MEPs were, in turn, used to develop Investment Catalogs. Our analysis of findings includes the following:

- These activities are relevant because they aim to improve the energy efficiency of heating networks (inside and outside buildings) and are therefore relevant to the MHR Project

[4] In the body of the report, the evaluation team's findings are stated separately from analysis and conclusions, in which we interpret the findings, using our own judgment.

objective to improve the sustainability and financial viability of district heating companies by reducing losses.

- The energy audits were of high quality, relative to other energy audit methodologies used in Ukraine. There were a few, non-systemic errors found in the energy audits of two cities. However, the quality of the MEPs developed from the energy audits varied across the cities evaluated, and the data were difficult to compare between cities.
- The energy audits and MEPs have been effective in attracting some financing for investments in energy efficiency. Lviv, Lutsk, and Dnipropetrovsk are using their energy audits and MEPs as the basis of discussions with several international financial institutions (IFIs). Agreement has already been reached for the financing of some of these investments.

Demonstration Projects

The MHR Project implements 35 demonstration projects in 11 cities of Ukraine.[5] The demonstration projects in residential and public buildings include: the construction of individual thermal points, installation of ambient temperature regulators, temperature controls, building enveloping (external wall insulation and replacements of windows), and rehabilitation of boiler houses. Our analysis of findings includes the following:

- The demonstration projects were relevant to the MHR Project objectives because they (i) were aimed at reducing losses that can compromise the financial viability of municipal heating companies, and (ii) they created a "demonstration effect" to improve awareness of the potential savings from investments in energy efficiency.
- The demonstration projects were mostly effective in (i) improved comfort levels within buildings because of a better distribution of heat, (ii) reduced monthly heat consumption and, (iii) in most cases, reduced monthly heating costs.
- There were problems with one of the demonstration projects (in Kramatorsk), namely: (i) improper design and improper maintenance of equipment that caused worse temperature imbalances than had existed before the demonstration project, (ii) some customers' monthly bills increased when they switched from "normative" tariffs (calculated on the basis of estimates of heat demand) to metered tariffs, (which measured actual heat consumption), and (iii) in some buildings in Kramatorsk, there was evidence of energy savings, but monthly bills increased because heat tariffs were increased after the demonstration projects were implemented.

Regional Training Centers

The MHR Project support regional training centers (RTCs) in Kyiv, Lviv, Poltava, Sevastopol, and Zhaporiziya to train energy managers, specialists, and municipality staff in energy planning. The evaluation team visited representatives of the RTCs in Lviv and Sevastopol. Our analysis of findings includes the following:

- The RTCs are relevant to the project objectives because they train and disseminate the MEP methodology.
- The conclusion in terms of the use of the training is mixed. Interviewees indicated in the KIIs that the training provided by the RTCs was of good quality and some said that it had helped them improve at their jobs. However, the RTCs were ultimately not effective in achieving the project objective of creating financially viable municipal heating companies.

[5] A "demonstration project" is made up of five buildings in the same city.

The RTCs were not effective in this regard because of legal and regulatory barriers, namely: (i) the absence of a better law supporting HOAs (to spur residential demand), and (ii) municipal budgeting rules which make it difficult for municipalities to borrow.

HOA Advisory Centers

This MHR activity provides start-up funding and training for advisory centers within municipal administrations and at non-governmental organizations (NGOs) to provide assistance in the formation of HOAs, and the implementation of energy efficiency measures in residential buildings. Our analysis of findings includes the following:

- HOA Advisory Centers are relevant to energy savings in residential buildings, and hence improve the financial viability of municipal heating companies.
- Four out of six HOA chairpersons we interviewed in the sample cities indicated that the HOA advisory centers were used by them or other residents. However, two chairpersons in one city (Kramatorsk) said the HOA Advisory Centers seemed more interested in protecting the interests of local communal service companies (ZhEKs).

Public Information Campaign

The MHR Project launched a public information campaign to inform heating customers about energy efficiency measures and municipal heating reforms. The campaign uses media, brochures, and organized events for reaching out to the public. "Energy Efficient Schools and Campuses" curricula were also developed for secondary schools and universities, and included textbooks and teacher's manuals with conceptual and practical lessons on energy and energy savings. Our analysis of findings includes the following:

- The public education campaign is relevant to overcoming important attitudinal and behavioral barriers to energy efficiency.
- The activities were effective, especially the energy efficient schools and campuses activity. Most interviewees we asked about the campaign (mostly city administrators and staff of schools) indicated that they thought it was of high quality and effective.

Analysis and Conclusions by Evaluation Question

The findings and analysis summarized above informs the answers to the six evaluation questions posed in the SOW.

How well has the MHR Project targeted key beneficiaries and counterparts in order to achieve the project purpose?

The project targeted all of the beneficiaries and counterparts who are most important to achieve the project purpose of "assisting national and local governments to create a financially viable and sustainable municipal heating sector, able to deliver quality services to the population, public institutions and local industries". The MHR Project was not successful in engaging all relevant counterparts and beneficiaries (the Project did not have a MoU with the State Agency on Energy Efficiency and Energy Conservation), but it made best efforts to engage them.

To what extent are MHR Project counterparts and/or beneficiaries adopting practices and behaviors critical for the sustainability of the municipal heating sector and commensurable to USAID's investment? Are there any gender or regional differences?

The prospects for sustainability of the Project are mixed. The MHR Project created foundations for sustainability by working closely with counterparts at the national and municipal levels. There is evidence that project counterparts are adopting practices and behaviors critical for the sustainability of the municipal heating sector. However, sustainability is seriously at risk unless NURC is able to

resist high-level political pressure to keep tariffs low, and a supply of private (non-concessional) financing for energy efficiency emerges.

As for gender differences, there were some differences in how men and women were affected by the demonstration projects. Women who participated in the FGD and KIIs preferred higher temperatures in buildings than the men. In the RTCs we surveyed, there were also gender differences: More men were trained than women.

Because of the small sample size, and the way the sample was identified, it is impossible to rigorously attribute differences between cities, or between regions to factors other than random distributions. However, we did observe differences in the effectiveness of the demonstration projects, and the quality of the MEPs between cities. The MEPs were of lower quality in Kramatorsk (East) and Yevpatoriia (South). The demonstration projects had problems in Kramatorsk and Kurakhove (East).

Which of the MHR Project activities appear to have most advanced the project's purpose of helping Ukraine create a financially viable and sustainable municipal heating sector able to deliver quality services to the population, public institutions, and local industries? Which activities have had less of a contribution toward this purpose?

The two project activities which most contributed to the achievement of project objectives were (i) the legal, regulatory and institutional reforms, and (ii) the energy audits, and municipal energy plans, coupled with the demonstration projects.

The biggest obstacles to meeting the project objectives are that tariffs are below cost-recovery levels, heat consumption is not metered, and customers have no control over their heat consumption. The consequences are that district heating companies do not recover enough to invest in the equipment they need to identify and reduce system losses, and customers do not have incentives to reduce heat consumption.

The Public Information Campaign and energy efficiency schools and campuses activities contributed less because they focused on end-use energy savings measures which do little to help the financial conditions of the district heating companies, or improve the quality of service.

How are MHR Project activities relevant to USAID's Global Climate Change Initiative (GCCI)?

The MHR Project is relevant only to the pillar #2 of the GCCI, "Clean energy". Under GCCI, clean energy technologies include both energy efficiency technologies as well as low carbon energy technologies.

Is the MHR Project implementing the most appropriate package of activities to attract private investments into the sector?

The MHR Project implements activities that are *supportive* to attracting private investment to the district heating sector buildings sectors, but the project activities have not yet been effective in attracting substantial private (non-concessional) investment.

How well did the MHR Project management coordinate implementation of project tasks, collaborate with other USAID and non-USAID programs, and verified results attributed to MHR Project activities?

This compound question has three sub-questions. We answer each of the sub-questions below, with reference to the KIIs and online survey.

1) *How well did the MHR Project management coordinate implementation of project tasks?*

Both the KIIs and the online survey responses indicated that implementation was positive and had been carried out effectively.

2) *How well did the MHR Project management collaborate with other USAID and non-USAID programs?*

All of the IFI representatives interviewed by the evaluation team provided mostly positive comments about the Project's coordination with other donor efforts. The only negative comments were that the project relied excessively on local consultants, and that, with such a vast project scope, there was a risk of quality suffering because Project management was "spread too thin".

3) How well did the MHR Project management verify results attributed to MHR project activities?

The MHR Project management did more than USAID required in their SOW to monitor and verify results. The first quarterly report with a PMP was issued for the period February, 2010 a year after the project launched. The MHR Project has since undertaken a number of studies to monitor and verify project results, including two evaluations of the results of the demonstration projects (one for the 2010/2011 heating season, and more recently, for the 2011/2012 heating season), a survey of the effectiveness of the public outreach campaign, and a survey of the energy efficient schools and campuses programs.

Lessons Learned

The findings from the evaluation offer two general lessons for future USAID work in infrastructure sectors:

- **New institutions face the same constraints as existing institutions.** Political pressures on tariffs affected NURC in the same way as its counterpart regulator for electricity and gas (NERC). It may be difficult for donors to create institutions that are "islands of excellence", isolated from the political, financial, and capacity constraints that affect other institutions in a country or sector.
- **The commitment of counterparts determines the success or failure of a project.** Energy audits, MEPs and public demonstration projects are generally more effective in cities (such as Lviv) where municipal government had clearly embraced the idea of reform and done parallel work on their own. The residential demonstration sites are similarly more successful where HOAs are involved. Where a HOA is involved there is a clear commitment of homeowners in the building, and a clear interest in the results. This lesson was internalized by the MHR Project team after the early demonstration project in Kramatorsk and is worthy of dissemination. We therefore include it as a recommendation in the subsection below.

The findings also offer more specific lessons for interventions in the municipal heating and buildings sectors. These findings are summarized in evaluation report.

Recommendations

The findings and analysis suggest a number of changes that could be made to improve the way future projects are designed and implemented:

- For future USAID programs in the sector, demonstration projects should be conducted where HOAs are involved or some other entity has clear responsibility for maintenance of equipment.
- The MHR Project should continue to pursue the possibility of working with SAEEEC to obtain approval for the energy audit methodology developed by the RTCs and to integrate the Municipal Energy Plans into SAEEEC's regional energy planning process.
- Any future funding for HOA advisory centers in Ukraine should focus on working within the existing legal and regulatory environment to secure financing for energy efficiency investments. Centers should provide information on donor-specific financing requirements, and help develop local government mechanisms (for example, loan guarantees) that facilitate financing.

- The Public Information Campaign and future campaigns in other USAID programs should advertise the positive achievements of demonstration projects, and incorporate more demonstration projects in schools where green curricula are introduced.
- The legal and regulatory work should be expanded, in this or future projects in the sector, to include a focus on: i) developing service quality indicators, ii) advice on how to coordinate heat supply tariffs set by the new regulator and the existing electricity and gas sector regulator, NERC; iii) a review of hot water and heat supply tariffs with the aim of removing cross-subsidies between them; and iv) revising normative tariffs to better reflect actual heat demand in buildings.

1. INTRODUCTION

The mid-term performance evaluation of the USAID funded Municipal Heating Reform (MHR) Project in Ukraine was conducted by International Technical & Business Consultants, Inc. (IBTCI) and its sub-contractor, IMEPower under Contract Number AID-RAN-I-00-09-00016, Task Order Number AID-121-TO-12-00002 awarded by USAID to IBTCI under the USAID Evaluation Services Indefinite Quantity Contract (IQC). The subject of the evaluation was the four-year, $18.5 million project aimed at assisting the national Government of Ukraine (GoU) and local governments to create a financially viable and sustainable municipal heating sector able to deliver quality services to the population, public institutions and local industries.

International Resources Group (IRG) has been implementing the project since February, 2009, in collaboration with ten subcontractors and seventeen grantees. The project is scheduled for completion on March 1, 2013. Appendix B contains a list of all subcontractors and grantees involved. The project work was conducted in parallel at national and municipal government levels. Various activities of the project have been implemented in 25 partner cities. The original scope of work included seven tasks. The scope was expanded (after the 2010 presidential elections) by two new tasks, as well as the addition of several sub-tasks, and the project's funding expanded by US $5.2 million.

The IBTCI team ("the evaluation team", or "we") completed interviews and data collection between April 19, 2012 and June 13, 2012 in four regions of Ukraine. Six municipal systems were chosen as representative of the cultural and administrative context: Kyiv, Yevpatoriia, Kramatorsk, Kurakhove, Lviv and Lutsk. The team collected additional data between July 20 and August 17, 2012 in response to USAID comments and questions on a first draft of the evaluation.

This section briefly describes the IBTCI team's understanding of the development hypothesis for the project, and the purpose of the evaluation.

DEVELOPMENT HYPOTHESIS

The purpose of the MHR Project, as stated in the evaluation SOW is to "help Ukraine create a financially viable and sustainable municipal heating sector able to deliver quality services to the population, public institutions, and local industries." The Mission expects the MHR Project to achieve that purpose "by (a) strengthening the legal, regulatory, and institutional framework to improve heating services to customers, (b) developing tariff methodology, (c) educating the public and government officials on these matters, (d) enhancing the capacity of municipalities to plan, manage, and fund the development of the heating systems, and (e) improving energy efficiency in residential and municipal buildings".

DEVELOPMENT PROBLEM BEING ADDRESSED BY MHR

District heating plays a critical role in meeting basic heating needs in Ukraine. More than 65 percent of Ukrainian residential and office buildings use municipal heating services, and the sector accounts for a large share of primary energy use.

In the district heating sector as in other utilities sectors in Eastern Europe and Central Asia, the challenge is to stop a vicious cycle of financial unsustainability and physical decay. Artificially low heating tariffs deprive district heating companies of the funds they need to properly operate,

maintain and invest in their networks.[1] High network losses—most of which occur within buildings—mean district heating companies supply units of heat on which no revenue is earned. Ukraine's district heating systems are estimated to lose, on average, 60 percent of all heat produced. Half of this (30 percent) is estimated to be lost within buildings.[2]

A lack of proper technical equipment on the demand side means customers receive a poor quality of service, and have little ability to control what heat they use. Too little heat in some apartments means the district heating companies have to over-heat the building to ensure the coldest apartments are comfortable. Too much heat in other apartments forces customers to open their windows in winter. Service quality and reliability deteriorate as a consequence of sustained financial hardship in the district heating companies, making it very difficult to justify to customers the higher tariffs required for financial (and ultimately physical) sustainability of the system.

The most acute consequences of this vicious cycle have been seen in Ukraine, for example, in the city of Alchevsk, where the district heating system collapsed during the harsh winter of 2006, and residents had to be evacuated. The chronic consequences of this situation can include the following:

- For customers, perpetually poor heat service which, at best, causes discomfort in the winter and, at worst, causes health problems;
- For government budgets, the foreign exchange outlays required to import the substantial amounts of gas required to run inefficient boilers on inefficient systems;[3] and
- For the environment, an inefficient use of fuel which leads to more pollution than would be necessary to deliver heating.

The MHR Project is aimed at helping Ukraine break this cycle, helping to avoid the acute and reduce the chronic consequences by improving the financial viability of district heating companies, and with it their sustainability as service providers.

PURPOSE OF THE EVALUATION

The purpose of this mid-term performance evaluation, as stated in the SOW is to "review the progress made in implementing the MHR Project and assess relevance, effectiveness and efficiency of major project activities, as well as to discuss approaches for potential follow-on programming".

Toward this end, IBTCI was asked to "assess the relevance and effectiveness of MHR Project activities in helping Ukraine create a financially viable and sustainable heating sector able to deliver quality services to the population, public institutions and local industries, as well as to assess the efficiency of major project activities and suggest approaches for potential follow-on programming."

IBTCI was asked to consider all activities of the MHR Project but place particular emphasis on: (a) the effectiveness of regulatory reform activities; (b) the approach, quality and utility of energy audits; and (c) the quality of municipal energy plans as well as the degree of municipal buy-in to those plans.

[1] The term "tariff" is used throughout this document to mean the price of a utility service (for example heating or electricity). For some district heating companies in Ukraine—who fail to recover even their operating and maintenance expenses—this means losing money on every giga calorie of heat they deliver.
[2] International Energy Agency, Energy Policy Review of Ukraine, 2006. Citing the Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine.
[3] Ukraine's district heating boilers run mostly on natural gas and coal. Ukraine has its own coal reserves but has to import most of its natural gas.

The evaluation team was also asked to answer the following six evaluation questions stated in the Scope of Work section of the Evaluation SOW:

- How well has the MHR Project targeted key beneficiaries and counterparts in order to achieve the project purpose?
- To what extent are MHR Project counterparts and/or beneficiaries adopting practices and behaviors critical for the sustainability of the municipal heating sector and commensurable to USAID's investment? Are there any gender or regional differences?
- Which of the MHR Project activities appear to have most advanced the project's purpose of helping Ukraine create a financially viable and sustainable municipal heating sector able to deliver quality services to the population, public institutions, and local industries? Which activities have had less of a contribution toward this purpose?
- Is the MHR Project implementing the most appropriate package of activities to attract private investments into the sector?
- How are MHR Project activities relevant to USAID's Global Climate Change Initiative?[4]
- How well did the MHR Project management coordinate implementation of project tasks, collaborate with other USAID and non-USAID programs, and verified results attributed to MHR Project activities?

IBTCI's full Statement of Work is included in Appendix C. Section 2 describes how the IBTCI team approached the work.

2. EVALUATION DESIGN AND METHODOLOGY

This section summarizes the team assembled for the evaluation, the sampling approach, and the methodology for data collection and analysis.

OVERVIEW OF THE EVALUATION TEAM

The evaluation team included four individuals with experience in the crucial aspects of district heating in Eastern Europe, Central Asia, and in Ukraine specifically. The team was composed of an international team leader from IBTCI, and three consultants from IMEPower, a Kyiv-based consulting firm with extensive experience in Ukraine's energy and utility services sectors. The team leader, Denzel Hankinson is a regulatory and financial economist with more than ten years' experience in the region's energy sector, specific experience in Ukraine's municipal heating sector, and in evaluations of donor-funded municipal heating projects. The local consultants included Leonid Zhyvylo a technical expert with more than 30 years' experience designing and operating municipal heating systems; Oksana Drannik, a regulatory and financial expert with extensive experience analyzing commercial and operational, and institutional matters related to municipal heating; and Anastasia Nekrasova, a consultant with more than 15-years' experience in major technical assistance projects in the Ukrainian energy sector, and particular knowledge of international procurement procedures and reporting. Appendix D describes the background and experience of each of the team members in more detail, and their responsibilities for this evaluation.

[4] This question is stated differently in IBTCI's SOW. As stated in the SOW, the question is: "How relevant are MHR Project activities relevant to USAID's Global Climate Change Initiative?" USAID reviews of a draft of this evaluation report asked us to reformulate the question and answer it as now stated above.

SAMPLING APPROACH

The size and scope of the MHR Project required a purposeful sample rather than a random sample of municipalities in order to best represent the categories of activities implemented by the project. Six cities in four regions of Ukraine are the "sample cities":[5]

- Kramatorsk and Kurakhove in the East;
- Lutsk and Lviv in the West;
- Yevpatoriia in the South; and
- Kyiv in the center.

The cities were selected to represent the geographic and regional coverage of the wide scope of the MHR Project, and a mix of city typologies, issues, and sizes. The first five cities in the sample (excluding Kyiv) were selected to represent:

- A high concentration of MHR Project activities in each city so that it was possible to collect information on the wide range of project results and outputs; and
- A long period of project activity and performance with cities that have been involved since phase one of the project.[6]

Kyiv was selected (instead of another city in the center, such as Vinnytsia or Poltava), to represent cities (Dnipropetrovsk is another) that had more recently been included in the project.[7]

The evaluation focused on two categories of MHR Project activities implemented at the national level, and four categories of MHR project activities at the municipal levels. We re-grouped and re-named slightly the categories of activities named in our SOW to better align them with how we would need to collect findings, and how we understood project implementers and beneficiaries to view them.[8] We focus on the followings categories of activities: (i) Legal, regulatory and institutional reform (which includes improving tariff regulation); (ii) Municipal Energy Plans (MEPs), energy audits and Investment Catalogs; (iii) Demonstration projects; (iv) Regional Training Centers (RTCs); (v) Homeowners' Association (HOA) Advisory Centers; and (vi) Public information campaigns. Appendix Table E.1 shows how the categories of activities listed in our SOW map to the Tasks in IRG's SOW, and the category of activities we use for this evaluation report. Appendix Table E.3 shows in which of the sample cities the categories of activities were implemented.

METHODOLOGY FOR DATA COLLECTION

As per the SOW, the evaluation team assessed the relevance and effectiveness of all project activities, placing special emphasis on (a) the effectiveness of regulatory reform activities, (b) the approach, quality and utility of energy audits, and (c) the quality of municipal energy plans as well as the degree of municipal buy-in to those plans. More specifically:

- We looked for evidence of the **relevance** of project activities to the overall MHR Project objective, as defined in our SOW, namely: "helping Ukraine create a financially viable and

[5] The team also visited former Regional Training Center staff in Sevastopol.
[6] MHRP Activity Map UKR-NM from the USAID/Am website
[7] A new task, Task 9, was added to IRG's SOW in October 2011, to "Provide Extended Assistance to Kyiv and Dnipropetrovsk in MEP and end-use EE.
[8] We use the term "categories of project activities" here because our SOW for this project seems to use the terms "activities", "components", and "items" interchangeably to refer to areas of work done under the MHR Project. It lists three "items" for emphasis (regulatory reform activities, energy audits, and MEPs), and also lists five areas of work (listed in the discussion of the development hypothesis of Section 1 of this evaluation report) "the Mission… expects to achieve the MHR Project's purpose".

sustainable heating sector able to deliver quality services to the population, public institutions and local industries".

- We looked for evidence of the **effectiveness** of project activities in:
    - The quality of the outputs delivered by project implementers; and
    - Whether the activities succeeded in delivering results which could be understood as contributing to the MHR Project's objective. Appendix Table E.4 shows specific categories of effectiveness indicators we asked about in KIIs or data requests. However, the evaluation team generally let interviewees identify what they thought were indicators of effectiveness, and—in deciding whether to include these indicators in our findings—used our judgment as to whether we agreed that these were indicators of effectiveness.

Where possible, we also evaluated the efficiency of the project activities. We looked for evidence of the **efficiency** of project activities in whether:

- According to the PMP, the activities achieved more (in terms of outputs) than initially intended by the MHR Project Management;
- According to the PMP, the activities were implemented along the timeline originally intended by the MHR Project Management;
- Interviewees or Project documents mentioned other criteria which indicated an efficient use of resources overall or an efficient use of Project resources (for example, the leveraging of other, non-USAID funds for certain project activities).

However, it is important to note that the efficiency of the MHR Project is difficult to measure in any rigorous way because:

- Doing so would require a comparison with inputs and outputs of comparable donor-funded municipal heating reform interventions in the region, or, ideally, in Ukraine. We are not aware of any interventions in the region that would allow for meaningful comparison.
- USAID's MHR Project management had considerable flexibility to allocate resources as they needed to different activities. Because budgets were flexible it was difficult for us to assess whether targets were hit using resources originally allocated to specific activities.

Seven techniques or tools were used to collect data on the relevance, effectiveness and efficiency of project activities:[9]

- *A review of project documents.* The team reviewed documents on the MHR Project website, quarterly project reports prepared by project implementers, and a range of other project documents prepared by project implementers. The evaluation team reviewed project documents to develop findings on the effectiveness and efficiency of all project activities.
- *A review of third party documents.* The team reviewed third party documents about the municipal heating sector in Ukraine and elsewhere in Eastern Europe and Central Asia. The review of third party documents was used to inform our findings on the relevance of MHR Project activities to meeting the project objective. Appendix F contains the project documents we reviewed, as well as third party sources consulted.
- *Data requests.* The evaluation team sent data requests to each city in advance of our visits. Data requests were used to collect findings on the effectiveness of the public information campaign, HOA advisory centers, RTCs, energy audits, Investment Catalogs, and MEPs. Appendix G contains copies of the data requests sent.

[9] Appendix Table E.2 shows, in more detail, which techniques were used to assess which Project activities.

- *A Focus Group Discussion (FGD) in one city, Yevpatoriia*. The FGD was used to collect findings on the effectiveness and efficiency of the demonstration projects in residential buildings. FGD participants were residents of apartment buildings (some of whom were also HOA representatives) identified in cooperation with city administration officials. Appendix G contains copies of the questions asked in the FGD.[10]
- *Expert assessments*. For some of the project activities, we relied on the evaluation team's expertise in a particular area to develop findings (as well as analysis). We relied on our own expertise to developing findings (as well as analysis and conclusions) on the approach and quality of energy audits, and the quality of municipal energy plans. We also relied on our own expertise (supported by third-party documents), to develop findings on the relevance of project activities to meeting the project objectives.
- *Site visits for demonstration projects and energy audits*. During our interviews in each of the sample cities, we also visited sites which had been the subject of demonstration projects and energy audits. Appendix Table E.5 (in Appendix E) lists the sites we visited which were the subject of demonstration projects and energy audits.
- *Key Informant Interviews (KIIs) with project implementers, beneficiaries, international financial institutions (IFIs) and other stakeholders*. KIIs were used to collect findings on the relevance, effectiveness and efficiency of all activities, and, in particular, to triangulate with information collected through the FGD, data requests, and document reviews. The KIIs were conducted as semi-structured interviews, with groupings of topics and questions that we asked in different ways, for different interviewees. Candidates for KIIs were identified through suggestions by USAID and the project implementers. Project implementers then provided specific contact details for each interviewee. As we conducted the KIIs, we also identified other individuals to interview (through the suggestions of other interviewees), and added them to our list. Appendix G includes the interview guides we used. Appendix I provides more details on individuals we interviewed for the KIIs, and their affiliations.
- *An online survey*. The survey was sent to 48 of the people we had interviewed in person. The purpose of the survey was to better standardize our findings on certain evaluation criteria and in the answers to certain evaluation questions. Of the 48 surveyed, 22 responded. Respondents represented a mix of Project counterparts, beneficiaries, implementing partners, city administration officials, and representatives of HOAs. Ukrainian, Russian, and English versions of the survey were prepared. The cover letter to respondents contained links to all three versions of the survey. We used IP addresses to check that no respondent filled-out the survey twice. Appendix G contains an English version of the survey, as well as the cover letter sent with it. Appendix I provides more information on the individuals who received the survey invitation, and those who responded.

At least one IMEPower team member (but usually two) were present at all KIIs, and the FGD. The team leader was present at most of the KIIs in Kyiv, and Lviv, and all KIIs in Yevpatoriia and Lutsk. He also attended (but did not facilitate) the FGD in Yevpatoriia. The technical expert (for heating) also visited five out of 35 project demonstration sites. In most cases, he was accompanied by other evaluation team members, unless other KIIs were conducted simultaneously.

[10] Similar questions were asked to groups of residents in Kramatorsk, Kurakhove, and Lviv, but were not held using a formal FGD methodology. The evaluation team attempted a formal FGD approach in Kramatorsk, but residents' dissatisfaction with some of the project results made it impossible to keep to the formal approach, and our original list of FGD questions.

LIMITATIONS TO THE EVALUATION METHODOLOGY

The evaluation methodology described above has a number of severe limitations that are typical of process or performance evaluations where qualitative interviews are the only basis for determining how and to what extent activities are carried out:

- The purposeful sample of cities cannot be shown, statistically, to be representative of the total population of cities; the sample was chosen because they represented the level of implementation and the cultural diversity of Ukraine that may have influenced the implementation of the program.
- The evaluator may judge that the MHR Project contributed to certain outcomes, but cannot prove in cause and effect terms that the outcomes are attributable to the MHR Project.
- As with all studies using survey instruments of any kind, it may be affected by recall bias.
- Because project implementers helped us to identify individuals for KIIs, and project beneficiaries helped us identify individuals for the FGD or interviews with beneficiaries of the demonstration projects, there is a risk of sampling bias.
- The semi-structured questionnaires we used made it difficult to standardize interviewee responses in a quantifiable way. In identifying "findings", the evaluator must inevitably, on some occasions, use his or her own judgment about what the interviewee really meant with a particular comment, and whether the response was as credible as other respondents, given his or her knowledge of the topic.
- Because the range of responses was unknown, scales were not possible, and in a sense, the qualitative responses required "content analysis" in order to decide which response was a "yes" or a "no," e.g. good quality training or not as is pointed out below.
- The most limiting aspect was the time allocated to conduct the fieldwork. It was not possible to add additional cities or interviews to triangulate as much as one would prefer.

METHODOLOGY FOR DATA ANALYSIS

In keeping with the mixed methods approach to assessing project implementation, the team members constantly compared notes at each stage (document reviews, and KIIs) of data collection in reference to the evaluation questions stated in the SOW. The findings at each stage were noted and, as the team arrived at conclusions by content analysis and triangulating sources, the process provided conclusions which could be explained, and references to sources maintained. Recommendations were based on these conclusions and the consultant's and IMEPower's experience with other heating system evaluations. The post-fieldwork survey was used as a check on conclusions reached from the open-ended interviews. This survey data provided corroborating evidence in the form of percentages of informants' opinions on the key evaluation questions.

3. FINDINGS

This section describes the IBTCI team's findings from the KIIs, the FGD, and review of project documents. The first part of this section presents findings on the project activity categories identified in Section 2. The descriptions of findings are grouped by the evaluation criteria (relevance, effectiveness, and efficiency) listed in Section 2. We begin by describing our findings on the activities identified in our SOW as activities for special emphasis, namely: the legal, regulatory and institutional reform activities, the energy audits, and municipal energy plans.

The second part of this section describes findings relevant to answering each of the evaluation questions in our SOW.

LEGAL, REGULATORY AND INSTITUTIONAL REFORM ACTIVITIES

The MHR Project's legal, regulatory, and institutional reforms focused on developing a national heating strategy, establishing an independent regulator for heat tariffs, improving regulation of tariffs, establishing mandatory metering of heat consumption, improving the basis of district heating companies to attract investment, assisting the GoU to develop an effective social safety net, and creating incentives to form HOAs.

Relevance

The activities that were focused on tariff regulation, establishment of the regulator, metering and investment attraction, were relevant to the MHR Project's objectives of helping to create a financially viable and sustainable municipal heating sector. Numerous third party reports offer evidence that the sustainability of Ukraine's municipal heating sector depends on the sector's financial viability, and that financial viability in turn depends on:

- Increasing tariffs to levels that recover the full costs of service per unit sold (GCal). Average household heating tariffs in Ukraine are estimated to be roughly 80% of the average cost of producing a unit of heat for a typical district heating company.[11]
- Reducing losses, so that the district heating companies recover revenue on more of the units they produce. Losses are typically categorized as "technical" or "non-technical" (also called "financial losses"). Each category of losses, and the relevance of the MHR Project activities to reducing them, are described below:
    - **Technical losses.** Much of the heat physically lost in district heating networks (technical losses) is lost within buildings. Energy efficiency improvements can reduce such losses for the district heating companies, thereby reducing their costs. The activities focused on incentivizing HOA formation were relevant because they helped to address the problem of losses. HOAs can help facilitate investments in energy efficiency because they help to solve the "public good" problem of common areas, by transferring ownership of common areas from the ZHeKs to residents represented by a HOA. The HOA is better able to coordinate tenants to fund investments in common areas of the building. Many studies have found that the creation of HOAs is an important activity in solving the problems of district heating and improving energy efficiency in the region.[12]
    - **Non-technical losses.** Non-technical losses in Ukraine's district heating systems typically range from 20-50% in winter.[13] Some of these system losses occur because of the use of so-called normative tariffs in most of Ukraine's buildings (roughly 70 percent). Customers paying normative tariffs pay for heat on the basis of assumptions about their heat consumption, rather than for their actual consumption. Losses occur when the assumed consumption is lower than actual.[14]

Financially viable companies are better able to attract financing for new capital expenditure, and better able to maintain existing infrastructure. According to the World Bank, a well-run district heating company invests 15-25 percent of its revenues in capital improvements and new

[11] Calculated by the evaluation team based on data from the Minregion's website, as of June 2012.
[12] See, for example, Martinot, Eric, and Vladimir Usiyevich. 2001. "Energy Efficiency." In The New Russia: Transition Gone Awry, ed. Lawrence Klein and Marshall Pomer, 365–378. Stanford University Press. Appendix F includes other references on barriers to energy efficiency and municipal heating reform.
[13] Based on prior experience and analysis by evaluation team members in Ukraine's district heating sector.
[14] Normative tariffs are based on: (i) Assumptions about the level of demand in a building, based in part on the number of floors and size of floor space; (ii) assumptions about the outside temperature for the heating season in a particular region; and (iii) assumptions about the length of heating season in a particular region. (World Bank, 2012.)

infrastructure. Ukraine's district heating companies typically invest, in contrast, only 3 percent.[15] Underinvestment leads to poor service quality. The poor quality of heating service provided was a major theme emerging from the FGD and project beneficiary KIIs we conducted. Roughly sixty percent of the heating customers we interviewed noted problems with the level of temperatures in apartment buildings, and the distribution of heat within them.[16] A World Bank survey of customers in Lviv and Mykolaiv similarly found that customers were dissatisfied with the lack of routine maintenance of heating networks by ZHeKs, and the recurrent practice of starting the heating season later than the established date.[17]

The body of literature on best practices in utility regulation provides evidence that political interference in tariff-setting is a common barrier to the financial viability of utility services. One way to move tariffs toward full-cost recovery, and improve service quality is through the creation of independent regulatory bodies which can help distance decisions about tariffs from political pressures. Representatives from NURC and NERC, as well as other key informants, pointed out that political interference in tariff setting was a particular problem in Ukraine. Prior to 2009, local politicians would sometimes set tariffs artificially low for political reasons or because of concerns about affordability. Affordability of heating tariffs was one of the main concerns of customers surveyed in the aforementioned 2012 World Bank study. Customers said they coped with higher heating bills by disconnecting from the network, accumulating debt, or applying for housing allowance (subsidies) from government.

The results of the online survey are that 17/17 respondents who were familiar with the legal, regulatory and institutional reform activities found them to be highly relevant (10), or somewhat relevant (7).

Effectiveness

The legal, regulatory and institutional reform activities were effective in drafting a number of policies and laws that support the overall objective of the MHR Project. The major documents include:

- Developing a "Concept" or policy on the modernization of heat supply systems (State Target Program on Modernization and Development of Heating Supply System of Ukraine for 2012-2022) which was adopted by Minregion. This Concept was planned by the Cabinet of Ministers for use in the development of a broader policy on housing and communal services;
- Developing an Action plan for the legal provision of energy-efficiency policies heat consumption and modernize of heat supply system' was approved by CabMin Order on July 30, 2012 under registration #588. This document contains a list of specific tasks which have to be performed by government authorities in the heating supply sector.
- Developing a legal framework for the establishment and operation of the National Utilities Regulatory Commission (NURC), a regulator specifically responsible for tariff setting for heat production, transportation and supply. The Law of Ukraine "On State Regulation of Public Utilities" gives NURC responsibility for setting heating tariffs. This responsibility was formerly held by local government and then, later, by the National Energy Regulatory Commission (NERC), designated to serve as an interim regulator for the sector. Appendix M includes a

[15] Semikolenova, Yadviga, Lauren Pierce and Denzel Hankinson. "Modernization of the District Heating Systems in Ukraine: Heat Metering and Consumption-Based Billing". The World Bank, 2012.
[16] Based on responses in KIIs and the FGD.
[17] Semikolenova, Yadviga, Lauren Pierce and Denzel Hankinson. "Modernization of the District Heating Systems in Ukraine: Heat Metering and Consumption-Based Billing". The World Bank, 2012.

description of the responsibilities of NERC and NURC. The new regulator, NURC, has responsibility for heat transmission and distribution tariffs, and heat production at boilers. The incumbent energy regulator NERC has responsibility for setting heat tariffs for heat generation from cogeneration plants, combined heat and power plants (CHPs), and thermal power plants.[18]

- Developing a new tariff methodology for NURC aimed at moving district heating companies toward financial viability.
- Developing recommendations for NURC and for the Ministry of Labor and Social Policy on improving the mechanism for social support to low income customers. These recommendations are currently being considered by the respective bodies.

However, several other major laws and policy documents drafted with support of the MHR Project were not approved. The project documents and our KIIs with two project implementers responsible for these activities indicate that the following major laws supported by the project were not passed (Appendix O contains a table from project implementers summarizing the status of the major legal and regulatory documents developed with MHR Project support):

- A draft National Heating Strategy. As noted above, a "Concept" was approved by Minregion, but the National Strategy drafted under the MHR Project was never approved because of an administrative reform in Ukraine, which took place in December 2010, after the presidential elections. The administrative reform resulted in the dissolution, merger, and creation of new government authorities.
- An Action plan for the provision of energy-efficiency policies on heat consumption and the modernization of heat supply systems. This Action Plan was approved by CabMin Order on July 30, 2012 under registration #588.
- The Law of Ukraine "On Energy Efficiency of Residential and Public Buildings". This draft law was adopted by the Parliament in a first reading and prepared for the second reading. The draft law went through substantial changes in the second reading and was withdrawn. Minregion is planning to develop and submit a revised draft to the Verkhovna Rada which better resembles the first draft.
- Amendments to the Law of Ukraine "On Associations of HOA". This law was adopted by the Parliament, but was vetoed by the President of Ukraine.
- Amendments to the Law of Ukraine "On Housing and Communal Services". The Cabinet of Ministers withdrew the proposed amendments to the law after presidential elections in 2010. Consideration of this law was interrupted by municipal (mayors and city councils) elections in 2010. It was decided instead to develop a more comprehensive Code on housing and communal services.

More generally, there is not yet evidence that the legal, regulatory and institutional reform activities have been effective in improving the sustainability and financial viability of municipal heating companies. NURC has started the process of reviewing heating tariffs but has not yet established new, higher tariffs. NURC's ability to increase tariffs has been affected, in part, by: (i) GoU statements that there will be no increases in the price of natural gas or tariff changes until after the

[18] The heat supplied in Kramatorsk, for example, is the residual waste heat from a thermal power plant (not a CHP).

development of social transfer to protect low income customers[19]; and (ii) a requirement by the President of Ukraine that there be a single heating tariff for all customers in Ukraine.

The results of the online survey are that 13/16 respondents who were familiar with the legal, regulatory and institutional reform activities found them to be highly effective (3), or somewhat effective (10). Four of the respondents found the activities to be somewhat ineffective.

Efficiency

According to project documents from a lead GoU counterpart (and lead project implementer), the 2010 administrative reform delayed the expected delivery of many of the legal, institutional and regulatory activities. It delayed some of the activities indefinitely, and made some of them (such as the draft National Heating Supply Strategy), obsolete.

ENERGY AUDITS, INVESTMENT CATALOGS, AND MUNICIPAL ENERGY PLANS

This activity supported local and regional governments of 25 cities in developing long-term Municipal Energy Plans (MEPs). Energy audits were developed for public buildings, residential buildings and municipal heating networks. Energy audits were used as inputs to Municipal Energy Plans (MEPs). The Investment Catalogs were developed based on MEPs and Energy Audits.

Relevance

As we noted in our findings on relevance of the Legal, Regulatory and Institutional reform activities, heating system losses jeopardize the financial viability of district heating companies. Improving energy efficiency is about reducing losses in heat production and transmission, and its distribution within buildings. Measures to improve the energy efficiency of heating systems are therefore relevant to the MHR Project's objective of improving the sustainability and financial viability of district heating companies.

A number of recent studies have indicated that an important barrier to private investment in energy efficiency in Ukraine (and in the region) is a lack of appreciation for energy efficiency potential, a lack of appreciation for the savings that can come about through relatively low cost investments in energy efficiency, and a knowledge of what investments to make. Consumers and private companies tend to systematically overestimate the costs, and underestimate the benefits of energy efficiency investments.[20]

The energy audits, Investment Catalogs and MEPs produced under the MHR Project provided a menu of possible energy savings investments which had not existed before in Ukraine. This finding is supported by statements from all of the IFI/donor organizations interviewed, all of whom are also using the energy audits and MEPs to identify investments for possible future financing.

The evaluation team is not aware of any practice of Municipal Energy Planning in Ukraine, other than that developed by the MHR Project. This view is supported by an interview with an NGO and project implementer whose members include city officials. Interviews with staff of the same organization noted that the concept of energy audits was not new to Ukraine. The Energy Management Center of Kyiv Polytechnic Institute trains and certifies energy auditors (NTTU-KPI")

[19] See, for example: http://www.ria.ru/world/20120810/720828383.html

[20] See, for example, Energy Efficiency: A New Resource for Sustainable Growth: Researching Energy Efficiency Practices among Companies in Armenia, Azerbaijan, Belarus, Russia, Georgia, and Ukraine. International Finance Corporation (IFC). 2010. (http://www.ifc.org/ifcext/ueep.nsf/AttachmentsByTitle/BelarusEEsurvey/$FILE/BelarusEEsurveyEN.pdf). Appendix F contains additional references to sources that confirm this point.

and the Centera Energy Audit Group of SAEEEC certifies energy auditors, but the methodology developed under the MHR Project was more relevant to Ukraine than the existing methodology, in particular, because the software used for the audits could be tailored to regional weather and climate conditions in each city.

The results of the online survey are that 20/20 respondents familiar with the energy audit activities found them to be highly relevant (13), or somewhat relevant (7). The results of the online survey are that 17/17 respondents familiar with the MEPs found them to be highly relevant (13), or somewhat relevant (4).

Effectiveness

As described in Section 2, our SOW asks us to place special emphasis on "the approach, quality and utility of energy audits", and "the quality of municipal energy plans as well as the degree of municipal buy-in to those plans". We therefore describe our findings on the energy audits and MEPs separately.

The approach, quality and utility of the energy audits

- **Approach.** We interviewed 7 organizations with individuals who had been trained in, or used the energy audit methodology developed under the MHR Project. Of these, three indicated that the energy audit methodology was of very high quality, and better than what had been used previously in Ukraine. One interviewee elaborated, saying that the methodology was better because it included software of equally high quality. The auditing methods typically used in Ukraine and Russia do not call for the application of efficient software, and therefore are difficult to use and fail to provide similar results when performed by different auditors. The same interviewee added (and the evaluation team's technical expert confirmed) that the software was of high quality because it contains thermal performance indicators for nearly all construction materials and engineering infrastructure, as well as climate data for Ukrainian cities and towns.
- **Quality.** The evaluation team's technical expert found all of the energy audits he reviewed to be of high quality. There were, nevertheless, some errors in some of the energy audits we reviewed. Box 3.1 provides examples of some of the errors identified in our review.

Box 3.1: Examples of Errors found in a Review of Energy Audits

- The technical and economic assessments of thermal performance of buildings in Lutsk and Yevpatoriia assumed nearly the same tariffs for both heating and electricity despite the fact that electricity tariffs are 30-40 percent higher than heating tariffs. This assumption led to significant deviations in the efficiency of the proposed measures.
- When calculating the payback period for replacement of windows in Lviv, the heat-transfer resistance of metal-plastic windows was understated, with reported improvement of 18 percent versus the actual 2-3 times improvement. As a result, the estimated payback period for one of the buildings was 63.6 years, and for the other 77.7 years, both of which significantly exceed the maximum lifetime of such windows (50 years), thus compromising financial viability of replacing windows.
- All energy audits in Kramatorsk assumed that reflection screens installed behind radiators increased room temperature by 2-3 degrees Celsius, whereas calculations and observed data show a much lower figure.

- **Utility**. The energy audits have been effective in attracting some financing for investments in energy efficiency. Two IFIs, EBRD and NEFCO, have used the energy audits and MEPs

to identify areas of possible investment in public buildings and district heating systems in Lviv, Lutsk, and Dnipropetrovsk. The World Bank is also preparing a project to finance investments in district heating systems in several municipalities. We did not learn of any private investors that were acting on the findings of the energy audits. Two interviewees from donor/IFI organizations noted, however, that the Investment Catalogs would have been more useful if—in addition to showing payback periods for energy efficiency investments—they also provided information on the creditworthiness of the municipalities as borrowers.

The quality of municipal energy plans and the degree of municipal buy-in

- **Quality.** The evaluation team's technical expert found that the quality of the MEPs was more variable than that of the energy audits. The MEPs in Lviv and Lutsk were of better quality than those in Kurakhove, Kramatorsk, and Yevpatoriia. Box 3.2 shows examples of some of the problems found in the MEPs in Yevpatoriia and Kurakhove. Two key informants commented that the data in the MEPs (for example, on heating losses) were difficult to compare between cities because the data had not been collected in a consistent manner. Another key informant observed that the difficulty in comparing data between cities results from a lack of specificity in the methodology on how to collect and input data required to develop the MEP, and the lack of software which (as with the EE audit methodology) can help to standardize inputs. The methodology for MEPs provides only a list of data to be collected, without sufficient detail to ensure consistency in data collection between cities.

Box 3.2: Problems found in a Review of Municipal Energy Plans

The Municipal Energy Plans (MEPs) in Yevpatoriia and Kurakhove showed some weaknesses in justification of the assumptions made, and in the quality of the analysis (in other words, the absence of mistakes). For example:

- In Yevpatoriia, the MEP asserted that:
  - Consumers could reduce their heat load by 60%. Whereas, in some buildings this may be possible it is likely to be too aggressive an assumption for aggregate consumption, and was provided without justification.
  - 75 percent of natural gas-fired energy production could be replaced with local fuels. It is doubtful that Yevpatoriia has any local fuel sources that can be used to replace three-quarters of production, and more doubtful still that such sources would be cheaper or cleaner than natural gas (the MEP makes no mention of solar, however, despite Yevpatoriia having one of the highest solar radiation rates in Ukraine).
- In Kurakhove, the MEP has a number of mistakes, including assuming the wrong number of hours for a heating season (the MEP assumes it is one month shorter), and assuming the wrong pipe diameter for the system (the MEP assumes 400 mm diameter when the pipes are in fact 250 mm in diameter).

- **Municipal buy-in.** There is evidence of municipal buy-in to the plans in some of the sample cities. Lviv, Lutsk, and Kyiv are using their MEPs for discussions with NEFCO, EBRD, and the World Bank on financing (and as noted above, agreement has already been reached for financing of some of these investments). In Lviv, unlike the other sample cities visited, the City has taken the additional step of creating an inter-disciplinary committee to oversee the preparation of the MEP. However, two project implementers noted that the effectiveness of the MEPs was limited by the fact that some cities will have trouble implementing MEPs on their own because they don't have adequate energy management

systems, and (although it is required by law) do not have any designated energy managers. Another project implementer said that MEPs could not be implemented because municipalities did not have access to sufficient funding/financing to implement them.

The results of the online survey are that 18/20 respondents familiar with the energy audit activities found them to be highly effective (8), or somewhat relevant (10). One interviewee found the energy audit activities to be highly ineffective, and another said they didn't know. The results of the online survey are that 15/17 respondents familiar with the MEPs found them to be highly relevant (8), or somewhat relevant (7). One respondent found the MEPs to be somewhat ineffective, and another said they didn't know.

Efficiency

There is some evidence that more energy audits, Investment Catalogs and MEPs were completed than had initially been planned. According to quarterly project reports, 21 municipalities had energy plans completed in 2011, which surpassed the target of 20 for the year.

DEMONSTRATION PROJECTS

The MHR Project implements 35 demonstration projects in 11 cities of Ukraine. The demonstration projects included a variety of energy savings measures implemented in residential and public buildings. The measures include the construction of individual thermal points, installation of ambient temperature regulators, temperature controls, building enveloping (external wall insulation and replacements of windows), and rehabilitation of boiler houses. As noted in Section 2, the evaluation team reviewed five demonstration projects (in five cities).[21] The findings in this section refer only to the demonstration projects we reviewed.

Two key informants pointed out that the demonstration projects were relevant because they were implemented in a variety of types of buildings (different vintages and construction types), and in buildings that are used for different purposes (public and private use). The MHR Project had demonstration sites in seven public buildings and 20 residential buildings, ranging in age from 30 to 50 years old. Of the projects we reviewed, three were implemented within public buildings, and 17 in residential buildings.

Four of the projects we reviewed are implemented outside of buildings, on the district heating network itself. For example, a project in Yevpatoriia focuses on modernizing boiler houses, and a project in Kramatorsk focused on rehabilitating portions of the external district heating network.

Relevance

As noted above, energy efficiency measures reduce network losses, and reducing losses can improve the financial viability of municipal heating companies. As also noted above, studies on energy efficiency in the region indicate lack of awareness is an important barrier to investments in energy efficiency. Building owners—whether public or private—routinely underestimate the energy and monetary savings possible from investments in energy efficiency, or may be unaware of which investments to make. There is evidence (described in the section on "effectiveness" below) that most of the demonstration projects have indeed achieved this positive demonstration effect.

The results of the online survey are that 20/20 respondents found the demonstration project activities to be highly relevant (12), or somewhat relevant (8).

Effectiveness

[21] According to MHR Project implementers, a demonstration project includes five sites in each city with metering projects. We reviewed 23 demonstration sites, across the five demonstration projects.

The effectiveness of the demonstration projects varied in the cities sampled in the evaluation. Four of the five demonstration projects we reviewed were successful. There were problems only in Kramatorsk.

Where the demonstration projects (in buildings) were successful, the outcomes were:

- Residents experience higher levels of comfort because of a better distribution of heat within the building. In residential buildings, residents in the colder apartments enjoy warmer temperatures, and residents in over-heated apartments (where temperatures get high enough in winter that people have to open their windows), enjoy cooler temperatures. According to KIIs with HOA chairmen, households, directors of kindergartens and parents, and (in Yevpatoriia) management and medical staff of a clinic, temperatures range between 10 and 28 degrees Celsius within buildings.
- In buildings where ITPs, heat meters and temperature controllers with ambient sensors were installed, there were cost savings on monthly bills of 5-12 percent because i) there was lower heat consumption by the building overall, and ii) customers paid only for the heat they actually used rather than paying on the basis of a normative tariff. Savings were higher in buildings (eight out of the twenty-four reviewed, including one public building, a clinic in Yevpatoriia) where enveloping measures were implemented in addition to ITPs, heat meters and temperature controllers with ambient sensors. In such buildings, the savings range from 40-60 percent. The evaluation team identified the savings through a review of actual heat meter readings and KIIs with HOA chairpersons or staff of the public administration buildings affected.
- Increased awareness of, and interest in, energy efficiency measures in the buildings where the pilot projects took place and in neighboring buildings. Comments from 45 KIIs indicated a positive demonstration effect. According to the chairperson of the HOA of one condominium complex in Lutsk, residents have continued to implement energy savings measures on their own because of the positive demonstration effect. A Lutsk kindergarten has also continued to implement energy savings measures on its own, with funds from the city budget and from parents (for new windows).

In contrast, in Kramatorsk, the problems were as follows:

- In Kramatorsk, customers said they did not know the equipment was being installed or what effect it would have.[22]
- Improper design and improper maintenance of equipment in the residential demonstration project in Kramatorsk caused worse temperature imbalances than had existed before the demonstration project (with temperatures ranging from 14 to 28 degrees Celsius), and high noise levels from the pump system.
- In the residential demonstration sites in Kramatorsk, customers' monthly bills increased when they moved from a normative heating tariff to a metered tariff. Building-level heat meters (as opposed to apartment-level meters) were installed in nearly all of the residential demonstration sites. Some customers' monthly bills increased with a metered tariff because the normative tariffs had been underestimating the actual heat use of the building, with very

[22] One customer at one demonstration project Yevpatoriia (who participated in an FGD) also said she was surprised when a new heating substation was erected in a courtyard near her building that children had used as a place to play. They had known that their heating system was going to be replaced, but had not known the full nature of the works that would be completed. Unlike the customers in Kramatorsk, this customer (and other customers in this building were very satisfied with the results of the demonstration project. Their only complaint was that they weren't told exactly what type of work would be done.

high heat losses. This was a particular problem in buildings of very poor quality construction. The lack of insulation meant that heating bills on the normative tariff were much lower than a level reflective of actual heat consumption. The residential demonstration sites in Kurakhove also had an unintended consequence with respect to tariffs. Kurakhove's district heating system is an open system in which the pipe that carries hot water through radiators is the same pipe that delivers hot water to taps (in most cities, there are two pipes, one for radiators and another for hot water). This meant that residents were charged for hot water at the heating tariff (which was increased in the winter of 2011-2012) since all hot water—whether for radiators or taps—flowed through the meter.

- In Kramatorsk, an increase in heating tariffs in the winter of 2011-2012, annulled cost savings that some of the buildings would have otherwise enjoyed. Three of the buildings would have otherwise seen their bills decrease 8-17 percent had it not been for the tariff increase. The combined effect of the switch to metered tariffs (previous bullet) and the increase in the metered tariff meant heat customers had been billed 150-200% more than in the previous period.[23]
- Because of the problems in Kramatorsk, the city authorized the removal of the equipment after the 2011-2012 heating season.[24] In removing the demonstration project equipment, the earlier heating equipment was not properly reconnected. Customers were not notified that the equipment was going to be removed, and key informants expressed dissatisfaction that it had been taken out without their knowledge.

As one of the MHR Project implementers and a USAID staff person indicated, the project in Kramatorsk was the first demonstration project implemented (one interviewee called the Kramatorsk projects the "pilots of pilots"). These informants also noted that the Kramatorsk projects differed from most of the other demonstration projects in that HOAs were not involved (in Kramatorsk, all of the projects were implemented in residential buildings; there were none in public buildings). Our review of the demonstration projects confirms this. Of the 17 demonstration sites we reviewed in residential buildings, 11 were implemented with the cooperation of HOAs.

As noted above, two of the projects we reviewed were implemented outside of buildings. The project to modernize boiler houses in Yevpatoriia achieved substantial fuel and electricity savings. We were not able to identify any savings resulting from the heat network improvements in Kramatorsk.

The results of the online survey are that 17/20 respondents who were familiar with the demonstration projects found them to be highly effective (3), or somewhat effective (14). Two of the respondents found the activities to be somewhat ineffective, and one said they didn't know.

Efficiency

Our review of project documents and KIIs with project implementers indicates that more demonstration projects were implemented than planned, using the same level of resources. The MHR Project had originally planned for four fast-track cities, but later expanded the scope to six.[25]

The project also made use of Global Development Alliance (GDA) arrangements to leverage funding for some of the projects. In Kurakhove, Donbass Fuel and Energy Company (DTEK)

[23] Heat production tariffs were increased by NERC for the power plant which provides heat. Heat distribution tariffs (the jurisdiction of NURC) were not increased.

[24] One of the sets of equipment has been reinstalled, with positive results, in another building.

[25] The fast-track cities were the first cities to receive assistance under the MHR Project. Demonstration project were undertaken in each of the fast-track cities. Most of the other project activities were also implemented in these cities. The fast-track cities are: Kramatorsk, Kurakhove, Lutsk, Lviv, Myrhorod, and Yevpatoriia.

funded a portion of the demonstration projects. GDAs were used in two other cities, in cooperation with private companies Contour Global and DTEK.

However, in Lviv, work on one of the intended demonstration sites has not been completed because the city did not have funds for the project.[26]

REGIONAL TRAINING CENTERS

Regional training centers (RTCs) were organized in Kyiv, Lviv, Poltava, Sevastopol, and Zhaporizya to train energy managers, specialists and municipality staff in the energy audit methodology, energy management, and energy planning. The evaluation team visited representatives of the RTCs in Lviv and Sevastopol.

The RTC in Sevastopol trained 112 people (65 males; 47 females) between June 2010 and April 2011 on the development of MEPs. The RTC in Lviv trained 127 people (84 males; 43 females) between September 2010 and March 2011 on the development of MEPs, energy audits and (one session) on business planning and attraction of investment. Trainees included representatives of the six municipalities, the municipal heating companies, as well as representatives of the HOA advisory centers.

Relevance

As noted in our findings on the energy audit, investments catalog and MEP activities: (i) the concept of MEPs was new to Ukraine, and (ii) the energy audit methodology introduced was better than the methodology used in Ukraine previously. The RTCs were logically relevant to project objectives in that they were intended to help disseminate the methodologies for energy audits and MEPs (which were, in turn, intended to improve the financial viability of municipal heating companies by reducing losses).

The results of the online survey are that 13/13 respondents who were familiar with the RTC activities found them to be highly relevant (6), or somewhat relevant (7).

However, the methodologies for energy audits and MEPs were not integrated with existing Ukrainian agencies and regulations. The State Agency for Energy Efficiency and Energy Conservation (SAEEEC) is responsible for two areas of activity which overlapped with the MHR Project's energy audit and MEP activities: Approval of an energy audit methodology and regional energy planning.

- Energy audit methodology: Companies may perform energy audits in Ukraine only if they have a license to do so. A company can acquire a license to perform energy audits if it has employees who are officially certified. To obtain certification, an individual must be trained in, and pass a test on an energy audit methodology approved by the State Agency for Energy Efficiency and Energy Conservation (SAEEEC). The energy audit methodology used by the MHR Project is different than the methodology approved by SAEEEC and previously taught in Ukraine.
- Regional energy planning. SAEEEC also undertakes regional energy planning activities. Because SAEEEC was not involved in the project, the MEP methodology taught by the RTCs was not integrated into their regional energy planning process.

Effectiveness

[26] At the time of the project's implementation, the city budget was in deficit. The city now has funds to complete the project, but, because of municipal budgeting rules, is unable to allocate funds to a previous year's expenditure.

We interviewed the staff of two RTCs (nine people), as well as 11 other individuals (in other organizations) who had participated in the training provided by the RTCs.

Six interviewees (in a single, group KII) were asked what the training had helped them achieve, and specifically whether the training had helped them to develop any new business. One interviewee said it had made him better at his existing job (a consultant on energy efficiency). However, none of the interviewees said that it had helped them to develop new business, explaining that the demand for investments in energy efficiency was still low because of legal and regulatory barriers. The legal and regulatory barriers cited by interviewees included the absence of a better law supporting HOAs (to spur residential demand), and municipal budgeting rules which make it difficult for municipalities to borrow. The municipal budgeting rules which (according to various interviewees) make it difficult to borrow are the following:

- GoU rules which preclude multi-year budgeting. Multi-year budgeting would be required for municipalities to enter into long-term contracts with energy service companies (ESCOs). ESCO contracts are typically structured so that the ESCO is paid from a city's energy savings over many years.
- IMF restrictions on municipal borrowing. These restrictions affect a municipality's ability to provide guarantees on direct borrowing from the private sector.

Of the two RTCs in our sample, one has remained open, while the other has shut. In Lviv, the entity selected as the RTC had a history of providing other types of training, and was therefore able to survive on income from other activities. In Sevastopol, however, the RTC closed when project funding stopped.

The Center in Lviv has not been able to provide the same type of training provided under the MHR Project. Licenses for the energy audit software were available only to those who passed the RTC training courses. Centers would have to purchase new licenses, and fund trainers from their own budgets, to continue to provide the same sort of training offered under the MHR Project.

The results of the online survey are that 10/13 respondents found the RTC activities to be highly effective (4), or somewhat effective (6). Two of the respondents found the RTC activities to be somewhat ineffective. One of the respondents said he/she didn't know.

Efficiency

There was some evidence of delays in signing subcontracts for the training. Because of a delay in signing the contract with EnEffect, the RTC's work providing training on energy audits was postponed by three months. As a consequence, demo projects were implemented before energy audits were conducted whereas the original intention of the MHR Project was to conduct energy audits as a way of determining where demo projects should be conducted.[27] Project implementers said that the delay in procuring EnEffect was due to delays in obtaining a source waiver approval.

HOA ADVISORY CENTERS

This activity establishes advisory centers within municipal administrations or as separate NGOs to provide assistance in the formation of HOAs, and advice and training on residential energy efficiency, financing sources for energy efficiency investments and a variety of other topics.

Relevance

Common spaces in Ukraine account for a large portion of a municipal heating system's physical and consequent financial losses in residential buildings. Simple repairs to doors, windows and hallways in

[27] This was the case in Kramatorsk, for example where five of the six demonstration project buildings selected never had energy audits.

common areas yield substantial savings in heating costs to individual apartments. Although most multi-apartment buildings have been privatized in Ukraine, and apartment owners have a stake in common areas, achieving energy efficiency measures in these spaces can prove difficult. Apartment owners may be reluctant to commit to investments in common spaces because of the risk that other residents will free ride on that investment. HOAs can take on responsibility for common areas from the ZHeKs, and provide a coordination and leadership function required to organize tenants to fund the investments. HOAs also make it easier for residents to borrow collectively for investments in common areas.

HOA Advisory Centers are therefore relevant to energy savings in residential buildings, and hence improvement to the financial viability municipal heating companies with respect to residential customers only. Three of the cities in our sample had HOA advisory centers: Yevpatoriia, Lviv, and Kramatorsk.

One city administration official commented that the HOA Advisory center activity was timely in helping them to respond to increasing demand from residents about HOAs, because of an increasing frustration with the quality of services provided by ZHeKs.

The results of the online survey are that 17/17 respondents who were familiar with the HOA Advisory Center activities found them to be highly relevant (9), or somewhat relevant (8).

Effectiveness

Three of the three HOA Advisory Center directors said the MHR Project's work to support the Centers was useful, and all noted the importance of the project funding the startup costs of the centers through the purchase of operating assets (computer equipment, furniture) and the provision of training.

KIIs with HOA chairpersons in Kramatorsk, Lviv, and Yevpatoriia provided evidence on the effectiveness of the Centers from the perspective of the people they are meant to serve:

- When asked if they or their tenants use the services of the center, four out of six HOA chairpersons said yes. Two (in Kramatorsk) said they once used the services of the center but no longer do because the HOA center no longer offers useful assistance. One interviewee said the HOA Advisory Center seems more interested in protecting the interests of local administrative and private ZhEKs, than HOAs.
- When asked how useful the assistance was, four HOA chairpersons said it was useful in informing the public on how to establish HOAs. One interviewee elaborated, pointing out that the Center organizes informative seminars and meetings, and provides assistance in preparing documents and requests to state agencies on issues pertinent to HOAs. Two HOA chairpersons (in Kramatorsk) said the Centers were not useful, or were ineffective.

The KIIs indicated that the problems of the HOA Centers include a lack of general legal support for HOAs in Ukraine and (in two cities), a perceived conflict of interest between the intended role of the HOA Advisory Center and its place within, and dependence on funding from, the city administration. HOAs Advisory Centers are meant to support the creation of HOAs, but in some cities the administration may have interests in preventing the formation of HOAs. A HOA chairperson in Kramatorsk and a private ESCO in Lviv indicated that the municipal housing departments may have incentives to keep apartment buildings on their balance sheets, and municipal ZHeKs have incentives to continue providing services to apartment buildings because it is a source of revenue.

All of the HOA Advisory centers we visited still exist. Because the city funds their operations, they do not depend anymore on project funding.

The results of the online survey are that 14/17 respondents who were familiar with the HOA Advisory Center activities found them to be highly effective, or somewhat effective. Three of the respondents found them to be somewhat ineffective.

Efficiency

There is evidence that the HOA advisory center activities were more efficient than initially estimated. The Project had established eight HOA Advisory Centers by February 2012, and an additional 35,000 people had joined HOAs. This exceeded the initial PMP targets to create three HOA Advisory Centers and 12,000 people joining HOAs.

The *design* of the HOA Advisory Center activities was also efficient in that it leveraged other sources of funding. The MHR Project provided capacity building and certain start-up costs (furniture, computers) for the Centers, but the rest of the costs of the centers were distributed among municipal governments (operating costs) and NGOs (training).

PUBLIC INFORMATION CAMPAIGN ON ENERGY EFFICIENCY

The MHR Project implements public awareness activities to inform customers about energy efficiency measures and municipal heating reforms. The MHR Project launched a campaign using media, brochures, a website with web portal, and organized events for reaching out to public. An "Energy Efficient Schools and Campuses" curriculum was also developed for secondary schools, and included a textbook with conceptual and practical lessons on energy and energy savings.

Relevance

As noted above, energy efficiency is relevant to the MHR Project objectives because better energy efficiency can help to reduce heat network losses, which can in turn improve the financial viability of municipal heating companies. The body of literature on energy efficiency often focuses on changing behavior through education and outreach as a way of removing barriers to energy efficiency.[28]

One key informant also pointed out that the campaign was a national campaign for problems that are relevant to all of Ukraine and not limited to the MHR Project's partner cities. 27 KIIs (teachers, parents and city administrators) offered comments indicating that children were rightly identified as a key target audience because of their receptiveness to the material.

The results of the online survey are that 18/18 respondents who were familiar with the public information campaign activities found them to be highly relevant (6), or somewhat relevant (12). On the energy efficiency schools and campuses activity more specifically, 14/14 respondents who were familiar with the activities found them to be highly relevant (10), or somewhat relevant (4).

Effectiveness

All of the city administration officials we interviewed were aware of the public information campaign. Only one official had a negative comment in the KIIs, saying that that the funds could have been better spent on more demonstration projects, which—in this person's view—have more of an impact on awareness about energy efficiency.

A representative of SAEEEC said that he believed that, one way or another, almost all residents of Ukraine were familiar with the campaign. He also noted: "One can only envy such advertising in the area of energy efficiency". SAEEEC is the government agency with principal responsibility for energy efficiency activities in Ukraine. One of its responsibilities is informing the public on energy efficiency (SAEEEC regularly organizes public outreach activities similar to those of the Project,

[28] Appendix F contains a list of studies consulted by the evaluation team on municipal heating reform and barriers to energy efficiency in the region.

including an "Energy Efficiency Week" event. Appendix N describes its responsibilities and activities in more detail).

The MHR Project conducted a survey of teachers, students and parents to specifically assess the effectiveness of the energy efficient schools and campuses activity. The evaluation team reviewed the survey methodology and results and found them to be of good quality. Ninety-three percent of 890 survey respondents said that they enjoyed the classes and confirmed that they had implemented energy efficiency measures in their homes. As another sign of effectiveness, the Ministry of Education in Ukraine adopted the textbooks as part of the official curriculum.

Our discussions with teachers, parents and city administrators largely confirmed the results of the survey. 11 of the school teachers and seven city officials interviewed indicated that the energy efficient schools and campuses activity was effective. Thirteen teachers and municipal department administrators of the 14 interviewed praised the quality of the text books. In one of the sample cities, a teacher said other teachers had applied the teaching methodology developed to other subjects they teach. Teachers commented that the textbooks contained good, practical examples and that the exercises could be done at home, as well as in the classroom. However:

- One teacher pointed out that the textbooks are difficult to re-use because they have worksheets (where students work out problem in written exercises) that are integrated with the text. The teacher would have preferred to have textbooks separate from workbooks, or to have detachable worksheet pages.
- Another key informant (a city administrator responsible for education) indicated that the materials were too complicated and needed to be adapted for use in the classroom.

Eleven teachers indicated in KIIs that children were effective in then pushing their teachers and parents to implement the knowledge acquired through this activity. One key informant (a teacher in a school in the East) thought that the curriculum would have been more relevant if coupled with a demonstration project in the school.

The results of the online survey are that 17/18 respondents who were familiar with the public information campaign activities found them to be highly effective (3), or somewhat effective (14). One respondent said they didn't know. On the energy efficiency schools and campuses activities specifically, 11/14 respondents who were familiar with the activities found them to be highly effective (6), or somewhat effective (5). Three found the activities to be somewhat ineffective.

Efficiency

There is some evidence of an efficient use of resources in the Public Information Campaign, namely:[29]

- The MHR Project exceeded PMP targets for efficiency. By the end of 2011, there were 39 events conducted in accordance with the National Plan for Public Information Campaigns, exceeding the target of 15 for 2011 and the target of 20 for 2012.
- A Global Development Alliance (GDA) with British advertising agency J. Walter Thompson reduced the cost of the Public Information Campaign by roughly USD 65,000 (in outreach material development).
- Cooperation with Big Media Company saved MHRP $297,000 on billboard rental and gluing. The MHR Project paid for printing.

[29] From IRGs quarterly reports.

For the energy efficient schools and campuses activities, the MHR Project leveraged additional resources from a private energy company who sponsored the printing of manuals for schools in Kyiv.

We did not find any other evidence to indicate that resources were used efficiently or inefficiently.

FINDINGS ON THE EVALUATION QUESTIONS

This section presents findings related to the evaluation questions in our SOW but not specifically to the relevance, effectiveness, or efficiency of MHR Project activities.

How well has the MHR Project targeted key beneficiaries and counterparts in order to achieve the project purpose?

Appendix A lists the MHR Project counterparts, project implementers and grant recipients.

Two high level agencies with involvement in Ukraine's energy sector did not have Memoranda of Understanding (MoU) with the project. The agencies were the State Agency on Energy Efficiency and Energy Conservation (SAEEEC), and the Ministry of Energy and Coal Industry.

- SAEEEC. According to representatives of the USAID Mission and project implementers, the Project made repeated attempts to engage SAEEEC, but could not come to agreement on the terms of the MoU. SAEEEC confirmed in an interview with the evaluation team that it did not agree to the terms of the MoU, saying that the scope of cooperation proposed did not "precisely coincide with what SAEEEC needs, and that there was no clear list of tasks for SAEEEC would be the beneficiary". SAEEEC pointed out that it is cooperating with USAID in other areas, even without a MoU, namely: the development of a National Plan for Energy Efficiency, the drafting of legislative acts, and the preparation of proposals on implementation of the ESCO mechanisms in the public sector.

  Other comments about SAEEEC's lack of involvement come from a city administration official, project implementers, and other donor representatives. The city administration official said that she was glad SAEEEC was not involved because it is ineffective. A representative from an IFI said that he chose to avoid working with SAEEEC because it had not accomplished much. Another representative of a donor agency said that SAEEEC seemed interested in receiving funding, but uninterested in working as a counterpart or implementing agency on projects.

- MEC. Project implementers said they did not sign a MoU with the Ministry of Energy and Coal Industry (MEC) because they viewed MEC's activity as peripheral to the purpose of the Project.

Another agency, the National Energy Regulatory Commission (NERC), was involved as in interim regulator for the municipal heating sector until the creation of the National Utilities Regulatory Commission (NURC), but handed over most of its responsibilities in the municipal heating sector to the new regulator, NURC, created with the assistance of the MHR Project. NURC has responsibility for heat distribution tariffs, and heat production at boilers. The incumbent energy regulator NERC has responsibility for setting heat tariffs at thermal plants and combined heat and power plants. This means, for example, that in Kramatorsk where heat is provided from a thermal power plant, NERC sets the tariffs for heat production, whereas NURC sets the tariffs for heat distribution.[30]

A lead project implementer explained that the creation of a new regulator was preferred because:

[30] Heat in Kramatorsk is provided from the residual heat of a traditional thermal power plant, not a combined heat and power plant. Such arrangements are relatively common in smaller Ukrainian cities.

- NERC had been established by government resolution, which gives it more tenuous legal standing than if it had been established—as NURC was—by law;
- NERC regulates at the wholesale level, over entities which may serve multiple oblasts and municipalities. Communal services, in contrast, are by their nature local, and therefore require a different type of regulator;
- NERC management and staff were not interested in taking on the function of regulating municipal heating.

Appendix M includes a description of the responsibilities of each of SAEEEC, the Ministry of Energy and Coal Industry, NURC and NERC.

The results of the online survey are that 20/22 said the MHR Project did a very good job (11), or good job (9) targeting beneficiaries and counterparts. One respondent said the Project did a poor job.

To what extent are MHR Project counterparts and/or beneficiaries adopting practices and behaviors critical for the sustainability of the municipal heating sector and commensurable to USAID's investment? Are there any gender or regional differences?

This compound question consists of three sub-questions:

1) To what extent are MHR Project counterparts and/or beneficiaries adopting practices and behaviors critical for the sustainability of the municipal energy sector?
2) Are there any gender differences (with respect to #1)?
3) Are there any regional differences (with respect to #1)?

We present our findings for each of these sub-questions separately:

1) There is evidence that project counterparts are adopting practices and behaviors critical for the sustainability of the municipal heating sector. Some of this evidence has already been cited above:
    a. The MEPs have managed to attract the attention of lenders (IFIs) to the sector.
    b. In the absence of a revised Law on HOAs, at least two cities have continued to push ahead to look for ways to finance energy efficiency investments in residential buildings. The City Administration of Lutsk, for example, has discussed the possibility of offering guarantees and interest rate subsidies for loans that HOAs take for energy efficiency investments.
    c. Some residents in buildings with demonstration projects (a residential building and school in Lutsk) have made some of their own investments in energy efficiency.
    d. Our site inspections showed that the equipment at most of the demonstration project sites was being properly maintained (the assessment of our technical expert).
    e. The textbooks introduced in the energy efficient schools and campuses have been approved for use by the Ministry of Education.

    However, there is also some evidence against sustainability of some of the activities:

    a. Two key informants indicated a concern that, without energy planners on staff, and without financing, municipalities would not be able to carry out implementation of the MEPs on their own.
    b. As also noted above, one of the RTCs included in our sample had closed with the cessation of project funding. The other RTC was unable to provide the same kind of training because of the cost of licenses for software and trainers.
    c. Equipment had not been properly maintained at five of the demonstration project sites we visited. All of these sites were in Kramatorsk. A HOA chairperson there,

and another at one other site (in another city) where maintenance was good, both said they did not know who was responsible for maintaining the new equipment once it was installed.

d. One of the main project implementers said that one of his biggest concerns about the project is its sustainability. A USAID representative also expressed the view that there are "too many demonstration projects", and not enough replication.
e. The textbooks are not easily reusable for students because the worksheets (where they are meant to write) are not detachable from the narrative of the text (what they are meant to read).

2. The only evidence of gender differences we found in the focus group discussions and the composition of individuals trained by the RTCs was:
    a. Male and female customers in the FGD and KIIs differed in the temperatures they considered to be comfortable. Men found temperatures of 18-22 degrees Celsius to be most comfortable. For women, the range was 22-25 degrees Celsius. The effect of most of the demonstration projects was to achieve uniform temperatures, throughout a building, of around 22 degrees Celsius.
    b. As noted above, more men than women were trained in the RTCs we surveyed (men=62%; women=38%).
3. The biggest differences between the cities in our sample were in the quality of the MEPs and the effectiveness of the demonstration projects. As noted above, the MEPs were of lower quality in Kramatorsk and Yevpatoriia. The demonstration projects had problems in Kramatorsk and some unintended negative consequences (hot water costs) in Kurakhove. However, because of the limitations indicated in Section 2 (the sample size, and the way the sample was identified) it is impossible to rigorously attribute differences between cities, or between regions to factors other than random distributions.

The results of the online survey are that 20/22 said they strongly agree or somewhat agree with the statement, "MHR Project counterparts are adopting practices and behaviors critical for the sustainability of the municipal heating sector in Ukraine." One respondent said they somewhat disagree, another said they didn't know.

Which of the MHR Project activities appear to have most advanced the project's purpose of helping Ukraine create a financially viable and sustainable municipal heating sector able to deliver quality services to the population, public institutions, and local industries? Which activities have had less of a contribution toward this purpose?

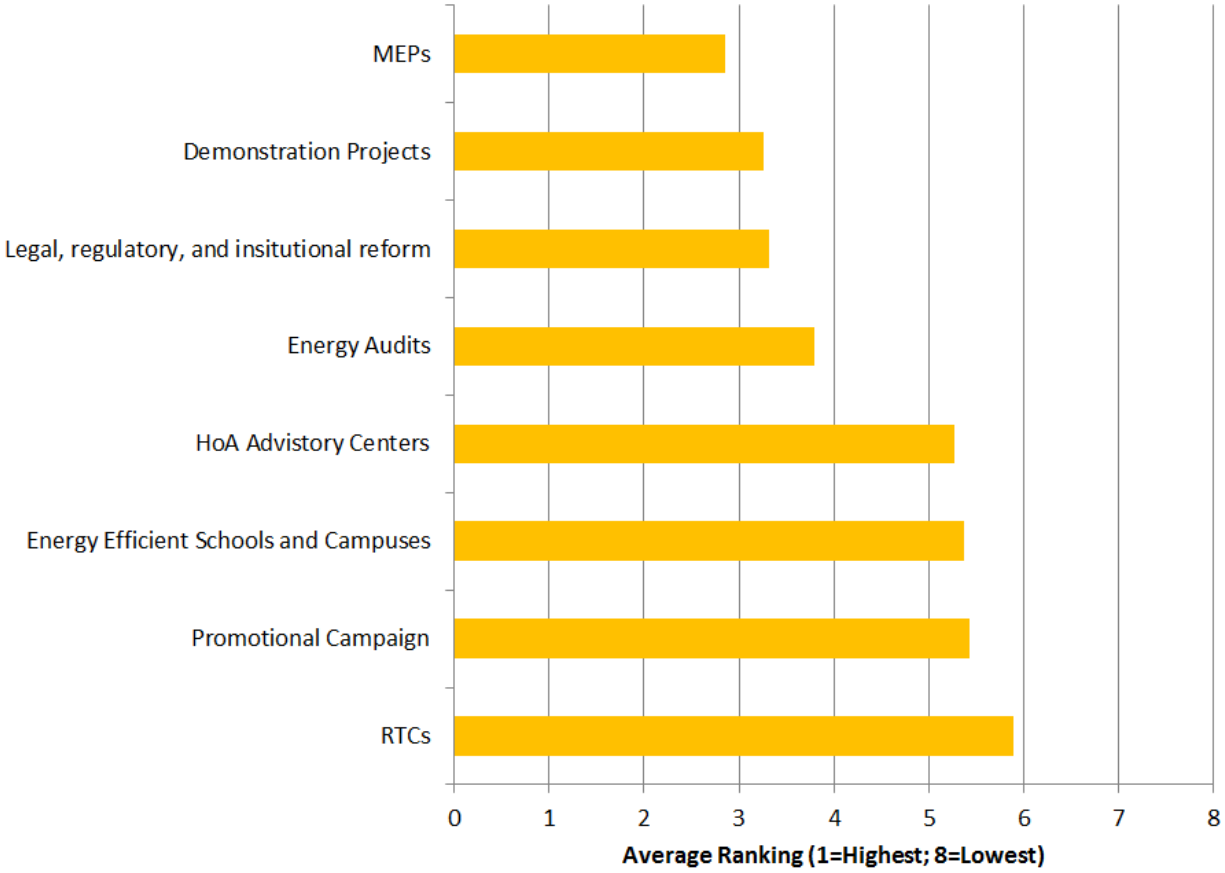
KII's indicated a wide range of opinions (and—as noted by the first two bullets below—some conflicting opinions) about which project activities were most important. We attribute this to the fact that we interviewed such a wide range of project counterparts and beneficiaries, each with different experiences of the many project activities (and some with no knowledge of certain project activities). Key informant comments on the relative importance of various project activities were the following:

- There were too many demonstration projects, not enough replication and involvement of the private sector (from USAID staff);
- There should have been more demonstration projects and better dissemination of their results, because this makes more of an impression than other activities (from a city administration official);
- The legal, regulatory, and institutional advisory work was the most useful (from the main GoU counterpart); and

- The regulatory activities, specifically the establishment of a regulatory that could break local political control of the tariff, were the most important (from a representative of an IFI).

The online survey offers a more standardized view of how respondents ranked the importance of various project activities. Respondents were asked to "rank the MHR Project activities in order of their importance in advancing the project's objective, where 1=most important and 7=least important".[31] Figure 3.1 shows the average ranking of MHR Project activities (1=highest ranking; 8=lowest ranking).[32]

FIGURE 3.1: AVERAGE RANKING OF MHR PROJECT ACTIVITIES



[31] The project objective was defined in the survey in the following way: "The objective of the MHR Project is to help Ukraine create a financially viable and sustainable municipal heating sector able to deliver quality services to the population, public institutions and local industries." Two of the project activity categories introduced in Section 2 of this evaluation report were each disaggregated into separate activities in the survey to specificity in responses. The "Public Information Campaign" activity was disaggregated into "promotional campaign", and "energy efficiency schools and campuses". The MEP, energy audit and investment catalog activity was disaggregated into into "MEP" and "energy audit" categories.

[32] The results were also analyzed using a "borda count" method, which produces an ordinal ranking of activities. The ranking revealed by the Borda count analysis is the same as the order of bars shown in Figure 3.1 (MEPs were first ranked, legal, regulatory and institutional reform ranked second; demonstration projects ranked third, and so on).

How are MHR Project activities relevant to USAID's Global Climate Change Initiative?

The GCCI has three pillars:

1. Adaptation assistance, to help low-income countries reduce their vulnerability to climate change, and to mitigate the effects of climate change;
2. Clean energy, to develop clean energy projects that reduce greenhouse gases from energy generation and use; and
3. Sustainable landscapes, to reduce greenhouse gas emissions from deforestation and forest degradation.

The MHR Project is only relevant to the clean energy pillar #2 of the GCCI because clean energy technologies include both energy efficiency technologies as well as low carbon energy technologies.

Is the MHR Project implementing the most appropriate package of activities to attract private investments into the sector?

As noted above, we did not find that the project activities have led to anything but concessional (donor) financing of investments. As we also noted above, there are still legal and regulatory obstacles which make it difficult for municipalities to borrow. The MHR Project legal, regulatory and institutional reform activities have sought to remove these obstacles, but have not yet succeeded in doing so.

How well did the MHR Project management coordinate implementation of project tasks, collaborate with other USAID and non-USAID programs, and verified results attributed to MHR project activities?

This compound question has three sub-questions:

4) How well did the MHR project management coordinate implementation of project tasks?
5) How will did the MHR project management collaborate with other USAID and non-USAID programs?
6) How well did the MHR project management verify results attributed to MHR project activities?

We present findings which help to answer each of these sub-questions. We rely principally on KIIs to answer these questions, and on the results of the online survey.

1) Findings which relate to the question of how well the MHR project management coordinated implementation of project tasks are:
    a. We asked in every interview about whether there were any problems in the quality of support received or in the way the project was implemented. There were very few negative comments about the MHR Project Management. The only negative comments were:
        i. At the start of the project, management did not share information as freely as the interviewee would have liked (from an IFI representative).
        ii. The project relied excessively on local consultants, and this lead, in some cases to "capture" by local interests. The interviewee added that there was too much reliance on outsourcing, and too little in-house capacity (from the same IFI representative).
        iii. The management team was strong but the scope of the project was such that it was difficult for them to be involved in the details of the work. This person added that there was a risk they could be stretched thin, and this would affect the quality of their work (a representative from a different IFI than for findings i and ii).

   b. The project met or exceeded its PIs (in the PMP) 83 percent of the time, for the years 2009, 2010 and 2011.[33]
   c. The results of the online survey show that 21/22 respondents said the MHR Project did a very good job (12), or good job (8) coordinating implementation or project tasks. One respondent said they didn't know.
2) Comments from KIIs also inform the answer to the question. A number of KIIs commented on the quality of cooperation with non-USAID programs.
   a. Four out of four donor KIs made comments indicating that there was good cooperation with the other IFIs.
   b. One representative of an IFI said that the project could have coordinated more closely with GoU and with other IFIs. IFIs were often shown drafts at the same time as the GoU, depriving them of any chance to provide feedback.
   c. The results of the online survey show that 21/22 respondents said the MHR Project did a very good job (12), or good job (9) coordinating implementation or project tasks. One respondent said they didn't know.
   d. The results of the online survey show that 15/21 respondents said the MHR Project did a very good job, or good job coordinating with other (non-USAID) programs. One respondent said the MHR Project did a poor job. Five respondents said they didn't know.
3) Comments from KIIs and our review of background documents inform the answer to the question of how the Project cooperated with other USAID programs. The MHR Project cooperated with a number of other USAID programs or institutions that had been previously established with USAID funding. As evidence of this, the Project cooperated with:
   a. A USAID program supporting libraries. The MHR Project organized the distribution of energy efficiency educational materials to libraries.
   b. A USAID program training regional and national journalists. The MHR Project provided training on EE through four seminars.
   c. A USAID program for reform of municipal finance. The MHR Project worked with the Association of Ukrainian cities to change the budget code (changes were approved in 2011).
   d. The project also worked with the Association of Ukrainian Cities, the Commercial Law Center, the National Democratic Institute, and the NGO OPORA, all of which had been supported by USAID in the past.
4) The following findings are related to the MHR project management verifying results attributed to MHR Project activities:
   a. The first quarterly report with a PMP was issued for the period February, 2010 a year after the project launched. The PIs in the PMP changed during the course of the project. The most recent PMP reviewed by the evaluation team was from the quarterly report completed in February 2012.
   b. The MHR Project has conducted a number of studies to determine the effectiveness of various project components. These include:
      i. A survey of the effectiveness of the energy efficient schools and campuses initiatives (reviewed for this evaluation report).
      ii. A survey to assess the effectiveness of the public information campaign (in draft form at the time of this evaluation report).

[33] Based on the evaluation team's analysis of the PMP table for Quarterly Report #13 (February 24-May 24, 2012).

iii. Two studies of the effectiveness of the demonstration projects (one for the heating season of 2010/2011, and one for the heating season of 2011/2012, currently in draft form).
iv. A legislation monitoring report, which it submits to the USAID Mission on a monthly basis.

4. ANALYSIS AND CONCLUSIONS

The first part of this section presents our analysis and conclusions on the three areas on which we were asked to place special emphasis: the effectiveness of regulatory reform; the approach, quality, and utility of energy audits, and the quality of MEPs; as well as the degree of municipal buy-in to those plans. The second part of the section presents our analysis and conclusions on the MHR Project activities not identified in our SOW as areas for special emphasis: the Demonstration Projects, HOA Advisory Centers, and Public Information Campaign. The third part of the section presents our analysis and conclusions on the evaluation questions contained in our SOW. The analysis and conclusions in this section reflect the views and interpretations of the evaluation team, based on the findings in Section 3.

ANALYSIS AND CONCLUSIONS ON AREAS FOR SPECIAL EMPHASIS

This section states our analysis and conclusions on the three areas for special emphasis indicated in our SOW.

The effectiveness of regulatory reform activities

The legal, regulatory and institutional reform activities were effective in providing support to pass the single most important law for achieving the project objective: the Law of Ukraine "On State Regulation of Public Utilities" which created NURC. Our view—which is supported by the statements of key informants and extensive literature on utility reform—is that tariff reform is one of the single biggest obstacles to private sector investment.

The Project was also right to focus on affordability as a critical barrier to both tariff increases. Tariffs are low, in part, because of customers' and politicians' concerns about affordability. Low income customers in Ukraine could have trouble supporting the large tariff increases required for financial viability. The MHR Project therefore also rightly added a task, during the course of the project, to assist the GoU to develop a social safety net policy for communal services customers with problems affording higher heating tariffs.

NURC, as a new regulator has not yet been effective in raising tariffs nor has a social safety net program been implemented, but the legal framework established has made it more likely that such measures will be adopted in the future.

Some of the major laws drafted under the MHR Project (for example, the Law on Energy Efficiency of Residential and Public Buildings, and the Law on Housing and Communal Services) were ultimately not adopted by the GoU, but we do not view this as a sign of the Project's ineffectiveness. We view it as a function of political factors, namely, the 2010 administrative reform following presidential elections, and political statements about tariffs made in advance of the upcoming parliamentary elections.

The approach, quality and utility of energy audits

Our view, supported by the findings in Section 3, is that:

- The approach of the energy audits was better than the approach used in Ukraine previously because it was supported by software and was appropriate for the different climatic conditions and building types in Ukraine.
- The energy audits completed under the project were consistently of high quality, with only a few, non-systematic errors found in the energy audits of two cities.
- The energy audits have been successful in attracting donor investment from IFIs, and have therefore shown to have utility. As they age (many of the audits were conducted in 2010-2011), they may become less useful, but the IFIs will likely continue to look for new investments in the sector—identifying their own menu of potential investments—even without updated energy audits.

The quality of MEPs as well as the degree of municipal buy-in to those plans

As noted in Section 3, the quality of the MEPs was less consistent between cities, and data more difficult to compare between cities.

The degree of municipal buy-in seemed to be higher in two cities, Lviv and Lutsk, than in Yevpatoriia, Kurakhove, and Kramatorsk. It is our view that the degree of municipal buy-in has a high correlation with the quality of the MEPs, as the MEPs in Lviv and Lutsk were (according to our technical expert) of excellent quality.

ANALYSIS AND CONCLUSIONS FOR OTHER PROJECT ACTIVITIES

This section states our analysis and conclusions on the Demonstration Projects, HOA Advisory Centers, and Public Information Campaign.

Relevance, Effectiveness and Efficiency of Demonstration Projects

The Demonstration Projects we reviewed were:

- Relevant to achieving project objectives as intended to:
  - Reduce network losses. As noted above, energy efficiency measures reduce network losses. Reducing losses can improve the financial viability of municipal heating companies.
  - Have a demonstration effect. The demonstration projects provided concrete, practical results which supplemented the work of the Public Information Campaign in targeting an important obstacle to investments in energy efficiency, namely, awareness of the potential for savings.
  - Show the applicability of results to a variety of types of buildings in Ukraine's housing stock (public and residential buildings of a range of vintages).
- Mostly effective. Sixteen of the twenty-one sites we reviewed showed evidence of energy and monetary savings, and a better distribution of heat within the building. It is worth noting that the demonstration project in Kramatorsk was one of the earliest implemented under the MHR Project ("pilots of pilots"), and—because of the difficulties of working in buildings without HOAs—helped inform how to better direct funding to future demonstration projects. In that sense, the demonstration project in Kramatorsk was effective in providing valuable lessons for subsequent demonstration projects.

It is difficult to conclude much about the overall efficiency of the Demonstration Projects. There is some evidence (more projects were done than planned, and GDA funding was used) that resources were used efficiently but our conclusions on efficiency are subject to the limitations noted in Section 2.

Relevance, Effectiveness and Efficiency of Regional Training Centers

The activities of the Regional Training Centers (RTCs) we reviewed were:

- Relevant to achieving project objectives because they were aimed at disseminating the methodologies for energy audits and MEPs, both intended to improve the financial viability of municipal heating companies by reducing network losses. The MEP methodology could have been more relevant if they it was linked to the regional energy planning activities of SAEEEC.
- Effective in providing high quality training, but ultimately not effective in achieving project objectives, because of the persistence of legal and regulatory barriers—beyond the control of the MHR Project. Municipal budgeting rules still make it difficult for municipalities to make the investments in energy efficiency required to reduce losses and improve the financial situation of the municipal heating companies.

As with the other project activities, and as indicated in Section 2, it is difficult to conclude much on the overall efficiency of the activities of the RTCs. We note only that, had the RTC activities started earlier, the energy audits could possibly have been conducted in advance of the demonstration projects.[34] Energy audits may have helped to avoid some of the problems that occurred with the demonstration project in Kramatorsk.

Relevance, Effectiveness and Efficiency of HOA Advisory Centers

The activities of the HOA Advisory Centers we reviewed were:

- Relevant because they sought to create entities that could more easily invest in measures that reduce heating system losses.
- Largely effective in serving the interests of homeowners and HOAs but—because revisions to the Law on Housing and Communal services has not been passed—still hampered from creating more HOAs, and from investing in energy efficiency because of the lack of a better legal framework.
- Efficient in that more people joined HOAs than foreseen by the PMP, and particularly efficient in their design, which used MHR Project funds for start-up costs, but relied on municipal funding for recurrent costs of the centers.

Relevance, Effectiveness and Efficiency of Public Information Campaign

The Public Information Campaign activities appear to have been:

- Relevant in that they were aimed at reducing network losses, and thereby improving the financial viability of the municipal heating companies.
- Effective in making an impression in the cities we visited. We did not have the scope or resources under our SOW to comprehensively assess the effectiveness of the campaign, but comments in the KIIs, and from the online survey indicate that it was of good quality and effective in making an impression. The energy efficiency schools and campuses activities appears to have been particularly effective in that: i) the textbooks were officially approved by the Ministry of Education for use in schools, and ii) most respondents indicated (as part of an 890-person MHR Project survey) that teachers, students and parents had—as a result of the MHR Project activities—implemented energy efficiency measures in their homes.

As noted in Section 2, the limitations of this evaluation prevent us from saying much about the efficiency of the use of project resources. There is evidence, shown in Section 3, that the MHR

[34] As noted in Section 3, Project implementers said there was a delay in hiring the contractor responsible for energy audit training, because of delays in obtaining a source waiver approval.

Project made good use of funding from private companies (through GDAs) to leverage funds for the Public Information Campaign.

ANALYSIS AND CONCLUSIONS ON THE EVALUATION QUESTIONS

How well has the MHR Project targeted key beneficiaries and counterparts in order to achieve the project purpose?

The project targeted all of the beneficiaries and counterparts who—in our assessment—are most important to achieving the project purpose of "assisting national and local governments to create a financially viable and sustainable municipal heating sector, able to deliver quality services to the population, public institutions and local industries".

The approach of working at the national and municipal levels in parallel was particularly useful because it pushed the national reform agenda while also achieving concrete, practical results through demonstration projects, RTCs, energy audits, and municipal energy plans. Ultimately, when the national reform agenda stalled in certain areas (the Law on HOA reform, for example), work at the municipal level remained on track: HOAs were still created, IFIs remained interested in investing in projects identified through the MEPs, and city administrations remained aware of the importance of reform.

The project also involved existing institutions, such as the Association of Ukrainian Cities (AUC), and Energy Efficient Cities of Ukraine (EECU) which already had a track record of activities related to district heating reform and energy efficiency in buildings, and which will be likely to carry the momentum of the reforms forward after the end of the MHR Project.

On the absence of formal participation by certain institutions, our view is the following:

- The failure to formally involve SAEEEC (despite best efforts of IRG and the USAID Mission) in the project is unfortunate, because it deprives the MHR Project of a partner which—if it were interested—could be critically important for the relevance, effectiveness and sustainability of many of the project activities.

  On the one hand, it is conceivable that, with a different project design—one that offered more for SAEEEC in terms of funding and assistance—SAEEEC may have been more interested in cooperating with the MHR Project. On the other hand, it is possible that SAEEEC's involvement could have compromised the relevance, effectiveness and sustainability of the project. Our conclusion is that the MHR Project did all that it could have done to involve SAEEEC, but had no choice, because of SAEEEC's apparent lack of interest, other than to work without them.

- The absence of a MoU with the Ministry of Energy and Coal Industry is understandable. Ministries of Energy in the region do not typically have responsibility for heating as heating is a communal service and is often under ministries of regional development.
- The decision to push for the creation a new regulator (NURC) instead of giving the incumbent energy regulator (NERC) responsibility for the municipal heating sector is understandable, for the reasons cited by project implementers (described in Section 3). We would add to the list of reasons for creating a new regulator the fact (our view) that NERC has suffered in the past from a lack of independence in decision-making, and has not been successful in raising electricity and gas tariffs to cost-recovery levels.

These judgments are, in our view, understandable and defensible. Effective and sustainable aid often requires that donors identify champions, even if those champions are not always—at the time—in the most relevant agencies. The converse is also true. The most relevant agencies do not always have the champions in them.

To what extent are MHR Project counterparts and/or beneficiaries adopting practices and behaviors critical for the sustainability of the municipal heating sector and commensurable to USAID's investment? Are there any gender or regional differences?

As noted in Section 3, this is a compound question with three sub-questions:

1) To what extent are MHR Project counterparts and/or beneficiaries adopting practices and behaviors critical for the sustainability of the municipal energy sector and commensurable to USAID's investment?[35]

The prospects for sustainability of the Project are mixed. The MHR Project created foundations for sustainability by working closely with counterparts at the national and municipal levels. It did so by:

- Implementing many of the project activities through existing institutions, with agendas compatible with MHR Project objectives (for example, AUC and EECU).
- Creating new institutions which can help carry forward the MHR Project objectives. At the national level, the MHR Project helped to create NURC, which will carry forward tariff and other regulatory reforms in the sector. At the municipal level, the MHR Project helped to create HOA Advisory centers, which in turn help to create HOAs, and will perpetuate the creation of HOAs after the MHR Project has ended. Few of the other laws developed under legal, regulatory, and institutional activities were ultimately adopted, but the material can still be used if and when the political climate becomes more favorable to reform in these areas.
- Attracting IFI interest in the district heating sector and in energy efficiency of buildings.

There are, however, some risks to sustainability. The most serious are that:

- NURC will be unable to increase municipal heating tariffs because of continued political pressures to keep them low.
- Markets for private financing of energy efficiency investments (in buildings or in district heating) will not develop without passage of the legal reforms developed under the project. HOAs will continue to have more difficulty borrowing without passage of the HOA Law, and cities will have difficulty borrowing for energy efficiency investments (or any investments that allow for payback over more than a year) until reform to municipal finance laws allows cities to commit to expenditures in future years. Without such reforms, evidence from other countries in the region suggests that a market for ESCOs or other entities that finance energy efficiency investments will not develop.
- Partner cities will be unable to update the Municipal Energy Plans without outside assistance, due to the absence of municipal energy managers with sufficient expertise in these areas. The plans themselves will quickly go out of date as fuel prices (gas prices, in particular) can change often and suddenly in Ukraine.

2) Gender Differences

As noted in Section 3, there were some differences in how men and women were affected by some MHR Project activities. More generally, we would expect—based on our experience in Ukraine but not specific evidence from the evaluation—that women likely benefited more from the demonstration project activities than men because:

- Women in Ukraine often have responsibility for paying utility bills, and would therefore be the first to see savings from the demonstration projects;

[35] We did not find any evidence which would allow us to answer the question of whether the practices and behaviors adopted are "commensurable to USAID's investment". Such analysis would require extensive comparisons with practices and behaviors adopted by counterparts and/or beneficiaries in other USAID municipal heating programs.

- Women in Ukraine more often have responsibility for caring for children, and therefore care more about room temperature and its effect on the health of children;
- Men in Ukraine spend more time outside the house than women, and therefore are affected less by uncomfortable temperatures.

3) Regional Differences

As described in Section 3, there were differences in the effectiveness of the demonstration projects, and the quality of the MEPs between cities. However, with such a small sample, it is impossible to infer any regional differences. In reality, every city should be treated as a separate case. Nevertheless, the evaluation team notes that, in Lutsk and Lviv (cities in the West) there seemed to be more municipal buy-in to project activities. Lviv, for example, had established a special inter-disciplinary committee to develop its MEP, and both Lviv and Lutsk are in discussions with IFIs for financing of investments identified by the energy audits. The MEPs were also higher quality in these cities than in Yevpatoriia (South), Kramatorsk and Kurakhove (East).

Which of the MHR Project activities appear to have most advanced the project's purpose of helping Ukraine create a financially viable and sustainable municipal heating sector able to deliver quality services to the population, public institutions, and local industries? Which activities have had less of a contribution toward this purpose?

Because this is a performance evaluation, and not an impact evaluation, it is impossible for us to say in any rigorous way which project activities contributed the most to achieving project objectives. We rely, for our answer below, on KIIs, and our own perceptions.

The activities that have most advanced the project's purpose in our view are:

- **Legal, regulatory, and institutional reform.** The MHR Project succeeded in adding the sector's challenges to the agenda of Ukraine's national and local policy makers, as well as to the agendas of other donors. This was a necessary, if not sufficient first step to creating a financially viable sector. The specific legal, regulatory and institutional reforms may not have been as effective as planned (the failure to pass some of the laws developed with support from the project), or may not have taken the shape originally intended (the abandoning of the idea for a municipal heating strategy in favor of a broader policy on communal services), but the efforts of the MHR Project and the technical assistance provided were enough to put district heating and building energy efficiency on a priority track for government officials and donors in the municipalities sampled.
- **The energy audits and municipal energy plans, coupled with demonstration projects.** The energy audits and MEPs do not provide investors with all of the information they need to make their investments, but it gives them a starting point that had never existed in Ukraine before the MHR Project. The municipal energy plans and energy audits have given potential investors a first look at the returns possible in the district heating and buildings sectors. It has succeeded in focusing the attention of the multilateral lending banks and bilateral donors on areas for possible investment and further analysis. The demonstration projects were an important supplement to the energy audits and MEPs. The projects have succeeded in spurring the interest of municipal governments in seeking financing for future projects.

The activities that contributed less to the project's purpose were the creation of HOA Advisory Centers, the Public Information Campaign and energy efficient schools and campuses activity. These activities were generally relevant and effective, but did less to improve the financial viability of district heating companies, or improve quality of service. Low public awareness is an important barrier to energy efficiency but education will not help if the energy efficiency measures have no

financial return. As the demonstration projects showed (through the cost savings achieved), energy savings measures begin to make financial sense only once heat use is metered.

How are MHR Project activities relevant to USAID's Global Climate Change Initiative?

As noted above, the MHR Project activities are relevant to the clean energy pillar #2 of the GCCI because clean energy technologies include both energy efficiency technologies as well as low carbon energy technologies.

Is the MHR project implementing the most appropriate package of activities to attract private investments into the sector?

As noted in Section 3, there is evidence that concessional lenders (IFIs such as EBRD, NEFCO, and the World Bank) are making investments based on activities of the MHR Project, but there is not yet evidence of substantial private investment.

In our view, the MHR Project implemented activities that were *supportive* to attracting private investment to the district heating sector buildings sectors. The single most important barrier to private investment in district heating is the level of the tariff. Until tariffs are raised to full cost-recovery levels, no private investment will emerge. Heating tariffs are well below the full cost of service in most district heating systems. The MHR Project rightly identified this as an important barrier and made tariffs the focus of one of the tasks. Other tasks (demonstration projects, HOA Advisory centers, public information campaigns, energy audits, MEPs, etc.) focused on reducing the losses which also compromise the municipal heating companies financially.

The MHR Project took an approach which depends on independent regulation to create an environment for financially viable municipal heating companies, able to attract private investment. This is a reasonable approach, and one that has been used successfully in other countries. There are, however, alternative reform approaches which have proven successful in attracting private investment to utility services sectors.

An alternative approach could have focused on activities designed at spurring Public Private Partnerships (PPPs) in the municipal heating sector instead of creating an independent regulator. With PPP contracts, a financially sustainable tariff (and as necessary transfers from government), and service standards are set in long-term performance agreements between a public agency (often, a municipal government), and a private operator.[36] PPP contracts with international investors are often subject to arbitration outside of the country in which they are implemented. This can make it more difficult for politicians to renege on tariff promises, and because they are longer-term than most political cycles, it is less likely that changes in political leadership can upset the financial equilibrium agreed in the contract.

PPP contracts are widely used in the provision of utility services. Recent, successful examples can be found in the United States, France, Czech Republic, the Philippines, and Romania. Creating an enabling environment for PPPs, however, can be just as challenging in a country like Ukraine (perceived by investors as a high risk country) as creating an effective independent regulator. We therefore cannot say that the alternative reform path would have been more likely to attract private investment.

It is worth noting, finally, that a *sustainable* municipal heating sector is not synonymous with a sector that has high levels of private investment. Utility services can be made sustainable through concessional lending (loans from IFIs), or through a combination of tariff increases and transfers

[36] PPPs differ from, but are often confused with privatization. With privatization, there is always transfer of assets and equity to a private owner from government. A PPP in contrast assigns the private party the right to use the assets for certain purposes (e.g., to provide utility services), for an agreed period of time.

from government (to customers or to the utilities) – provided that such transfers are affordable for government over the long-term.[37] The MHR Project activities rightly recognize this, by including a task on the creation of social safety nets.

How well did the MHR Project management coordinate implementation of project tasks, collaborate with other USAID and non-USAID programs, and verified results attributed to MHR Project activities?

As described in Section 3, this is a compound question with three sub-questions. To answer these questions, we rely principally on the KIIs, as we had no other way to assess

1) How well did the MHR Project management coordinate implementation of project tasks?

As described in Section 3, there were very few negative comments from key informants about MHR Project management's role.

2) How will did the MHR Project management collaborate with other USAID and non-USAID programs?

As also described in Section 3, most of the donor partners we interviewed said that they had a positive and cooperative relationship with the MHR Project management.

3) How well did the MHR Project management verify results attributed to MHR Project activities?

The findings in Section 3 suggest to us that the MHR Project management did more than USAID required in their SOW to monitor and verify results.

5. LESSONS LEARNED

The findings from the evaluation offer reminders of two lessons that have been drawn in other studies on foreign aid, but remain an area of open debate among donors and development policy specialists. These are not, in other words, new lessons, but they bear repeating in the context of the MHR Project.

The commitment of beneficiaries determines the success of a project

Energy audits, MEPs and public demonstration projects were generally more effective in cities (such as Lviv, where an inter-disciplinary committee was established to develop the MEPs) where municipal government had clearly embraced the idea of reform and done parallel work on their own.

The residential demonstration projects were similarly more successful where HOAs were involved. Where a HOA was involved there was a clear commitment of homeowners in the building, and a clear interest in the results. As noted above, this lesson was internalized by the MHR Project team after the early demonstration projects.

At the national level, ultimately, it was also a lack of a consistent commitment to reform (because of a change in administrations) which prevented the passage of several laws, and has prevented NURC from increasing heating tariffs.

New institutions face the same constraints as existing institutions.

The 2010 administrative reform and the presidential moratorium on tariff increases have affected the new regulator, NURC in the same way as its counterpart regulator for electricity and gas (NERC). NERC has struggled-without success-to bring electricity tariffs up to the full cost of supply. NURC appears so far to face the same challenge.

[37] Municipal water and sewerage companies in the United States, for example, are sustainable, in part, because of low interest loans available to them through a revolving fund. The revolving fund is capitalized by funds from the Environmental Protection Agency (EPA).

This is a reminder that it can be difficult to create institutions that are "islands of excellence", isolated from the political, financial, governance and capacity constraints that affect other institutions in a country or sector.

The findings also include several more specific lessons, useful for consideration for future programming in the municipal heating and buildings sectors. The lessons are grouped, roughly, by project activities. These lessons are based exclusively on our findings and analysis in the sample cities, not on project activities elsewhere.

Demonstration projects

- The demonstration project sites in buildings with HOAs were generally more successful than in buildings without HOAs, as evidenced by the fact that the equipment was better maintained. HOAs have an incentive to maintain the equipment because of the cost savings that can be achieved. The ZHeKs do not have a clear incentive to maintain the equipment properly, since selling less heat means less revenue. Once the warranty expires on the equipment, the systems are at risk of falling apart (as they did in Kramatorsk).
- The more comprehensive demonstration project sites had better results. Cost savings were higher in buildings where enveloping measures were implemented in addition to the ITPs, heat meters and temperature controllers installed in other demonstration project sites.
- Some of the problems with demonstration project in Kramatorsk could possibly have been avoided if the MHR Project had better communicated with homeowners—or made sure the city administrations were communicating with homeowners—before, during, and after the installation of the equipment. As noted in the findings, residents were surprised when the equipment was installed, and surprised again when it was taken out. Residents in a FGD in Yevpatoriia also noted (though they were happy with the end-result) that they were surprised with the placement of the ITP in the courtyard of their condominium complex.

Legal, Regulatory, and Institutional

- Meter-based billing (at the building level) helps customers see the financial benefits of energy efficiency improvements, as long as a tariff remains constant (or does not increase so much that it outstrips the cost savings) and customers behaviors do not change. Most customers in buildings with demonstration projects saw their monthly bills drop when the demonstration project equipment (which included building-level heat meters) was installed. In some demonstration projects, there was energy savings, but tariff increases outstripped the financial savings to customers.[38] In buildings without heat meters, it is important to restructure normative tariffs so that the monthly fixed demand charge better reflects actual demand. This can help improve the financial viability of district heating companies until meters can be installed.
- The existence of two regulators leads to some inconsistency in national tariff policy in the sector. NERC allowed for an increase in the heat production tariff at Kramatorsk's privately owned thermal power plant in the winter of 2011/2012.[39] This led to an increase in end-user heating tariffs, though NURC had not made any tariff decision. The tariff increase annulled the cost savings from some of the demonstration project sites there.

[38] MHR Project implementers have noted, however, that the purpose of the Project was energy savings, not cost savings to customers *per se*.

[39] NERC sets the tariffs for heat production by power plants and CHPs, whereas NURC sets the tariffs for heat-only boilers and heat distribution.

- Reform of hot water tariffs is also required to deal with the different types of heating systems in Ukraine. Customers on an open cycle system (as in Kurakhove) will otherwise see their hot water costs increase when the new metered heating tariff is applied to use of hot water from taps.

Energy audits, MEPs, RTCs

- The energy audit methodology, while of high quality, is not officially recognized by the entity (the Energy Management Center, within the Kyiv Polytechnic Institute) that can certify energy auditors. The MEPs also have no relation to the regional energy efficiency program developed by local administrations for SAEEEC.
- Uptake and dissemination of an energy audit methodology which requires the purchase of software may be less sustainable because of the cost of licenses.

Public information campaign

- The textbooks are easier to re-use if their worksheet pages are separate from the narrative of the text (or can be easily separated.

6. RECOMMENDATIONS

The findings and analysis suggest a number of changes that could be made to improve the way future projects are designed and implemented. This section is organized by activity and, in the case of programmatic recommendations, includes indicative estimates of the implementation costs.[40] There is limited time remaining for changes to be made to the way in which the current project is implemented, but some short-term corrections should also be considered for certain activities.

DEMONSTRATION PROJECTS

Problems with the demonstration project in Kramatorsk necessitate a number of short-term corrections. The recent problems described in Section 3 (where the city removed the heating equipment in the buildings and failed to reconnect it) are not the fault of the project because the equipment had officially been handed over to the city administration and the MHR Project had neither access to nor authority over the equipment. Nevertheless, the problems threaten the sustainability of this activity and pose reputational risks for the MHR Project. We recommend that, during the upcoming heating season, the Project stay in close contact with the City Administration and with the homeowners affected by the removal of the equipment to ensure that reconnections have been made properly.

Cost: The costs of monitoring the situation in Kramatorsk are operational, and would be incurred as part of the current MHR Project. There are no capital costs or marginal costs other than communications costs and transportation of MHR Project personnel to the project site.

REGIONAL TRAINING CENTERS

The MHR Project's work in training energy auditors would be more sustainable if the energy audit methodology allowed for official certification of energy auditors. The general options for doing this could include: i) Working through other, higher-level champions in GoU who are closely allied with the MHR Project, or ii) Approaching SAEEEC or Kyiv Polytechnic' Energy Management Center,

[40] Programmatic recommendations are recommendations for support that could be provided under future USAID programs. Cost estimates are provided for the programmatic recommendations only.

with an offer of funding and technical assistance directed at getting the energy audit methodology approved. The MHR Project knows the relevant players, and how best to approach them, better than the evaluation team and is therefore better suited to determine which approach is most likely to succeed.

Cost: As with the suggestions on the demonstration projects, above, the costs required to implement this suggestion are operational and would be incurred as part the current MHR Project.

HOA ADVISORY CENTERS

The failure to pass the HOA Law has made the work of the HOA Advisory Centers more difficult, but also more critical. HOAs are still being created, in the absence of a revised Law, and HOAs are actively looking for ways to finance energy efficiency investments. As described in Section 3, Lviv has signed loan agreements with EBRD and NEFCO and Lutsk is considering ways to guarantee and subsidize energy efficiency loans to HOAs.

We recommend that any future MHR Project or other project support to HOA Advisory Centers should focus on developing customized approaches to financing within each city. This would mean: i) for HOAs, serving as a clearinghouse of information on the requirements of the individual donors or IFIs; and ii) for donors, IFIs and other investors, providing information on potential projects for municipal governments, working to develop more localized financing solutions which work around gaps and obstacles in national legislation.

Cost: We estimate this work would require 18-24 months of two local consultants' time, and two to three months of an international consultant. Assuming two to three consultant visits to each of the 25 partner cities (including time for the international consultant in-country), we estimate a cost of roughly US$200,000-$250,000 to implement the work.

PUBLIC INFORMATION CAMPAIGN

We recommend that, if MHR Project funds are still available, the positive results of the demonstration projects be publicized as widely as possible. The demonstration projects are convincing, concrete examples of how investments in energy efficiency can reduce costs and improve comfort.

Cost: This work could be done within the context of the current MHR Project, or as part of a follow-on USAID project. The range of cost estimates for this work depends heavily on the breadth and type of dissemination required. We estimate that the cost of this work could range from US$30,000 (one time printing and dissemination of pamphlets, including the effort of two consultants to prepare the materials) to US$100,000 for a more widespread campaign using similar means of communication (TV spots, billboards, and posters) as were used by the MHR Project.[41]

ENERGY EFFICIENT SCHOOLS AND CAMPUSES

Two recommendations that emerge from KII findings with teachers are: i) Wherever possible, green curricula should be combined with demonstration projects in the schools (or perhaps in an HOA where some of the children live) to show the potential for energy savings; and ii) Textbook and workbook portions of the curricula be separated so textbooks can be more easily re-used from year-to-year.

[41] We assumed that comparable contributions would be made through a GDA as were made under the MHR Project promotional campaign. The cost would be considerably higher without GDA contributions (which—for promotional campaign activities—amounted to as nearly $500,000 under the MHR Project).

Cost: The first recommendation is an operational recommendation and not programmatic. The costs of second recommendation—separating textbook material from workbook material—would be marginal only. We have not attempted to estimate those costs here.

INVESTMENT CATALOGS, ENERGY AUDITS, AND MUNICIPAL ENERGY PLANS

As recommended for the RTCs, the energy audit methodologies developed under the MHR Project would be more effective if they carried with them the promise of official government certification.

LEGAL, REGULATORY AND INSTITUTIONAL REFORM

The evaluation team identified a few areas where the legal, regulatory and institutional reform could be expanded in the future. These are less indicative of gaps in the support that was provided, but a natural progression of that support. Areas for future work (some of which may be possible under the current MHR Project) are:

- The development of service quality standards for hot water and heat supply. Regulation of service quality is central to the role of economic regulation and a critical counterpart to tariff regulation. Service quality standards are a starting point for determining the level of investment needed in a network, and hence the level of tariff required to make that investment.
    - Cost: We estimate that support on service quality regulation would require roughly six months local consultant time, and three months of an international consultant's time (with all time in Kyiv), for a total cost of roughly US$75,000.
- Advice on how to coordinate NERC and NURC's roles in setting heat production tariffs, and possible advice to NERC in this area.
    - Cost: Much of this work needs to be done at a fairly high political level, and between NERC and NURC. However, a team with a single international consultant and a single local consultant could produce a proposal on how best to coordinate. We estimate this would cost roughly US$50,000.
- A review of hot water and heat supply tariffs with the aim of removing cross subsidies between them.
    - Cost: We estimate this work would require roughly two months of time from a single international consultant (tariff specialist), and a total of six months of time from two local specialists (one economic/financial specialist and an engineer with expertise in district heating). We estimate a cost of roughly US$65,000.

Appendix A Executive Summary (Ukrainian)

РЕЗЮМЕ

У відповідності з контрактом AID-RAN-I-00-09-00016, номер замовлення AID-121-TO-12-00002, компанія International Technical & Business Consultants, Inc. (IBTCI) та її субпідрядна компанія IMEPower провели середньострокову оцінку Проекту «Реформа міського теплозабезпечення в Україні» (РМТ), який фінансується USAID. Цей звіт містить дані, аналіз, висновки та рекомендації за результатами проміжної оцінки Проекту МРТ. Мета оцінки полягала у визначенні актуальності, ефективності та сталості діяльності Проекту МРТ з перспективою визначення можливих подальших підходів та стратегій.

Передумови та зміст
Централізоване теплопостачання відіграє важливу роль у задоволенні основних потреб комунальних послуг в Україні, але, станом на даний час сектор перебуває у колі фінансових труднощів та технічного зносу обладнання з гострими та хронічними наслідками щодо якості та надійності послуг. Як наслідок, важко виправдати підвищення тарифів, яке є необхідним для фінансової та, відповідно, технічної стійкості системи. Проект виконується у рамках Замовлення AID-EPP-I-09-03-00006 компанією International Resources Group (IRG). Компанія працює у співробітництві з 27 партнерами, серед яких десять субпідрядників та сімнадцять грантоотримувачів. Проект впроваджується у співпраці з Урядом України та органами місцевої влади у 25 містах-партнерах.

Мета Проекту МРТ
Метою чотирьохрічного проекту «Реформа міського теплозабезпечення в Україні» (Проект), з обсягом фінансування у 18.5 мільйонів доларів США, є допомогти Україні розірвати це коло. Проект МРТ був розроблений для допомоги Урядові України та органам місцевої влади у створенні фінансово життєздатного та сталого сектора міського теплозабезпечення, що буде у змозі надавати надійні та якісні послуги з теплопостачання населенню, державним установам та місцевим підприємствам.

Методологія оцінювання[1]
Оцінка була проведена у період з 19 квітня 2012 року до 13 червня 2012 року у чотирьох регіонах України. Додатковий збір даних було проведено з 20 липня до 17 серпня 2012 року у відповідь на зауваження та запитання, отримані від USAID до першої редакції звіту за результатами оцінки.

Документи Проекту та дослідження третіх сторін стосовно муніципального опалення та енергоефективності в Україні та регіоні, були розглянуті при підготовці до польової роботі, а також, при обробці результатів, отриманих внаслідок польових робіт. Були обрані шість конкретних міст, що представляли географічне охоплення Проекту, сферу його діяльності, а також, типи населених пунктів, проблеми та розміри: Київ, Євпаторія, Краматорськ, Курахове, Львів та Луцьк.

Група з оцінки відвідала Проектні об'єкти у кожному з шести міст, провела інтерв'ю з ключовими інформантами (ІКІ) та фокус-групові дискусії (ФГД) в одному місті. Перед візитом були надіслані інформаційні запити, а під час та після візиту були отримані та обговорені відповіді. Зрештою були проведені он-лайнові опитування після деяких інтерв'ю, спрямовані на уточнення початкових висновків і стандартизації відповідей на ключові запитання.

[1] Цей вид оцінки має серйозні обмеження з урахуванням масштабного географічного охоплення та сфери діяльності Проекту. Одним з найбільших обмежень був час та наявний простір для роботи. Для проекту, що має 38 міст-партнерів, вибірка з шести не може вважатися статистично репрезентативною по відношенню до всього населення міст, залучених до Проекту. Не маючи контрфактуальних даних, оцінювальник також не може точно застосувати отримані результати до діяльності Проекту в цілому. Зрештою, використання напівструктурованих анкет ускладнює узагальнювання відповідей респондентів у кількісному вимірі, а також, з огляду на те, що межі відповідей були невідомі, оцінювальна група мала застосовувати контент-аналіз якісних відповідей замість встановленою шкали.

Згідно з переліком робіт (ПР) експерти приділили увагу: (а) ефективності зусиль у напрямку регуляторної реформи, (б) підходу, якості та корисності енергетичних аудитів, (в) якості міських енергетичних планів та ступеню прийняття цих планів на муніципальному рівні. За наявності достатніх даних Група з оцінки провела оцінку ефективності ключових напрямків діяльності Проекту. Висновки зібрали відповіді на шість запитань оцінювання, передбачених в ПР.

Аналіз та висновки по окремих складових діяльності Проекту
Спочатку Група з оцінки проаналізувала актуальність та ефективність кожного з шести компонентів Проекту і використала отримані оцінки, щоб відповісти на шість ключових питань оцінювання.[2]

Правове, регуляторне та інституційне реформування

Діяльність Проекту МРТ у напрямку правового, регуляторного та інституційного реформування була спрямована на розробку національної стратегії, створенні незалежного регулятора тарифів на теплову енергію, покращення регулювання тарифів, запровадження обов'язкового обліку споживання теплової енергії, поліпшення стану компаній з централізованого теплопостачання для залучення інвестицій, допомогу Урядові України у розробці ефективної мережі соціального забезпечення та створення стимулів для формування ОСББ. Проведений аналіз продемонстрував наступне:

- Ця діяльність була актуальною з огляду на завдання Проекту МРТ у частині сприяння у створенні фінансово життєздатного та сталого сектору централізованого теплопостачання. Сталість українського сектору централізованого теплопостачання залежить від його фінансової життєздатності, а фінансова життєздатність, у свою чергу залежить від і) підвищення тарифів то рівня, що дозволяє відшкодувати повну вартість надання послуги, та іі) зменшення втрат у системі внаслідок підвищення ефективності енергокористування. Фінансо життєспроможні компанії мають більше можливостей для: і) залучення фінансування нових капіталовкладень, та іі) підтримку існуючої інфраструктури;
- Діяльність була ефективною у частині розробки ряду нормативно-правових та законодавчих актів з підтримки загальної мети Проекту МРТ – зокрема, Закону України «Про державне регулювання у сфері комунальних послуг», яким створюється новий регулятор – Національна комісія регулювання ринку комунальних послуг України (НКРК). Водночас, кілька значних законів та стратегічних документів, розроблених у рамках Проекту МРТ, не були затверджені;
- Поки що не існує доказів того, що зусилля у напрямку правової, регуляторної та інституційної реформи буди дієвими з точки зору досягнення мети Проекту щодо посилення сталості та фінансової життєздатності компаній, що забезпечують централізоване теплопостачання;
- НКРК ще не продемонструвала свою ефективність у підвищенні тарифів, а програма соціального забезпечення також не буда запроваджена. Втім, створене правове поле посилює можливості для здійснення таких кроків у майбутньому.

Енергетичні аудити, інвестиційні каталоги та міські енергетичні плани

Цей компонент Проекту був спрямований на підтримку місцевих та регіональних органів влади у 25 містах у розробці довгострокових міських енергетичних планів (МЕП), проведенні енергоаудитів громадських та житлових будинків, а також мереж централізованого теплопостачання. Енергетичні аудити використовувалися для отримання даних, на яких базувалися міські енергетичні плани (МЕП). Інвестиційні каталоги складалися на основі міських енергетичних планів (МЕП) та енергетичних аудитів. Проведений аналіз отриманих даних показав наступне:

- Діяльність у цьому напрямку була актуальною, оскільки вона була спрямована по покращення ефективності енергокористування мереж теплопостачання (всередині та зовні будівель), а,

[2] У тексті звіту дані, отримані Групою з оцінювання, наводяться окремо від аналізу та висновків, в яких інтерпретуються дані, що лягли в основу відповідних висновків.

тому, актуальною з точки зору завдань Проекту МРТ щодо підвищення сталості та фінансової життєздатності компаній централізованого теплопостачання завдяки зменшенню втрат енергії;
- Якість проведення енегроаудитів була високою, у порівнянні з іншими методологіями енергетичних аудитів, що використовуються в Україні. Було декілька несистемних помилок у результатах енергетичних аудитів у двох містах. Однак, якість міських енергетичних планів (МЕП), розроблених за результатами енергоаудитів, була різною у містах, в яких проводилася оцінка, тому, дані, отримані у різних містах, було важко порівняти. Це викликано тим фактом, що методологія МЕП була менш розвиненою, ніж методологія проведення енергоаудитів;
- Енергоаудити були ефективними з точки зору залучення певного фінансування у забезпечення енергоефективності. У Львові, Луцьку та Дніпропетровську енергетичні аудити та МЕП використовуються як основа для переговорів з кількома міжнародними фінансовими установами (IFIs). Було досягнуто згоди щодо фінансування кількох інвестицій.

Демонстраційні проекти

У рамках Проекту МРТ було здійснено 32 демонстраційні проекти в 11 містах України. Демонстраційні проекти у житлових та громадських будинках передбачали: спорудження індивідуальних теплових пунктів, встановлення погодних регуляторів температури та утеплення фасадів будинків (ізоляція зовнішніх стін та заміна вікон), а також реконструкцію котелень. Результати проведеного аналізу свідчать про наступне:

- Демонстраційні проекти були актуальними з огляду на завдання Проекту МРТ, оскільки вони (i) були спрямовані на зменшення втрат, що можуть підірвати фінансову життєздатність компаній, що забезпечують централізоване теплопостачання, та (ii) забезпечення «демонстраційного ефекту» задля підвищення рівня усвідомлення потенційної економії за рахунок інвестицій в енергоефективність;
- Демонстраційні проекти були здебільшого ефективні у частині (i) покращення рівня комфортності у будинках за рахунок кращого розподілу тепла, (ii) зменшення обсягів щомісячного споживання та (iii) у більшості випадків, зниження розміру щомісячної оплати опалення;
- До переліку проблем з деякими демонстраційними проектами належить: (i) недосконала розробка та неправильне обслуговування обладнання, що призвело до погіршання температурного дисбалансу, ніж існував до початку демонстраційного проекту, (ii) вартість опалення для деяких користувачів підвищилася після переходу від «нормативних» тарифів (що розраховуються на основі оцінки потреби у теплозабезпеченні) до оплати на основі показників лічильників (фактичне споживання теплової енергії), а також (iii) у деяких будинках в Краматорську була продемонстрована економія тепла, але вартість щомісячної оплати зросла внаслідок підвищення тарифів на теплову енергію після впровадження демонстраційних проектів.

Регіональні тренінгові центри

Регіональні тренінгові центри (РТЦ) були створені у Києві, Львові та Севастополі для підготовки енергоменеджерів, фахівців і міських службовців з енергоаудиту, енергоменеджменту та енергопланування. Група з оцінки зустрілася з представниками РТЦ у Львові та Севастополі. Результати нашого аналізу свідчать про наступне:

- РТЦ є актуальними з точки зору завдань Проекту, оскільки вони допомагають поширювати методології проведення енергоаудитів та розробки МЕП. Водночас, методології РТЦ не були затверджені на рівні Державного агентства з енергоефективності та енергозбереження України (Держенергоефективності);
- Висновки щодо застосування тренінгу є неоднозначними. Інтерв'ю з ІКІ продемонстрували, що навчання від РТЦ має високу якість, а деякі респонденти відзначили, що воно допомогло їм у їхній роботі. Втім, жоден з респондентів не сказав, що воно допомогло розвинути нові

напрямки діяльності, пояснюючи, що попит на інвестиції в енергоефективність все ще низький внаслідок існування юридичних та регуляторних перешкод, серед яких: (i) відсутність кращого закону з підтримки ОСББ (для стимулювання попиту з боку житлових будинків), (ii) правила міського бюджетування, що ускладнюють процес отримання кредитів для муніципалітетів.

Консультаційні центри ОСББ

У рамках цієї діяльності Проекту МРТ був створений стартовий майданчик для фінансування та навчання консультаційних центрів ОСББ на базі міських адміністрацій з метою надання підтримки у створенні ОСББ та запровадженні заходів із забезпечення ефективності енергокористування у житлових будинках. Результати проведеного аналізу демонструють, що:

- Консультаційні центри ОСББ є актуальними з точки зору економії теплоенергії у житлових будинках, а звідси – покращення фінансової життєздатності компаній централізованого теплопостачання;
- Чотири з шести голів ОСББ, які взяли участь в інтерв'ю, що проводилися у відібраних містах, засвідчили, що вони та інші мешканці будинків зверталися до консультаційних центрів ОСББ. Однак, два голови ОСББ в одному місті (Краматорськ) зауважили, що консультаційні центри ОСББ здаються більш зацікавленими у захисті інтересів місцевих комунальних служб (ЖЕК).

Кампанія з інформування громадськості

Проект МРТ започаткував кампанію з інформування громадськості, спрямовану на поширення інформації серед користувачів послуг з опалення про ефективність енергозбереження та реформи централізованого теплозабезпечення. Кампанія використовували ЗМІ, брошури та організовані заходи для охоплення широкого загалу. Крім цього, був розроблений курс навчання для загальноосвітніх шкіл під назвою «Школи та кампуси з енергоефективності», до якого увійшов посібник з теоретичними та практичними уроками з енергії та економії енергії. Результати проведеного аналізу свідчать про наступне:

- Громадська освітня кампанія є актуальною з точки зору подолання перешкод щодо ставлення та поведінки у сфері ефективності енергоспоживання;
- Діяльність була ефективною, особливо у частині енергоефективних шкіл і студентських містечок. Більшість респондентів, відповідаючи на запитання про кампанію (як правило, керівники органів міської влади та працівники шкіл), зазначали, що, на їхню думку, ці кампанії були успішними та якісними.

Аналіз та висновки по запитаннях оцінки

Висновки та аналіз, узагальнені вище, дають відповіді на шість запитань з оцінки, поставлених у Робочому завданні.

Наскільки добре Проект націлений на основних бенефіціарів і партнерів для досягнення мети проекту?

Проект охопив усіх бенефіціарів та партнерів, які, є найбільш важливими для досягнення мети Проекту, що полягає в «підтримці центральних та місцевих органів влади у створенні фінансово життєздатного та сталого сектора міського теплозабезпечення, що буде у змозі надавати надійні та якісні послуги з теплопостачання населенню, державним установам та місцевим підприємствам». Проект не був цілком успішним у залученні всіх відповідних партнерів та бенефіціарів (Проект не підписав Меморандум про взаєморозуміння із Державним агентством з енергоефективності та енергозбереження України), але зробив усе можливе для їхнього залучення.

В якій мірі партнери та/або бенефіціар запозичають досвід і методи, що мають вирішальне значення для сталості муніципального сектора теплопостачання та сумірні з інвестиціями USAID? Чи існують будь-які гендерні або регіональні розбіжності?

Перспективи щодо сталості Проекту неоднозначні. Проект МРТ забезпечив основи для сталості завдяки своїй тісній співпраці з партнерами на національному та муніципальному рівні. Є підстави стверджувати, що партнери Проекту приймають практики та поведінку, що є запорукою забезпечення сталості у секторі централізованого теплопостачання. Втім, ця сталість знаходиться під серйозною загрозою, якщо НКРК не зможе опиратися тиску на вищому політичному рівні, спрямованому на утримання тарифів на низькому рівні, та не з'явиться приватне фінансування (неконцесійне) заходів з енергоефективності.

Що стосується гендерних відмінностей, існують певні відмінності щодо впливу демонстрційних проектів на чоловіків та жінок. Жінки, які брали участь у ФГД і ІКІ, надають перевагу більш високій температурі комфорту у будинках, ніж чоловіки. У регіональних тренінгових центрах, опитаних нами, також були гендерні відмінності: тренінгові навчання пройшли більше чоловіків, ніж жінок.

Через невеликий розмір вибірки і спосіб ідентифікації зразку, неможливо чітко віднести відмінності між містами, а також між регіонами, до інших факторів, ніж випадковий розподіл. Однак, ми дійсно спостерігаємо відмінності в ефективності демонстраційних проектів і якості МЕП між містами. МЕП були низької якості в Краматорську (Схід) і Євпаторії (Південь). Демонстраційні проекти мали проблеми в Краматорську і Кураховому (Схід).

Яка з діяльностей за Проектом була найбільш продуктивною з точки зору досягнення мети Проекту допомогти Україні створити фінансово сталий муніципальний сектор теплопостачання, спроможний надавати якісні послуги населенню, громадським установам і місцевим промисловим підприємствам? Які види діяльності зробили найменший внесок щодо цієї мети?

Два компоненти Проекту, що мали найбільший вплив на досягнення цілей Проекту, були: (i) правові, регуляторні та інституційні реформи; (ii) енергоаудити та міські енергетичні плани разом з демонстраційними проектами.

Найважливішими перешкодами у досягненні цілей Проекту стало те, що тарифи встановлюються на рівні, нижчому за відшкодування витрат, відсутність обліку обсягів споживання теплоенергії, а також відсутність контролю за споживанням тепла з боку користувачів. Як наслідок, підприємства, що забезпечують централізоване теплопостачання, не отримують достатніх надходжень для інвестування в обладнання, необхідне для визначення та зменшення втрат у системі, а користувачі не мають стимулів для зниження обсягів споживання теплоенергії.

Рекламна кампанія та школи і кампуси з енергоефективності були менш дієвими, оскільки вони фокусувалися на кінцевому енергозбереженні, що не дуже впливає на фінансовий стан кампаній з централізованого енергопостачання чи поліпшує якість послуг, що надаються.

Наскільки актуальними є Проектні заходи відносно Ініціативи USAID щодо глобальної зміни клімату?

Проект МРТ є актуальним з огляду лише на Основний принцип №2 Ініціативи «Чиста енергія». У рамках Ініціативи, технології генерування чистої енергії включають у себе технології з енергоефективності та технології з виробництва енергії з низьким вмістом вуглецю.

Чи реалізує Проект найбільш відповідний пакет заходів, спрямованих на залучення приватних інвестицій у сектор?

Проект МРТ реалізував діяльності, що були *сприятливими* для залучення приватних інвестицій у сектори розбудови сектору централізованого теплозабезпечення, але діяльність Проекту ще не досягла успіхів у залученні значних приватних (неконцесійних) інвестицій.

Наскільки задовільно керівництво Проекту координує виконання проектних завдань, співпрацює з іншими програмами USAID та іншими не-USAID програмами та перевіряє результати, що відносяться до проектної діяльності?

Це складне запитання можна розділити на три менші запитання. Відповіді на кожне з таких менших запитань наводяться нижче із посиланням на ІКІ та онлайн опитування:

1) Наскільки задовільно керівництво Проекту координує виконання проектних завдань?

Як ІКІ, так і онлайн відповіді опитування, свідчать про те, що впровадження було позитивним і таким, що відбулося.

2) Наскільки задовільно керівництво Проекту співпрацює з іншими програмами USAID та іншими не-USAID програмами?

Всі ІКІ, з якими ми проводили інтерв'ю, надали переважно позитивні відгуки щодо співпраці Проекту з не-USAID програмами. Єдиний негативний коментар стосувався того факту, що Проект занадто покладався на місцевих консультантів, а також було зазначено, що обсяги Проекту були занадто великими, що могло становити ризик для якості, оскільки керівництво Проекту було «розмазане тонким шаром».

3) Наскільки задовільно керівництво Проекту перевіряє результати, що відносяться до проектної діяльності?

Керівництво Проекту МРТ зробило більше, ніж вимагалося у Робочому завданні від USAID у сфері моніторингу та перевірки результатів. У рамках РЗ IRG не затверджувався План моніторингу ефективності роботи (ПМЕ) та Показники ефективності діяльності. IRG розробила ПМЕ після початку Проекту. Перший квартальний звіт з ПМЕ був підготований за лютий 2010 р. – через рік після початку Проекту. З того часу Проект МРТ здійснив кілька досліджень з моніторингу та перевірки результатів Проектної діяльності, включаючи дві оцінки результативності демонстраційних проектів (одна за опалювальний сезон 2010/2011 року, і пізніше – за опалювальний сезон 2011/2012 року), а також дослідження ефективності інформаційної кампанії та дослідження навчального курсу шкіл та кампусів з енергоефективності.

Здобутий досвід

З висновків оцінки виплаває два уроки для майбутньої роботи USAID в інфраструктурних галузях:

- **Нові інститути стикаються з тими ж обмеженнями, що й існуючі інституції.** Політичний тиск на тарифи вплинув на НКРК таким же чином, як на його колегу-регулятора у сфері електроенергетики і газового сектора – НКРЕ. Донорам важко буде створювати інституції, які є «островами передового досвіду», ізольовані від політичних, фінансових і ресурсних обмежень, яких зазнають інші установи в країні або секторі;
- **Зобов'язання виконавців визначають успіх або провал проекту.** Енергетичні аудити, МЕП та громадські демонстраційні проекти були, як правило, більш ефективні в містах (наприклад, Львів), де місцева влада явно сприйняла ідею реформи і зробила паралельну роботу самостійно. Демонстраційні проекти в житлових будинках, так само, були більш успішними там, де були залучені ОСББ. Там, де були залучені ОСББ, було чітке зобов'язання власників житла в будинку, а також зацікавленість у результатах. Цей урок був засвоєний командою проекту МРТ після впровадження перших демонстраційних проектів у місті Краматорську і гідний поширення. Тому, ми його включили до рекомендацій у розділі, наведеному нижче.

Отримані дані також пропонують більш конкретні уроки щодо діяльності у сфері реформування централізованого теплозабезпечення та будівництва. Стислий виклад цих даних наводиться у звіті за результатами оцінювання.

Рекомендації

Висновки та аналіз пропонують ряд змін, які могли б бути зроблені для поліпшення розробки та впровадження майбутніх проектів:

- Для майбутніх програм USAID в цьому секторі, демонстраційні проекти повинні проводитися там, де беруть участь ОСББ або інше підприємство, яке має чітку відповідальність за технічне обслуговування обладнання;
- Проект МРТ повинен продовжувати пошуки можливості співпраці з Держенергоефективності для отримання відповідного рішення щодо методики з енергоаудиту, розробленої для регіональних тренінгових центрів та інтеграції міських енергетичних планів з регіональними програмами з енергоефективності, які надаються до Держенергоефективності;
- Будь-яке майбутнє фінансування Консультаційних центрів ОСББ в Україні повинно зосереджуватись на роботі в рамках існуючого правового та регуляторного середовища для забезпечення фінансування інвестицій у підвищення енергоефективності. Центри повинні надати інформацію про конкретні вимоги донорів щодо фінансування, а також сприяти розвитку місцевих механізмів влади (наприклад, у частині гарантій по кредитах), які полегшують фінансування;
- Рекламна кампанія і майбутні кампанії в інших програмах USAID повинні рекламувати позитивні результати демонстраційних проектів, а також включити більше демонстраційних проектів у школах, де вводяться «зелені» програми;
- Нормативно-правова робота повинна бути розширена, у цьому і майбутніх проектах у даному секторі, з акцентом на: i) розробку показників якості обслуговування, ii) консультації з питань координації встановлення тарифів на теплову енергію новим регулятором, та встановлення тарифів на виробництво теплової енергії існуючим регулятором у сфері електроенергетики і газового сектору - НКРЕ, iii) перегляд тарифів на теплопостачання та гаряче водопостачання з метою усунення перехресного субсидування між ними; iv) перегляд нормативних тарифів у частині їх кращого відображення фактичного споживання теплової енергії в будинках.

Appendix B List of Counterparts and Implementing Partners

List of Main Government Counterparts

- Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine
- Center of Economic Reforms under Presidential Administration
- Verkhovna Rada Committee on Construction, Urban Development, Housing and Communal Services and Regional Policy
- National Commission of Communal Services Market Regulation of Ukraine
- National Electricity Regulatory Commission UKRAINE (NERC)
- State Agency on Energy Efficiency & Energy Saving of Ukraine (NAER)
- Ministry of Finance of Ukraine
- Ministry of Education and science of Ukraine
- Ministry of Labor and Social Policy of Ukraine
- City administrations of 25 cities

List of MoUs signed by the Project

Government Offices

1. Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine
2. Ministry of Labor and Social Policy of Ukraine
3. National Commission, which performs state regulation of public utilities National
4. Electricity Regulatory Commission of Ukraine

Local governments and administrations of cities

1. Alchevsk City Council
2. The Executive Committee of Alchevsk City Council
3. The Executive Committee of City Council and Dnipropetrovsk City Council
4. The Executive Committee of the Ivano-Frankivsk city council
5. The Executive Committee of Kamenets-Podolsk City Council
6. The Executive Committee of Komsomolsk City Council and City Council Komsomolsk, Poltava region
7. The Executive Committee Korosten City Council
8. The Executive Committee Krasnoperekopsky City Council
9. The Executive Committee of Kremenchug town council
10. Executive Committee at the town council
11. The Executive Committee of Mogilev-Podolsk City Council
12. The Executive Committee of Nikopol municipality
13. The Executive Committee of Novgorod-Volyn city council
14. The Executive Committee of Poltava City Council
15. The Executive Committee of Slavutych City Council
16. The Executive Committee of Kherson City Council
17. The Executive Committee Chuguev City Council
18. Executive Body of Kyiv City Council (Kyiv City State Administration) and the Office of Education Obolon district of Kyiv
19. Vinnytsia City Council and the executive committee of Vinnitsa municipality

20. Main Utility Department of Sevastopol City State Administration and Sevastopol City State Administration
21. Dzhankoy City Council and Executive Committee Dzhankoy City Council
22. Dolynska City Council
23. Evpatoriyskaya City Council
24. Kovelska City Council
25. Kupyansk City Council
26. Kurahovskaya City Council
27. Lviv City Council and Department of Housing and infrastructure of the Lviv City Council
28. Mirgorodska City Council and the Office of Housing Mirgorodskoy City Council
29. Pavlograd City Council and Executive Committee Pavlograd City Council
30. Rivne City Council
31. Romenskaya City Council
32. Rubizhne City Council Lugansk region
33. Simferopol City Council
34. The Executive Committee of Kramatorsk City Council and Utility Department of Kramatorsk City Council
35. Khmelnytsky city council and executive committee of Khmelnytsky city council
36. Chervonogradska City Council
37. Chernivtsi City Council and Executive Committee of the Chernivtsi City Council
38. Chernihiv City Council.

Companies
1. Ltd. "DTEK"
2. PJSC "DTEK Pavlogradugol"
3. Ltd. "Vostokenergo"
4. Ltd. "Kramatorskteploenergo"
5. Company "Energy Company" Lutsk Communal Systems "
6. Lease Enterprise "Krymteplocomunenergo" Evpatoriyskaya Branch
7. Regional Municipal Production Enterprise thermal sector "Myrhorodteploenerho"
8. Communal enterprise "Sevteploenerho"

NGOs
1. Dnipropetrovsk City NGO "Association for Consumer Protection of utility services" Our House"
2. NGO "Association of Condominium" Rubezhnoye
3. Association of Condominium Kamenets-Podolsk
4. Private Institution "Development Fund Alchevsk"
5. Condominiums "Vostok 2003", Alchevsk
6. Condominiums "Maria", Lviv
7. NGO "Fund of Sevastopol"

International legal entities and projects ITA
1. Nordic Environment Finance Corporation (NEFCO)
2. Project ESIB EU-INOGATE, performer SOFRECO

APPENDIX TABLE B.1: PROJECT IMPLEMENTING PARTNERS

Vendor	Type of Agreement	Location of Activities
Sub-contracts		
ENSI - Energy Saving International AS	Sub Contract	EU - Ukraine
Research Triangle Institute	Sub Contract	US - Ukraine
EnEffect Consult Ltd	Sub Contract	EU-Ukraine
Alliance to Save Energy	Sub Contract	US - Ukraine
Municipal Development Institute (MDI)	Sub Contract	Ukraine
Energy Efficient Cities of Ukraine (EECU)	Sub Contract	Ukraine
JurEnergoConsult (JurEnergo)	Sub Contract	Ukraine
PEF OptimEnergo	Sub Contract	Ukraine
Energy Consulting Company "ITCON" (ITCON)	Sub Contract	Ukraine
ESCO"Ecologichny Systemy" (ECOSYS)	Sub Contract	Ukraine
Grants		
Association of Ukrainian Cities (AUC)	Grant	Ukraine
Civic Network OPORA	Grant	Ukraine
Yevpatoriya Branch "KRYMTEPLOCOMUNENERGO"	Grant	Yevpatoria
"Kramatorskteploenergo" LLC	Grant	Kramatorsk
HOA "Pokolinya"	Grant	Kramatorsk
HOA "Vidrodzhenya"	Grant	Lutsk
HOA "Parus"	Grant	Yevpatoria
HOA "Bilya Parku"	Grant	Lviv
HOA "MZHK Kamenyar"	Grant	Lviv
Fund "Sevastopol"	Grant	Crimea
Western Ukrainian Regional Training Centre (WURTC)	Grant	Ukraine
KOPO "Regional Council of Entrepreneurs"	Grant	Kherson
"Energy service company "Lutsk Communal Systems"	Grant	Lutsk
HOA "Almaz-Kurakhove"	Grant	Kurahove
HOA "Brigantina-Kurakhove"	Grant	Kurahove
HOA "Sharm-Kurakhove"	Grant	Kurahove

Institute for Budgetary and Socio-Economic Research (IBSER)	Grant	Kyiv

Appendix C Evaluation Scope of Work (SOW)

The Contractor will assess the relevance and effectiveness of MHR project activities in helping - Ukraine create a financially viable and sustainable municipal heating sector able to deliver quality services to the population, public institutions and local industries, as well as to assess the efficiency of major project activities and suggest approaches for potential follow-on programming. The Contractor will consider all components of the MHR project with particular emphasis on the following three items:

(a) the effectiveness of regulatory reform activities;

(b) the approach, quality, and utility of energy audits; and

(c) the quality of municipal energy plans as well as the degree of municipal buy-in to those plans.

The Contractor will answer the following questions:

- How well has the MHR project targeted key beneficiaries and counterparts in order to achieve the project purpose?
- To what extent are MHR project counterparts and/or beneficiaries adopting practices and behaviors critical for the sustainability of the municipal heating sector and commensurable to USAID's investment? Are there any gender or regional differences?
- Which of the MHR project activities appear to have most advanced the project's purpose of helping Ukraine create a financially viable and sustainable municipal heating sector able to deliver quality services to the population, public institutions, and local industries? Which activities have had less of a contribution toward this purpose?
- Is the MHR project implementing the most appropriate package of activities to attract private investments into the sector?
- How relevant are MHR project activities to USAID's Global Climate Change Initiative?
- How well did the MHR project management coordinate implementation of project tasks, collaborate with other USAID and non-USAID programs, and verified results attributed to MHR project activities?

The Contractor will visit MHR project sites in at least five municipalities of different size in at least two geographically distinct regions. The Contractor will ensure that the conduct of the MHR evaluation is consistent with evaluations procedures in USAID's Evaluation Policy (January 2011: http://www.usaid.gov/evaluation/USAIDEvaluationPolicy.pdf).

Deliverables

The Contractor will submit a clear, informative, and credible report (up to 30 pages, excluding annexes and references) that reflects all relevant evaluation team (ET) findings, conclusions, and recommendations made in conjunction with the mid-term performance evaluation of the MHR project in Ukraine. The report must describe the MHR project evaluation design and the methods used to collect and process information requested in the Scope of Work section above and must disclose any limitations to the MHR project evaluation and, particularly, those associated with the evaluation methodology.

The Evaluation Report (ER) must be in line with relevant USAID ADS (Chapters 203 and 578) and USAID Evaluation Policy requirements and recommendations. In particular, the ER must include

sufficient local and global contextual information so the external validity and relevance of the evaluation can be assessed. Evaluation findings should be based on facts, evidence, and data. Findings should be specific, concise and supported by reliable quantitative and qualitative data. Conclusions should be supported by a specific set of findings. Recommendations should be practical, clear, action oriented, and supported by a specific set of findings, conclusions, and estimates of implementation costs.

In the Annexes, the ER should include the Evaluation SOW, a Ukrainian version of Executive Summary section, description of the Evaluation Team (ET) and its member qualifications, the final version of the Evaluation Work Plan (EWP), conflict of interest statements signed by all ET members, tools used for conducting the MHR project evaluation, in-depth analyses of specific issues and pictures of a visited project site(s), sources of information, and a statement(s) of differences (if any) reported by the ET members and/or the Mission and/or MHR project leadership.

The ER will be written in English and submitted in electronic form using MS Word Times New Roman 12 or other legible font of similar size. Any data used to prepare the report will be presented in MS Office compatible format suitable for re-analysis and submitted either by e-mail or on a CD or a flash drive.

The ET will present its major findings and preliminary conclusions made in conjunction with the mid-term evaluation of the MHR project at a pre-departure briefing for Mission management and staff. The draft ER will be due in 10 working days after that briefing. The draft ER must include all relevant ET findings and conclusions made in conjunction with the MHR project evaluation and preliminary ET recommendations. The Mission will have 15 working days to review the draft ER.

The final ER will be due in 10 working days following the receipt of the Mission's comments on a draft ER. The Contractor will use either a cover memorandum or similar format to explain how comments provided by the Mission were addressed in the final ER if the final ER differs Substantialy from the draft one. Both the Mission and the Contractor will have a right to initiate an extension of the ER review or preparation/completion time for up to 10 working days at no additional cost.

Evaluation Team Qualifications and Composition

The ET will include one or more international development specialists who have substantial experience in each of the following areas: (a) designing and/or building reliable and sustainable municipal heating systems; (b) drafting national policies and legislation governing utilities, social safety nets, and public companies; (c) regulating and/or managing municipal heating companies; (d) designing and/or conducting effective public oversight and education campaigns; and (e) attracting significant energy efficiency investments. The ET is also expected to use local expertise – at least one individual or company with detailed knowledge of Ukraine's municipal heating sector and relevant governmental and non-governmental institutions. Experience in conducting performance evaluations of large USAID projects is desirable for all ET members. USAID asks that gender be considered in the formation of an evaluation team.

The Contractor must assign at least one specialist with strong understanding of data collection and analysis methodologies and substantial international experience in designing and conducting evaluations of similar projects (Evaluation Specialist). This person must be familiar with USAID Evaluation Policy and evaluation reporting requirements. Experience in designing and conducting performance evaluations of large USAID projects is preferred.

The ET Leader must have strong team management skills, and sufficient experience with evaluation standards and practices. This person must be familiar with USAID Evaluation Policy and evaluation reporting requirements. Excellent communication, both verbal and written, skills and experience in managing performance evaluations of large USAID projects are preferred.

The ET Leader and an Evaluation Specialist will be key personnel under this TO. *Note: one individual may act as both the ET Leader and an Evaluation Specialist if all qualifications requirements are met.*

Evaluation Planning

To facilitate evaluation planning, the Mission will make available to the Contractor four MHR Annual Work Plans, three Performance Monitoring Plans, and ten Quarterly Reports, as well as lists of MHR project subcontractors, counterparts, sites, and documents intended to support reforms in Ukraine's municipal heating sector (municipal energy plans, energy audit reports, etc.), within a working day of the award effective date.

Upon a request, the Contractor will also receive short descriptions of MHR demonstration projects, subcontractors contact information, and copies of MHR documents intended to support reforms in Ukraine's municipal heating sector, as well as the approved Country Development Cooperation Strategy, if the latter is available. As warranted, the Contractor will receive additional project-related documentation.

When planning and conducting the evaluation, the Contractor will make every effort to reflect opinions and recommendations of all key MHR project stakeholders from the national and local governments, donors, civil society and the private sector. In particular, the Contractor is expected to meet with leadership and/or staff of the Ministry for Regional Development, Housing and Utilities, the National Electricity Regulation Commission, National Utilities Regulation Commission, the Association of Ukrainian Cities, the International Bank for Reconstruction and Development, European Bank for Reconstruction and Development, and Nordic Environmental Finance Corporation. USAID requests that any forthcoming American and Ukrainian holidays be considered in scheduling evaluation meetings in the United States and Ukraine.

To keep the Mission informed about the status of the evaluation, the Contractor will submit the final electronic version of the EWP to the Evaluation COTR within two working days following the award. The Contractor will update the EWP on a weekly basis. The ET will discuss any deviations from the EWP with the Evaluation COTR and seek USAID's concurrence with the proposed changes in the EWP if those changes are significant, as determined by the Evaluation COTR.

The ET will invite the Evaluation COTR and other relevant Mission personnel to participate in all meetings and site visits planned in conjunction with the evaluation as soon as those events are on agenda. The ET will conduct weekly briefings for the Evaluation COTR and other relevant Mission personnel in order to keep them informed of the progress of the evaluation and any other issues that may arise.

Logistical Support

The Contractor will be responsible for all logistical support of the evaluation and must not expect any substantial involvement of Mission staff in either planning or conducting the evaluation

Appendix D Brief Description of Evaluation Team Members' Background

- Denzel Hankinson (IBTCI), the team leader is a financial analyst and regulatory economist with a decade of experience with donor-funded energy projects in Eastern Europe and Central Asia, and in Ukraine in particular. In 2011, wrote a report with the World Bank on the financial, social and regulatory challenges facing district heating in Ukraine. In 2009-2010, he drafted a report on the impact of the global financial crisis on Ukraine's energy sector (including the district heating sector). He also has experience leading evaluations. In 2010, for Switzerland's State Secretariat for Economic Affairs (SECO), he led an impact evaluation of SECO's energy sector projects (including district heating) in Europe and Central Asia. He is also a member of a team conducting an impact evaluation of the Millennium Challenge Corporation's electricity sector projects in Tanzania. Denzel was principally responsible for managing the team's work, analyzing the team's findings from a financial and regulatory perspective, and drafting the evaluation report.
- Oksana Drannik (IMEPower) is an accomplished senior regulatory and energy market expert with extensive experience analyzing the performance of Ukraine's district heating companies and assessing investment programs. She is a specialist in the commercial, financial, regulatory and institutional aspects of company operations in preparation for projects financed by international financial institutions (IFIs) including USAID. Having worked with Ukraine's National Energy Regulatory Commission (NERC), she has advanced knowledge of settlement and tariff setting systems, licensing and contractual frameworks for the heating sector. Oksana was principally responsible for analyzing the project activities related to legal, regulatory and institutional reform, HOA Advisory Centers, and public information campaigns. Oksana also had chief responsibility for facilitating Focus Group Discussions with HOAs and customers.
- Leonid Zhyvylo (IMEPower) is a Heat and Power Generation Expert with over 30 years of experience designing district heating systems. For 20 years, he served as the Lead Expert of the Maintenance Department for the largest Ukrainian district heating company, Kyivenergo Central Heat Networks, where he designed, planned and maintained heat networks and boiler houses and performed technical and economic evaluations of the efficiency of introduction of new equipment and technologies. Currently, he serves as Lead Heating Expert for IMEPower in Ukraine where he has performed investment analyses of Ukrainian power generating companies and developed strategies for the rehabilitation of thermal power generating companies. He is a certified energy auditor. Leonid was chiefly responsible for technical assessment of the energy audits, Municipal Energy Plans (MEPs), and demonstration projects.
- Ms. Anastasia Nekrasova is a technical expert with over 15 years of experience consulting on power-related projects in Ukraine. Ms. Nekrasova specializes in energy sector projects with strong experience in the preparation of tender documents. She is familiar with all stages of energy sector project facilitation, from consulting on project implementation and cost analysis to the monitoring of existing projects. In addition to her technical expertise, Ms. Nekrasova is well-versed in facilitation of large scale projects funded by international donors. She is knowledgeable in International Procurement Guidelines and standard bidding documents, as well as the formal procedures and reporting processes for the European Bank for Reconstruction and Development and the World Bank. As a Ukrainian local, Ms. Nekrasova possesses impressive knowledge and understanding of the conventional energy sector in Ukraine, as well as industrial process applications. With a seasoned career and central government experience, Ms. Nekrasova is adept to establishing relationships and

networking with Ukrainian officials and potential clients. She provides an expert regional knowledge as well as strong analytical, communication, presentation, and writing skills. Ms. Nekrasova is fluent in Russian, Ukrainian, and English. Ms. Nekrasova accompanied the team on site visits to Kurakhove and Kramatorsk, and participated in KIIs. She also analyzed results related to the public information campaign and energy efficient schools and campuses activities.

Appendix E Additional Details on Methodology

APPENDIX TABLE E.1: MAPPING PROJECT "ACTIVITIES" TO "COMPONENTS" AND "TASKS"

From IBTCI's SOW, "the Mission… expects to achieve the MHR Project's purpose by…"	"Items" for special emphasis in IBTCI's SOW	Tasks in IRG's SOW	Evaluation Team's Categories of Activities
(a) Strengthening the legal, regulatory, and institutional framework (b) developing tariff methodology	(a) The effectiveness of regulatory reform activities	Tasks 1: Provide assistance to the GOU task forces and working groups in developing and approving a national municipal heating strategy Task 2: Improving Tariff Regulation Task 3: Develop a legal basis and technical specification for installation of building-level meters and heat regulators Task 4: Assist government of Ukraine in developing the legal framework for condominium associations, changes to the housing code, and development of energy efficiency building codes Task 9: Assistance to GoU to Develop an Effective Social Safety Net	Legal, regulatory and institutional reform (which includes improving tariff regulation)
(e) improving energy efficiency in residential [and municipal buildings][1]		Task 4: Assist government of Ukraine in developing the legal framework for condominium associations, changes to the housing code, and development of energy efficiency building codes	HOA Advisory Centers

[1] HoA Advisory Centers are meant to improve energy efficiency in residential buildings only, not municipal.

(d) enhancing the capacity of municipalities to plan, manage, and fund the development of heating systems (e) improving energy efficiency in residential and municipal buildings	(b) the approach, quality, and utility of energy audits (c) the quality of municipal energy plans as well as the degree of municipal buy-in to those plans	Task 5: Assist municipalities with energy planning, as well as with developing, implementing and monitoring comprehensive municipal energy efficiency programs Task 6: Business planning and project financing of municipal heating programs Task 9: Provide Extended Assistance to Kyiv and Dnipropetrovsk in MEP and End-Use EE	MEPS, energy audits and investment catalogues Regional Training Centers (RTCs) Demonstration projects
(c) educating the public and government officials on these matters		Task 7: Conduct public awareness campaigns	Public information campaign

APPENDIX TABLE E.2: EVALUATION METHODS USED FOR EACH PROJECT ACTIVITY

Project Activities	**Review of project documents**	**Review of 3rd party document**	**Data requests**	**Focus Group Discussion**	**Expert assessment**	**Site visits**	**Key informant interviews**
Demo projects	√		√	√	√	√	√
HOA Advisory Centers	√	√	√				√
Legal, regulatory and institutional advisory	√	√	√				√
MEPS, energy audits and investment catalogues	√	√	√		√	√	√
Public information campaign	√		√				√
RTCs	√		√				√

APPENDIX TABLE E.3: CATEGORY OF ACTIVITIES IMPLEMENTED IN EACH OF THE SAMPLE CITIES

Project Activities	Kramatorsk	Kurakhove	Kyiv	Lviv	Lutsk	Yevpatoriia
Demo projects	√	√		√	√	√
HOA Advisory Centers	√			√		√
Legal, regulatory and institutional advisory	√	√	√	√	√	√
MEPS, energy audits and investment catalogues	√			√	√	√
Public information campaign	√	√	√	√	√	√
RTCs			√	√		√[2]

APPENDIX TABLE E.4: INDICATORS OF EFFECTIVENESS

Project Activities	Indicators of Effectiveness
Demo projects	• Energy savings • Cost savings • Indications of demonstration effect
HOA Advisory Centers	• Number of HOAs established • Other Indications of utilization by HOA chairs and residents
Legal, regulatory and institutional advisory	• Number of policies, laws, regulations or institutional changes successfully adopted • Extent to which laws and regulations are enforced
MEPS, energy audits and investment catalogues	• Indications that municipalities are actively using the audits, MEPs or investment catalogs • Signs that investors are actively using the audits, MEPs or investment catalogs • Quality of the energy audits, MEPS, and investment catalogs (from KIIs and as assessed by the evaluation team's technical expert)
Public information campaign	• Indications that lessons learned in the campaign are being applied • Indications that materials developed for the campaign are still being used • Indicators of quality of the campaign (from KIIs)
RTCs	• Indications of quality of the training provided • Indications that the trainees are somehow applying what they learned, or that the training somehow improved the quality of their work, or their ability to do their work

[2] The RTC was located in Sevastopol, not Yevpatoriia, but the evaluation team visited representatives of the RTC during our trip to the Crimea.

APPENDIX TABLE E.5: SITES VISITED FOR ENERGY AUDIT ANALYSIS

№		*Cities*				
		Yevpatoria	Kurakhovo	Kramatorsk	Lvov	Lutsk
1.	Executor of energy audit	*Central Energy Service Company "ESCO-CENTER", Slavutich city*	*CJSC "Arnika Center", Kiev city*	*Energy Company "Ecological Systems", Zaporozhe city*	*CJSC "KESK", Rovno city*	*CE "Group project on energy saving in administrative and public buildings in Kyiv"*
1	Total number of executed energy audits	15	15	15	15	15
	Including:					
1.1	Residential buildings	10	10	10	10	10
1.1.2	*Out of them HOAs*	*5*	*3 (before the audit)*	*7*	*10*	*8*
1.2.	Schools, kindergartens	3	4	4	4	4
1.3	*Hospitals, clinics*	2	1	1	1	1
2	Analysis performed with on-site inspection by evaluation team, total	5	5	6	1	3
	Including:					
2.1	Residential buildings	2	3	2	1	2
2.1.2	*Out of them HOAs*	*1*	*3*	*1*	*1*	*2*
2.2.	Schools, kindergartens	1	2	0	0	1
2.3	*Hospitals, clinics*	1	0	0	0	0
2.4	*Objects, where the audit was not executed*	*Boiler house at Revolutsii str., 61*		*4 demonstration projects without audit*		

Appendix F Documents Reviewed

List of documents received from MHR (on General Data Request)

1. Full List of Contracting Actions (2010-2012)
2. List of Deliverables for MHRP
3. MHR-Key Sub Contractors and Grantees
4. MHR- Project PMP Table Modification #5 October 2011
5. MHRP GOU Counterparts
6. MHRP-25-cities-key-partners
7. PMP Data Table
8. PMP_data_tbl_final_modif- Performance Indicators
9. MHR Draft Workplan Modification #5 Approved
10. MHR Workplan for Project, Year 1
11. MHR Project Workplan Year 2-Final
12. MHR Workplan for Project, Year 3 and 4
13. MHR Project Workplan for New Activities under Modification No3
14. MHR Quarterly Report No1
15. MHR Quarterly Report No2
16. MHR Quarterly Report No3
17. MHR Quarterly Report No4
18. MHR Quarterly Report No5
19. MHR Quarterly Report No6
20. MHR Quarterly Report No7
21. MHR Quarterly Report No8
22. MHR Quarterly Report No 9
23. MHR Quarterly Report No10
24. MHR Quarterly Report No11

List of Material Additionally Provided by the Project upon Individual Request (on Regulatory Issues)

1. Interim Report on the status of developing providing the National Municipal Heating Strategy, on the status of consulting support in the process of consideration of the draft Laws of Ukraine related to municipal heating and participation in a working group on improvement of the draft Law of Ukraine "On Energy Efficiency of Buildings", July 2010
2. Interim Reports on the status of consulting support within the project, August 2011, October 2011, January 2012
3. Guidelines for Improvement of District Heating Pricing Methodology, March 2010
4. Report on the Overview of the Tariff Setting Process and Tariff Methodology in the Sphere of Centralized District Heating in Ukraine, March 2010
5. Report on Tariff Regulation Options In the Sphere of Centralized District Heating, September 2009
6. Methodological guidelines for improvement of the government regulation system in the area of district heating (regarding identification of an entity and subject of regulation) as of 06.08.2010
7. Rationale of the need to change pricing system in the area of district heating
8. Municipal Heating Reform in Ukraine Project, June 1, 2010

9. Concept of provision of housing and municipal services to population (heat energy, DH, hot water, cold water, wastewater) – to established homeowners associations and individual owners of residential and nonresidential premises (residents of multi-apartment buildings) as of 06.08.2010
10. Methodological Principles of Improving the System of State Regulation in the Field of District Heating (in the part of identification of subject and object of regulation) as of 06.08.2010
11. Policy of Utility Services Provision (Thermal Energy, District Heating, Hot Water Supply, Cold Water Supply, Sanitation) to the Population - Organized (HOAs) and Unorganized Owners of Residential and Nonresidential Premises (for inhabitants of multistory buildings) as of 06.08.2010
12. Grounds for Changes in Pricing System in the Field of District Heat Supply as of June, 1, 2010
13. Report on the Results of Inspection of Customers of District Heating Services in Kramatorsk as of June, 2010
14. Report on the Results of Inspection of Customers of District Heating Services in Lviv as of June, 2010
15. Report on the Results of Inspection of Customers of District Heating Services in Lutsk as of June, 2010
16. Experience of the Cities on Issues of Pricing in the Field of Heat Supply, August, 2010
17. Interim Reports on the status of consulting support in the process of consideration of the draft Laws of Ukraine related to municipal heating, October, 2010; November 2010
18. Report on the Workshop "Methodology of Establishment of Two-Tier Tariffs. Automation of Calculation of Two-Tier Tariffs Based on the Software Model for Tariff Calculation" as of September 14 -15, 2010, Irpin, Kyiv Oblast
19. Suggestions and Comments to the Draft Resolution of the NERC "On Approval of the Procedure of Formation of Tariffs for Heat Production, Transportation, Supply" of 05.10.2010 p.
20. Information about the Process of Approval of Tariffs for Heating and Hot Water Supply Services in the Pilot Cities of the Municipal Heating Reform Project as of 01.02.2011
21. Report on the Results of the Workshops №№1, 2, 3 of Training Course "Formation of Tariffs for the Production, Transportation, and Supply of Heat According to the Requirements of the Resolution of the NERC № 242 of 17.02.2011. For the Representatives of Heat Supply Enterprises of Pilot Cities as of May-July, 2011
22. Legal Aspects of Establishment and Formation of Utility Services Tariffs. Features of Formation of Tariffs for Centralized Cold Water and Hot Water Supply, Sanitation and District Heating According to Current Legislation of 29.11.2011
23. Report on the Overview of the Tariff Setting Process and Tariff Methodology in the Sphere of District Heating in Ukraine, December 2011
24. Stocktaking Report on Current Legal and Regulatory Requirements for Benefits to Low-Income Households Related to Communal (Heat) Services, June, 2011
25. Housing Reform in Ukraine, Opora, 2011
26. Business Plan, Lviv, June, 2011
27. Business Plan, Yevpatoria, August 2011
28. Mechanisms of Formation of Tariffs in the Field of District Heating and Analysis of Effectiveness of Social Protection of Customers Subject to Application of the Two-Blocks Tariffs

29. Recommendations on improvement of the system of social protection of consumers of housing and communal services, August, 2011
30. Analysis and Suggestions on Financial Support at the Expense of Budget Funds for the Introduction of Energy Efficiency Measures for Low-Income Customers (Report), 2012
31. Policy of Implementation of Pilot Project on Energy Conservation at the Local Level with the Introduction of Measures on Social Protection of Low-Income Citizens, February, 2012
32. Comparison Table to the Draft Law of Ukraine "On Energy Efficiency of Residential and Public Buildings", (registration № 9683 in VRU), Prepared for the Second Reading (as of 23.05.2012)
33. Action Plan for the Introduction of Public Private Partnership into the Heat Supply Sector of Ukraine, June, 2011
34. ESCO and Energy Efficiency Contracts (Energy Services Contracts). Short Information, February, 2012
35. Methodology for the Implementation of ESCO Projects (General Guideline), February, 2012

List of Major Ukrainian Legislative Acts in the Field Heat Supply (Ukrainian legislation, used for preparation this Report on Regulatory issues)

1. The Law of Ukraine "On State Regulation in the Field of Utility Services"
2. The Law of Ukraine "On Local Governments in Ukraine"
3. The Law of Ukraine "On Heat Supply"
4. The Law of Ukraine "On Natural Monopolies"
5. The Law of Ukraine "On Licensing of Certain Types of Economic Activity"
6. The Law of Ukraine "On Associations of Apartment House Owners"
7. The Law of Ukraine "On Electricity"
8. The State Target Economy Program on Modernization of Communal Heating Power Sector for 2010-2014, approved by the Resolution of the CMU of 04.11.2009 №1216 (The Resolution is Void according to the Resolution of the CMU of 22.06.2011 №704)
9. The Energy Strategy of Ukraine until 2030, approved by the Resolution of the CMU of 15.03.2006 №145-p
10. The Program of Economy Reforms for 2010-2014 "Wealthy Society, Competitive Economy, Efficient State" of 02.06.2010, the Committee of Economic Reforms under the President of Ukraine
11. The National Action Plan for 2012 on the Implementation of the Program of Economy Reforms for 2010-2014 "Wealthy Society, Competitive Economy, Efficient State", approved by the Decree of the President of Ukraine of 12.03.2012 №187/2012
12. The State Target Economic Program on Energy Efficiency for the period 2010-2015, including the Action Plan of its Implementation by the Cabinet of Ministers of Ukraine CMU Instruction as of 01.03.2010 № 243
13. Regulation on the National Commission on State Regulation in the Utility Services Sphere, Approved by the Decree of the President of Ukraine of 23.11.2011 №1073
14. Regulation on the National Commission on State Regulation in the Energy Sphere approved by the Decree of the President of Ukraine of 23.11.2011 №1059
15. The Decree of the President of Ukraine "On Measures on Support of the National Commission on State Regulation in the Energy Sphere of Ukraine" of 14.03.1995 №213

16. Regulation on the State Agency on Energy Efficiency and Energy Saving of Ukraine, which established the functions of SAEEEC, approved by the Decree of the President of Ukraine of 13.04.2011 № 462/2011
17. Regulation on the Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine of Ukraine of 31.05.2011 №633
18. The Procedure for Review and Approval of Tariffs for the Licensees on Electric and Thermal Energy Production, approved by the Resolution of the NERC of 12.10.2005 №898
19. The Procedure for the Calculation of Tariffs for Electric and Thermal Energy, Produced by CHPs, TPPs, NPPs and RES, approved by the Resolution of the NERC of 12.10.2005 №896
20. The Procedure for the Calculation of Tariffs for Electric and Thermal Energy, Produced by Cogeneration Units, approved by the Resolution of the NERC of 12.10.2005 № 897
21. The Resolution of the CMU "On Ensuring a Unified Approach to the Formation of Tariffs for the Housing Utilities" of 01.06.2011 №869
22. Regulation about the Ministry of Energy and Coal Industry of Ukraine, approved by the Decree of the President of Ukraine of 06.04.2011 №382 and by the Resolution of the CMU of 02.11.2006 №1540
23. Concept of the State Target Program on Modernization of Heat Power Sector, approved by the Resolution of the CMU of 02.04.2009 №440-p.
24. The State Target Economy Program on Energy Efficiency and Development of energy production from renewable energy sources and alternative fuels for 2010- 2015, approved by the Resolution of the CMU of 25.01.2012 №105.
25. The National Program of Reforming and Developing of Housing and Communal Services for 2009-2014, defined by the Law of Ukraine
26. Sectoral Program on Energy Efficiency and Energy Saving in Housing and Communal Services for 2010-2014, approved by the Order of the Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine of 10.11.2009 №352
27. The Decree of the President of Ukraine "On optimization of the system of central executive bodies" of 06.04.2011 №370/2011
28. The Order of the State Committee of Ukraine for Regulatory Policy and Entrepreneurship, the Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine "On Approval of Licensing Conditions for the Economic Activities on Thermal Energy Production (Except for Thermal Energy Production by Combined Heat and Power Plants, Cogeneration Units and Power Plants that Use Non-Traditional or Renewable Energy Sources)" of 30.12.2008 №167/417
29. The Order of the State Committee of Ukraine for Regulatory Policy and Entrepreneurship, the Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine "On Approval of Licensing Conditions for the Economic Activities on Thermal Energy Transportation through Main and Local (Distribution) Heat Networks" of 30.12.2008 №168/418
30. The Resolution of the CMU "About New Size of Expenses for Housing and Communal Services, Purchase of Liquefied Gas, Solid and Liquid Furnace Domestic Fuel in the Event of Granting of Housing Subsidy" of 27.07.1998 №1156.

APPENDIX TABLE F.1: LIST OF DOCUMENTS DEVELOPED DURING THE PROJECT IMPLEMENTATION THAT WERE REVIEWED BY THE EVALUATION

TEAM AND INSPECTED IN THE DEMO SITES (ON ENERGY AUDIT, MEP AND DEMO PROJECTS)

№	Title	City, address	Contractor	Note
		Yevpatoria		
1	Municipal energy plan	Yevpatoria	LLC ESCO Environmental Systems	Approved in 2010 (city mayor)
2	Report on energy inspection of the heating system in Yevpatoria	Yevpatoria	Optim Energo, Kharkiv	
3	Report on energy audit of the city outpatient hospital	Yevpatoria, Nekrasova str. #39	CEC ESCO Center, Slavutich	Installation of a gas-fired boiler house
4	Report on energy audit of a residential building	Yevpatoria, Tuchina str. #1		Installation of a gas-fired boiler house
5	Report on energy audit of a residential building	Yevpatoria, May 9 str. #39 B, HOA Parus		
	Report on energy audit of a residential building	Yevpatoria, Pobedy prosp. #65		
6	draft	Yevpatoria, Internatsionala, #135 A, boiler house	Akva Ukraina, Kyiv	variable frequency control
		Kurakhovo		
7	Municipal energy plan	Kurakhovo	Energy consulting company "ATCon", Poltava	**Not approved**
8	Report on energy inspection of the heating system in Kurakhovo	Kurakhovo	Optim Energo, Kharkiv	
9	Report on energy audit of kindergarten №21 Skazka	Kurakhovo, Pushkina str.#4	ARNIKA-Center, Kyiv	

10	Report on energy audit of kindergarten №18 Kosmonavt	Kurakhovo, Chapaeva str. #18B		
11	Report on energy audit of a residential building	Kurakhovo, Lenina str. #117, HOA «Almaz»,		
12	Report on energy audit of a residential building	Kurakhovo, Mechnikova str. #18 HOA Sharm		
13	Report on energy audit of a residential building	Kurakhovo, K. Marksa str. #10, HOA Brigantina		
		Kramatorsk		
14	Municipal energy plan	Kramatorsk	LLC ESCO Environmental Systems	Approved in 2010 (city mayor)
15	Report on energy inspection of the heating system in Kramatorsk	Kramatorsk	Optim Energo, Kharkiv	
16	Report on energy audit of a residential building	Kramatorsk, 19 Partsiezda str. #57 (municipal housing office)	LLC ESCO Environmental Systems	
17	Report on energy audit of a residential building	Kramatorsk, 19 Partsiezda str. #51 (municipal housing office)	LLC ESCO Environmental Systems	
18	Design document "Installation of a ITP with weather regulation and metering"	Kramatorsk, five buildings	Private company "Energya-KU", Kramatorsk	
		Lviv		
19	Municipal energy plan (part of the Program for Sustainable Energy Development	Lviv	Working group of the Reconciliation Council	Approved in 2011 (city council session)

	of Lviv Till 2020")			
20	Report on energy inspection of the heating system of Lviv	Lviv	Optim Energo, Kharkiv	
21	Report on energy audit of a residential building	Lviv, Pokhyka str. #3, HOA Near Park	CJSC KESK Rivne, Rivne	
22	Report on energy audit of a residential building	Lviv, Roksoliany str. #57, HOA Kameniar		
23	Report on energy audit of a residential building	Lviv, HOA Maria		
		Lutsk		
24	Municipal energy plan	Lutsk	Regional training center "Local development Institute", Kyiv	Strategic development goals approved in 2010 (reconciliation committee of the city council)
25	Report on energy inspection of the heating system of Lutsk	Lutsk	Optim Energo, Kharkiv	
26	Report on energy audit of a residential building	Lutsk, prospekt Pobedy #10, HOA Binom	KP Group on Introduction of the Project on Energy Saving in Administrative and Public Buildings in Kyiv	
27	Report on energy audit of a residential building	Lutsk, prospekt Vozrozhdenia #22 A, HOA Vozrozhdenie		
28	Report on energy audit of a nursery school	Lutsk		
		General documents		
29	Municipal Energy Planning		USAID	

	General Framework Methodology		
30	Methodology of Monitoring of Decreased Energy Resources Consumption at Sites Where Energy Efficiency Measures Were Implemented	USAID	
31	Methodology of Conducting Energy Audits Using ENSI EAB application software	USAID	
32	Guidelines on preparation of building energy certificate for new build and rehabilitation. DSTU-N B A.2.2-5:2007	Minregionstroy of Ukraine, 2008	
33	Methodology and recommendations for the development of energy efficient and environmentally sound DH programs for Ukrainian cities	Approved by the Directive of Minstroy of Ukraine dated 26.10.2007, №147	
34	Integral inspection and energy audit methodology for building rehabilitation projects. MDS 13-20.2004	Central Research & Design Experimental Institute for Industrial Buildings and Facilities (Russia, Moscow, 2004)	
35	Structural design of buildings and facilities. Thermal insulation. DBN V,2,6-31:2006	Minstroy of Ukraine 2006	
36	DIRECTIVE 2010/31/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 May 2010 On The Energy Performance Of Buildings.	European Parliament, 2010	

Third party sources consulted

District Heating (Ukraine):

Center of Social Expertise of the Institute of Sociology of the National Academy of Sciences of Ukraine (CSEP). "District Heating Reforms in Ukraine: Public Consultations". Report for the World Bank. 22 June 2011.

COWI. 2009. *Affordable Heating , Ukraine World Bank Affordable Heating , Ukraine: Strategy Report.*

Larive International. 2011. "Market Survey: Opportunities for District Heating Systems in Ukraine" (December).

Lukosevicius, Valdas. 2008. *Regulation of Ukrainian District Heating Sector.*

Poyry Group. "Implementing Consumer-End Heat Metering in Ukraine. Activity 1: Analysis of cost structure of district heating companies." Report for the World Bank. 21 March 2011.

Poyry Group. 2011. *Implementing Consumer-End Heat Metering in Ukraine. Activity 2: Analysis of Options to Introduce Building-level Heat Metering. Journal of International Development*. Vol. 50. doi:10.1002/jid.1826.

Poyry Group. 2011. *Implementing Consumer-End Heat Metering in Ukraine. Activity 3: Institutional, Legal and Regulatory Framework to Introduce Building-level Heat Metering in Ukraine. Journal of International Development*. Vol. 50. doi:10.1002/jid.1826.

Poyry Group. "Implementing Consumer-End Heat Metering in Ukraine. Activity 4: Implementing apartment-level heat metering." Report for the World Bank. 8 June 2011.

Poyry Group. 2011. *Implementing Consumer-End Heat Metering in Ukraine. Activity 5: Introducing Compumption-based Heat Billing. Journal of International Development*. Vol. 50. doi:10.1002/jid.1826.

Republic of Ukraine. Case Study: How to Improve the District Heating Sector in Kharkiv, May 2010, the World Bank.

The World Bank. 2012. *Modernization of the District Heating Systems in Ukraine : Heat Metering and Consumption-Based Billing*.

The World Bank. 2010. Republic of Ukraine Case Study : How to Improve the District Heating Sector in Kharkiv.

Tsarenko, Anna. 2007. "Overview of Heating Sector in Ukraine."

<u>District Heating (Regional):</u>

Alliance to Save Energy. 2007. *Municipal Network for Energy Efficiency : Regional Urban Heating Policy Assessment Executive Summary*.

ERRA, and Fortum. 2011. *Benchmarking District Heating in Hungary ,Poland, Lithuania, Estonia and Finland*.

Interreg IIIc Program. *Organizing Local Transformation in the Municipal District Heating Sector. Component 2: Local District Heating Utility Restructuring and Regulatory Reform*. http://www.reg-energy.org/data/guidelines/Guidelines - Organizing Local Transformation in the Municipal DH Sector.pdf.

Kavalsky, Basil G. 2000. *Implemntation Completion Report on Loans to the Republic of Poland and Four Distric Heating Enterprises*.

Wennerstrom, Karl Enar. 2001. *Implementation Completion on a Loan to Pec Katowice for Katowice Heat Supply and Conservation*.

World Energy council. 2004. *Regulating District Heating and Cogeneration in Central and Eastern Europe A Report of the World Energy Council*. http://www.worldenergy.org/documents/dhchp.pdf.

Energy efficiency (regional and general):

Agency for Rational Energy Use and Ecology. 2000. Energy Efficiency in Residential Buildings in Ukraine (RESBUILD).

Alliance to Save Energy. 2006. *Removing Barriers to Residential Energy Efficiency in Southeast Europe and the Comonwealth of Independent States*.

Kiva, Olena. 2009. "Energy Efficiency in the Residential Sector in the Ukraine: Achieving the Potential."

Martinot, Eric, and Vladimir Usiyevich. 2001. "Energy Efficiency." In The New Russia: Transition Gone Awry, ed. Lawrence Klein and Marshall Pomer, 365–378. Stanford University Press.

International Finance Corporation (IFC). "Energy Efficiency: A New Resource for Sustainable Growth. Researching energy efficiency practices among companies in Armenia, Azerbaijan, Belarus, Georgia, Russia, and Ukraine". 2010.

Sargsyan, Gevorg; Gorbatenko, Yana. 2008. *Energy efficiency in Russia: untapped reserves*. Washington D.C. - The Worldbank. http://documents.worldbank.org/curated/en/2008/12/10123872/energy-efficiency-russia-untapped-reserves

Taylor, Robert P., Chandrasekar Govindadajalu, Jeremy Levin, Anke S. Meyer, and William A. Ward. 2008. *Financing Energy Efficiency: Lessons from Brazil, China, India, and Beyond*. The World Bank.

The World Bank. 2011. "Project Appraisal Document on a Proposed Loan to the Ukreximbank for the Energy Efficiency Project."

Appendix G Evaluation Tools

Key Informant Interview guides

The questions below were used as guides for questions asked of different categories of Key Informants. The evaluation team did not ask all of the questions shown below, nor did we always ask them with exactly the same phrasing. Often, the flow of the conversation necessitated that questions be asked in different ways, or that questions be skipped because we judged during the interview that the interviewee had already answered the question in another way. Moreover, as each interview progressed, we asked successively more detailed questions, relevant to the Project activities and issues with which each particular interviewee was familiar. The more detailed questions are not shown here, as they differed for each individual interview.

All interviewees

1. Name, agency, position, date of interview, complete contact information
2. How has your organization been involved with the Project and Project activities, for how long and in what activities of the project
3. What do you perceive as the Project successes? What worked well?
4. What evidence is there of the success of the Project activities you are most familiar with?
5. What could have worked better?
6. What might you do differently next time, or as a continuation of the project?

Counterparts (National and municipal government agencies)

1. On what issues do you believe progress has been made in the legal and regulatory framework for energy efficiency and heating sector?
2. What impediments and obstacles are there in implementation of the recent changes? At what level are there problems? What other legal and regulatory changes and other inputs are needed to fully implement the changes already in effect?
3. How was the quality of the work done by IRG and other project implementers?
4. How was the quality of cooperation with the MHR Project staff, and with USAID?
5. Are the project activities (with which you were most familiar) sustainable without additional project inputs?
6. What additional or follow-on work would is necessary, in relation to the MHR Project?

Project beneficiaries (Residents where demonstration projects took place in apartment buildings; or staff, where demonstration projects took place in public buildings such as kindergartens or clinics)

[In some cities, for residential customers, these questions were asked in Focus Group Discussions; in others, they were asked in interviews with small groups of residents and/or HOA representatives]

1. Do you notice any improvements resulting from the Project implementation?
2. Are there any changes in the room temperature after the Project implementation?
3. Is the room temperature after the Project your comfort temperature?
4. Is there any cost-saving with regard to heat payment after the Project implementation?
5. What, in your opinion, is an ideal heat supply services?
6. Do you consider installation of heat meters necessary?
7. Do you consider installation of temperature controllers necessary in each room?
8. Has the Project achieved its results? Should these measures be recommended to other buildings?
9. What can you recommend to improve the Project
10. Are you familiar with any of the activities of the Public Information Campaign carried out under the MHR Project? What is your view of them?

Project beneficiaries (HOA chairpersons)

1. [If a demonstration project was completed in their building, same set of questions as for residents, above].
2. What [other] results have you observed from Project activities?

3. What are the legal, regulatory or other barriers to achieving better energy efficiency in residential buildings?
4. Are you familiar with any of the activities of the Public Information Campaign carried out under the MHR Project? What is your view of them?

Project beneficiaries (teachers or staff of schools involved in the energy efficiency schools and campuses activities)

1. How was the quality of the textbooks and other materials provided under the project?
2. What results (positive or negative) have you observed in connection with this activity?
3. Do you have any suggestions on how to improve on this activity?
4. Are you familiar with the other (nationwide) activities of the Public Information Campaign carried out under the MHR Project? What is your view of them?

Project Implementers

1. You were a Project implementer, but were you also a beneficiary? If so, how? [for subcontractors and grant recipients only]
2. How was the quality of cooperation with IRG and other project implementers?
3. Are the project activities (in which you were involved) sustainable without additional project inputs?

IFI/Donor Partners

1. How was the quality of the work done by IRG and other project implementers?
2. Do the project activities support your activities? Is there overlap or conflict?
3. Have you been able to leverage the results of the project activities for your own activities (additionality)?
4. Are project inputs targeting the right institutions, cities or beneficiaries?
5. What additional activities or approaches would be useful to achieve common purposes?
6. How was the quality of cooperation with the MHR Project staff, and with USAID?

Private sector

1. What are the legal and regulatory and fiscal issues that continue to inhibit private sector participation or finance of municipal energy and energy efficiency?
2. Are there legal and regulatory changes that took place recently that made for more interest?
3. Provide examples of a successful investment: what were the conditions that made it work? Was there MHR project involvement? What was it and how was it effective?
4. What can the MHR project do to attract private sector investment? What activities are effective and useful within the limits of the project?

Questions used in Focus Group Discussions

The following questions were used in the FGD in Yevpatoriia.

1. Do you notice any improvements resulting from the Project implementation?
   Yes
   No
2. Are there any changes in the room temperature after the Project implementation?
   Yes
   No
3. Is the room temperature after the Project your comfort temperature?
   Yes
   No
4. Is there any cost-saving with regard to heat payment after the Project implementation?
   Yes
   No
5. What, in your opinion, is an ideal heat supply services?
6. Do you consider installation of heat meters necessary in kindergarten?
   Yes
   No
7. Do you consider installation of temperature controllers necessary in each room?

Yes
No

8. Has the Project achieved its results? Should these measures be recommended to other buildings?
   Yes
   No.
9. What can you recommend to improve the Project?

Data requests

The questions below were sent to municipalities in the form of a data request in advance of our visits.[51]

Metering Assessment

1. A list of existing tools for metering of thermal energy on heat sources, indicating the class of accuracy of metering. Separately - established with the assistance of the Project.
2. Number of existing metering tools of thermal energy installed for heat consumers by category: dwelling houses, budget organizations, business, industry, community facilities, and other consumers, with the proportion of the total in%. Separately - established with the assistance of the Project.
3. The presence of intra heating controls (regulators of thermal energy) and meters of thermal energy.
4. The presence of water temperature controls for hot water and hot water metering (number and% share of all consumers).
5. Suggestions for improving the work of the Project in this direction and proposals for development of the Project for the future

MEP`s, Energy, Audits & Investment Catalogues

1. Structure of the organization of heat energy supply system in the City: heat energy generation companies (enterprise), transportation and distribution heat energy by trunk and distribution heat networks, the exploitation of house heating systems
2. Is there an energy management structure in the municipality? The composition of the structure. Information about education of staff and the passage of energy management training (to provide the methodology and training program, the number of hours of study, information about the organization that provided training).
3. Information about the developers of a municipal energy plan (MEP). Who carried out an expertise of MEP?
4. The actual duration of the heating season 2008-2009, 2009-2010, 2010-2011. Estimated and actual heating temperature schedule, the schedule of the hot water systems.
5. The characteristics of heat consumers:
   • The number of heat consumers of centralized heating systems and number of heat consumers of individual systems. The calculated thermal capacity: houses, budget organizations, business, industry, community facilities, and other consumers. The amount and the calculated thermal load of consumers equipped with units of metering.
   • Information on the availability of solar thermal generators or other heat sources that do not use gas for heat production, the number of produced heat of heating and hot water.
6. Reports on results of energy audits of buildings before and after the implementation of energy efficiency measures (by the Project).
7. The actual indicators of heating system for each month of 2009, 2010, 2011. (In tabular form, see Appendix Table G.1)
8. Suggestions for improving the work of the Project in this direction and proposals for development of the Project for the future

[51] The data requests for Yevepatoriia were sent during and after our visit.

APPENDIX TABLE G.1: TABLE REQUESTING TECHNICAL DATA ON MUNICIPAL HEATING SYSTEM

Indicator	Unit	January	February	March	April	April	May	June	July	August	September	October	November	December	Year, total
Natural gas consumption (for heat supply)	thousand. м^3														
Electricity consumption (for heat supply)	Thousand кWt*h														
Heat energy, generated by sources (released into the network)	Gcal														
Heat energy consumed (for heating)	Gcal														
Including metered	Gcal														
Consumed for hot water supply	Gcal														
Including metered	Gcal														
Heating water use	Ton														
Water replanishment supply	Ton														
including the raw water	Ton														
Temperature of water network supply	°C														
The temperature of feedback water of system	°C														
Air temperature	°C														

Demo Projects

1. The list is actually performed demonstration projects in the framework of the Project in 2009 – 2011 and activities to improve and enhance the economic efficiency of heating systems, improving the thermal efficiency of buildings and incentive consumers to save heat energy.
2. Calculation of actual energy savings and the actual investment costs for each of the executed under the Project activities
3. The actual heat consumption buildings before and after the implementation of measures to improve energy efficiency in meter readings at comparable outdoor temperatures. The actual temperature of the indoor air during the same periods.
4. Suggestions for improving the work of the Project in this direction and proposals for development of the Project for the future

RTC

1. The number of experts, which took part in the Project training in regional centers in the following areas: energy planning, energy audit. Which organizations they are working for and which positions are specialists trained in the centers?
2. Training methods and manuals
3. Suggestions for improving the work of the Project in this direction and proposals for development of the Project for the future

Energy Efficient Schools and Campuses

1. The list of schools and campuses and dormitories, in which, under the project, carried out activities to improve their energy efficiency
   Calculation of actual energy savings and the actual investment costs for each of the executed under the Project activities
4. The actual heat consumption buildings before and after the implementation of measures to improve energy efficiency in meter readings at comparable outdoor temperatures. The actual temperature of the indoor air during the same periods.
5. Suggestions for improving the work of the Project in this direction and proposals for development of the Project for the future

DH Improved Business operations

1. A list of boilers, which, under the project, carried out work to improve their technical and economic indicators. Describe the specific work.
6. The actual increase in efficiency (reduction in specific fuel consumption per unit of electricity and heat supply) after the Project implementation.
7. The characteristics of thermal networks from each of boiler: the average diameter, length, duration of operation, the volume of water in the networks and local systems
8. A list and description of parts of heating network, which carried out the work for replacement or repair of the Project. Assessment the economic effect obtained under the Project.
9. A list of heating units/points (central heat points and Individual heat points), reconstructed or newly constructed under the Project. Assessment of economic effect obtained under the Project
10. Suggestions for improving the work of the Project in this direction and proposals for development of the Project for the future

HOA Advisory Centers

1. Period of operation of the Advisory Center: from _____ to _____
2. Number of written requests to the Advisory Center during the period of its operation
3. Number of people taken at personal reception center professionals
4. Number of appeals for the establishment and registration of the new association
5. Number of OAH created as a result of the Advisory Center
6. Number of OAH that are currently in the process of registration of all necessary documents
7. Number of new initiatives, which are ongoing in the direction of the association of citizens, formation of an effective owner of housing and a further OAH
8. Does the municipality have the structure to work with the associations, condominiums (OAH)? The composition of the structure
9. Suggestions for improving the work of the Advisory Centre.

Business Planning

1. The quantity and quality of the project conducted training programs on business planning (date, venue, theme, materials);
2. Criteria for selection of pilot projects
3. Ensuring the participation and mechanisms for private sector participation in pilot projects, the use of public-private partnerships
4. Establishment of Energy Service Companies (municipal, private).
5. What is the Project part taken in the preparation of project pilot projects, in particular, in the preparation of project proposals, organization of seminars, community mobilization, organization of targeted review of project proposals, the selection, the beginning of the negotiation process and sign the contract, etc.
6. Suggestions for improving the work of the Project in this direction and proposals for development of the Project for the future

Public Information Campaign

1. Which advertising campaigns were carried out by the Project?
2. What were the target audiences, for which advertising campaigns are designed?
3. Instruments that were used in advertising campaigns (billboards, television, attracting star singers, children's drawing competitions, etc.)
4. Measurement quantifying the effectiveness of advertising campaigns (number OAH created as a result of advertising campaigns, the number of schools / classes, high schools, in which energy efficiency programs were actually implemented, the degree of provision of schools, higher education by textbooks on energy efficiency (%)
5. Rating of advertising campaigns on energy efficiency in the field:
   - Education;
   - Creation OAH;
   - Inform the public on energy saving;
   - Other (please specify).
6. Suggestions for improving the work of the project in this direction and prospects for development in this direction for the future.

Appendix H Online Survey Questions and Results

Survey Cover Letter

Earlier this Summer, I visited you with colleagues from IMEPower as part of a mid-term performance evaluation of the Municipal Heating Reform (MHR) Project funded by USAID during the 2009-2013 period. As part of this evaluation, we were asked to review the progress made in implementing the MHR Project. We have been asked to focus specifically on the relevance of project activities to the project objective, and the effectiveness of the project activities in achieving those objectives. Your input, during our interview, was extremely helpful. We thank you for that.

We would sincerely appreciate it if you would be willing to supplement the ideas you shared with us by completing this short follow-up survey. We are sending this survey to everyone we interviewed. The objective is to confirm and better standardize responses. You may complete the survey by clicking any of the following links:

https://www.surveymonkey.com/s/2KHVCWL (English version)

https://www.surveymonkey.com/s/GQ6JYDB (Ukrainian version)

https://www.surveymonkey.com/s/GTF6JRH (Russian version)

As with your responses to our interview questions, we promise to keep you responses anonymous. We ask for your name and organization as a way of categorizing your responses only, not as a way of identifying you personally. The survey should take no more than 10 minutes to complete. We very much appreciate your continued cooperation. We kindly ask you to complete the survey **no later than August 18**. If you have any questions or concerns, please do not hesitate to contact me, Denzel Hankinson, or my colleagues at IMEPower. Questions and concerns may be sent in English, Ukrainian or Russian.

Finally, if there are others in your organization whom you feel should complete this survey (instead of, or in addition to yourself), please feel free to forward this email to them.

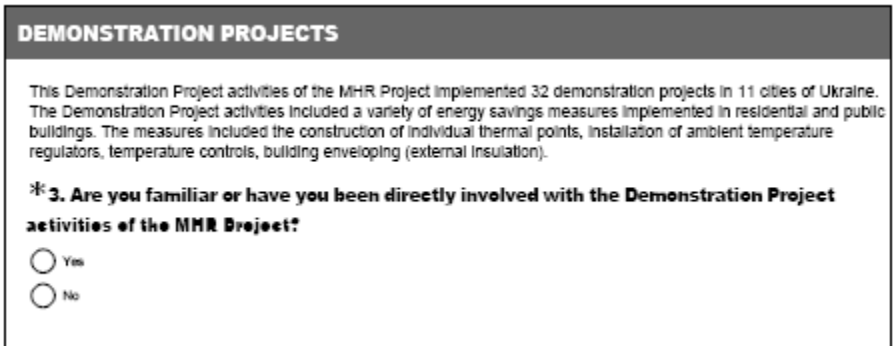
Many thanks and kind regards,

Denzel Hankinson

Survey Questions with Results

The table below shows the categories of respondents emailed a survey invitation, and the categories who responded.

Category of respondent	Invited	Responded
Government counterpart (Municipal)	19	7
Government counterpart (National)	3	3
Implementer (Grant recipient)	12	5
Implementer (Subcontractor)	3	3
International Financial Institutions	4	0
Private company[1]	7	4
Total	**48**	**22**



SURVEY RESULTS FOR QUESTION #3

Yes: 20

No: 2

[Note: Next question was automatically skipped for respondents who answered "No".]

[1] Do not include Project subcontractors.

DEMONSTRATION PROJECTS

The questions below ask you about the relevance and effectiveness of the Demonstration Project activities in achieving the project objective. (Reminder: The objective of the MHR project is to help Ukraine create a financially viable and sustainable municipal heating sector able to deliver quality services to the population, public institutions and local industries.)

***4. Please rate the relevance of the DEMONSTRATION PROJECT activities to achieving the MHR Project objective.**

- ◯ Highly relevant
- ◯ Somewhat relevant
- ◯ Somewhat irrelevant
- ◯ Highly irrelevant
- ◯ Don't know

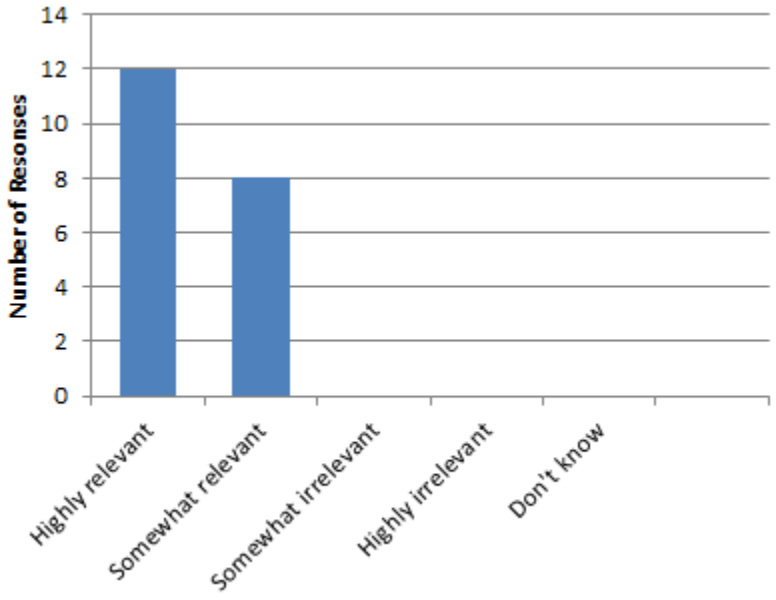
Please use the space below to include any comments you have on the relevance of this project activities.

***5. Please rate the effectiveness of the DEMONSTRATION PROJECT activities in achieving the MHR Project objective.**

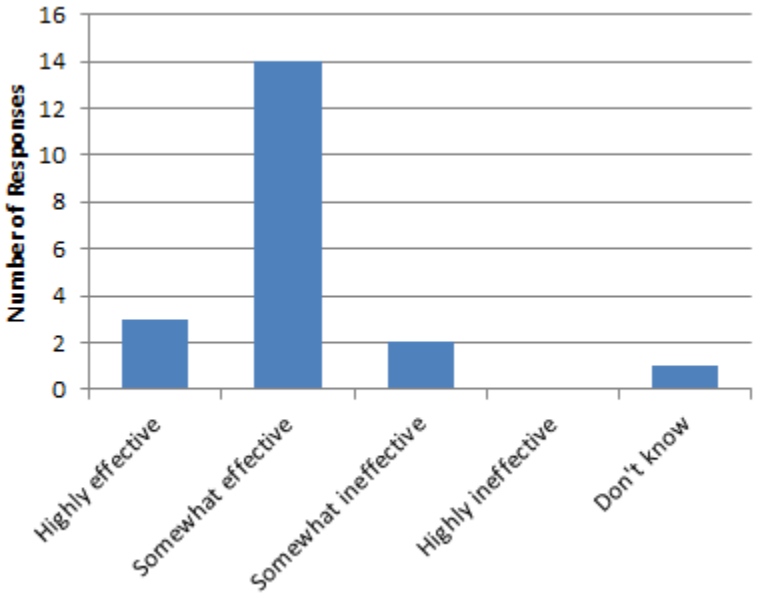
- ◯ Highly effective
- ◯ Somewhat effective
- ◯ Somewhat ineffective
- ◯ Highly ineffective
- ◯ Don't know

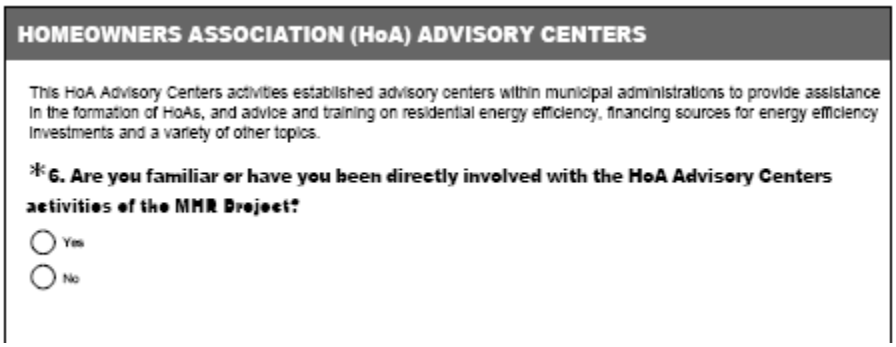
Please use the space below to include any comments you have on the effectiveness of this project activities.

SURVEY RESULTS FOR QUESTION #4



SURVEY RESULTS FOR QUESTION #5





HOMEOWNERS ASSOCIATION (HoA) ADVISORY CENTERS

This HoA Advisory Centers activities established advisory centers within municipal administrations to provide assistance in the formation of HoAs, and advice and training on residential energy efficiency, financing sources for energy efficiency investments and a variety of other topics.

***6. Are you familiar or have you been directly involved with the HoA Advisory Centers activities of the MHR Project?**

- ◯ Yes
- ◯ No

SURVEY RESULTS FOR QUESTION #6

Yes: 17

No: 5

[Note: Next question was automatically skipped for respondents who answered "No".]

HOMEOWNERS ASSOCIATION (HoA) ADVISORY CENTERS

The questions below ask you about the relevance and effectiveness of the HoA Advisory Centers activities in achieving the project objective. (Reminder: The objective of the MHR project is to help Ukraine create a financially viable and sustainable municipal heating sector able to deliver quality services to the population, public institutions and local industries.)

***7. Please rate the relevance of the HOMEOWNER ASSOCIATION (HoA) ADVISORY CENTERS activities to achieving the MHR Project objective.**

- ◯ Highly relevant
- ◯ Somewhat relevant
- ◯ Somewhat irrelevant
- ◯ Highly irrelevant
- ◯ Don't know

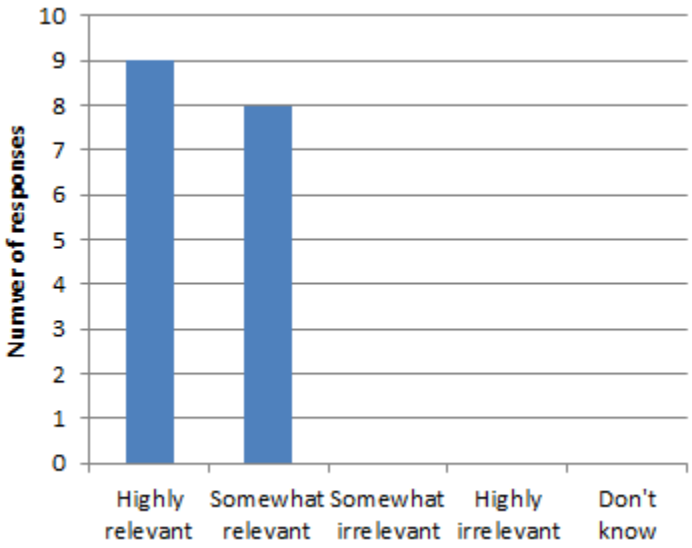
Please use the space below to include any comments you have on the relevance of this project activities.

***8. Please rate the effectiveness of the HOMEOWNER ASSOCIATION (HoA) ADVISORY CENTERS activities in achieving the MHR Project objective.**

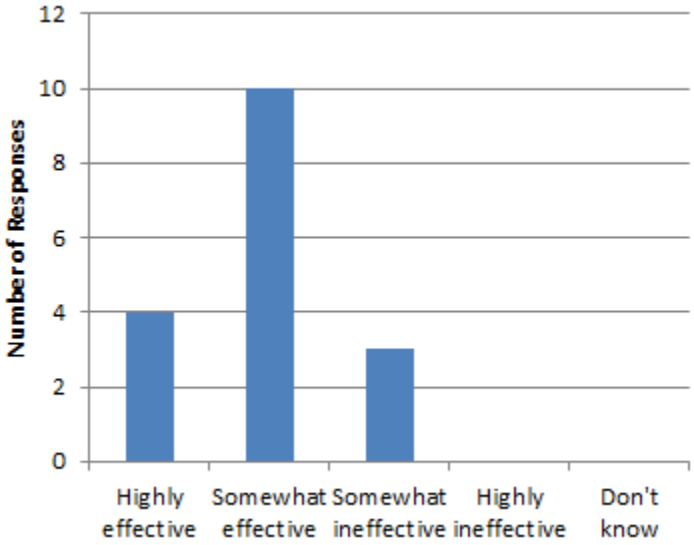
- ◯ Highly effective
- ◯ Somewhat effective
- ◯ Somewhat ineffective
- ◯ Highly ineffective
- ◯ Don't know

Please use the space below to include any comments you have on the effectiveness of this project activities.

SURVEY RESULTS FOR QUESTION #7



SURVEY RESULTS FOR QUESTION #8



ENERGY AUDITS

The Energy Audits activities were conducted in 25 partner cities. These activities targeted district heating systems and typical (public and residential) buildings. Energy audits were used as inputs to Municipal Energy Plans (MEPs).

***9. Are you familiar or have you been involved with the Energy Audits activities of the MHR Project?**

- ◯ Yes
- ◯ No

SURVEY RESULTS FOR QUESTION #9

Yes: 20

No: 2

[Note: Next question was automatically skipped for respondents who answered "No".]

ENERGY AUDITS

The questions below ask you about the relevance and effectiveness of the Energy Audits activities in achieving the project objective. (Reminder: The objective of the MHR project is to help Ukraine create a financially viable and sustainable municipal heating sector able to deliver quality services to the population, public institutions and local industries.)

***10. Please rate the relevance of the ENERGY AUDITS activities to achieving the MHR Project objective.**

- ◯ Highly relevant
- ◯ Somewhat relevant
- ◯ Somewhat irrelevant
- ◯ Highly irrelevant
- ◯ Don't know

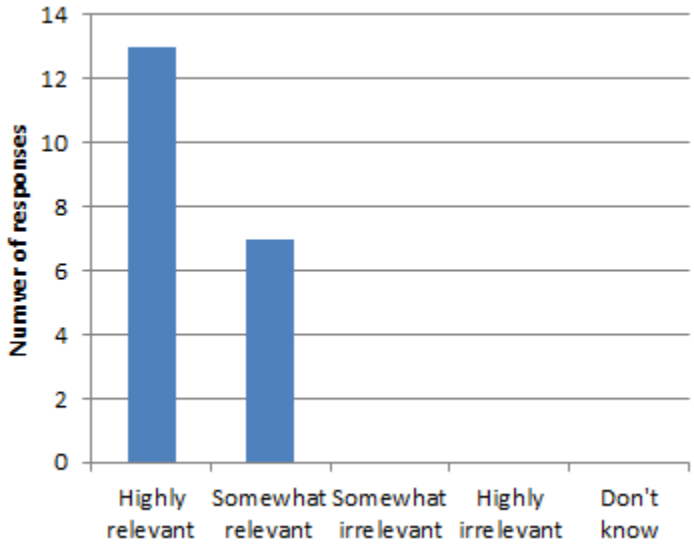
Please use the space below to include any comments you have on the relevance of this project activities.

***11. Please rate the effectiveness of the ENERGY AUDITS activities in achieving the MHR Project objective.**

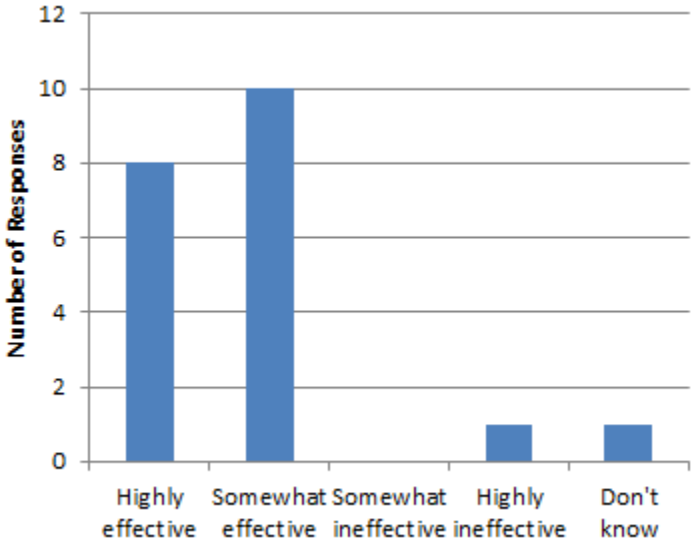
- ◯ Highly effective
- ◯ Somewhat effective
- ◯ Somewhat ineffective
- ◯ Highly ineffective
- ◯ Don't know

Please use the space below to include any comments you have on the effectiveness of this project activities.

SURVEY RESULTS FOR QUESTION #10



SURVEY RESULTS FOR QUESTION #11



MUNICIPAL ENERGY PLANS (MEPs)

The Municipal Energy Audits (MEPs) activities supported local and regional governments of 25 partner cities in developing comprehensive, long-term Municipal Energy Plans (MEPs). Energy audits (developed under another activity) were used as inputs to the MEPs.

***12. Are you familiar or have you been involved with the MEPs activities of the MHR Project?**

- ◯ Yes
- ◯ No

SURVEY RESULTS FOR QUESTION #12

Yes: 17

No: 5

[Note: Next question was automatically skipped for respondents who answered "No".]

MUNICIPAL ENERGY PLANS (MEPs)

The questions below ask you about the relevance and effectiveness of the Municipal Energy Plans (MEPs) activities in achieving the project objective. (Reminder: The objective of the MHR project is to help Ukraine create a financially viable and sustainable municipal heating sector able to deliver quality services to the population, public institutions and local industries.)

***13. Please rate the relevance of the MUNICIPAL ENERGY PLANS (MEPs) activities to achieving the MHR Project objective.**

- ◯ Highly relevant
- ◯ Somewhat relevant
- ◯ Somewhat irrelevant
- ◯ Highly irrelevant
- ◯ Don't know

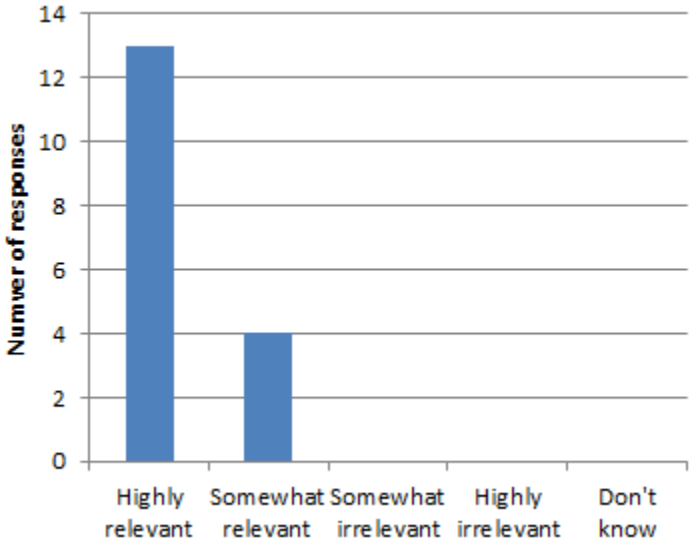
Please use the space below to include any comments you have on the relevance of this project activities.

***14. Please rate the effectiveness of the MUNICIPAL ENERGY PLANS (MEPs) activities in achieving the MHR Project objective.**

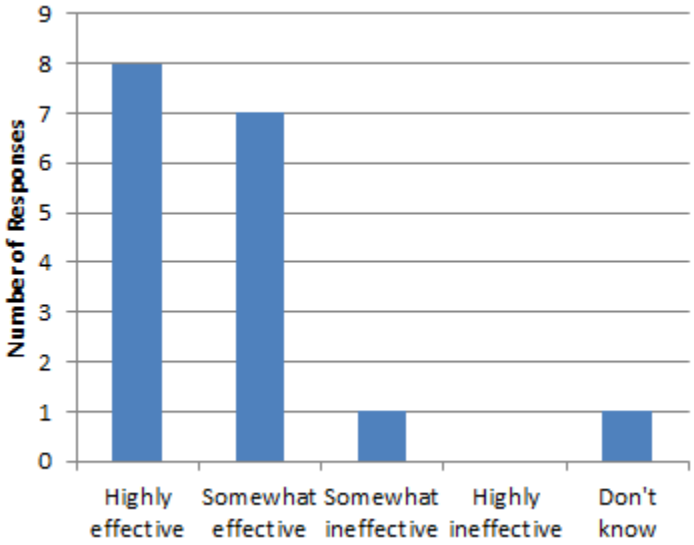
- ◯ Highly effective
- ◯ Somewhat effective
- ◯ Somewhat ineffective
- ◯ Highly ineffective
- ◯ Don't know

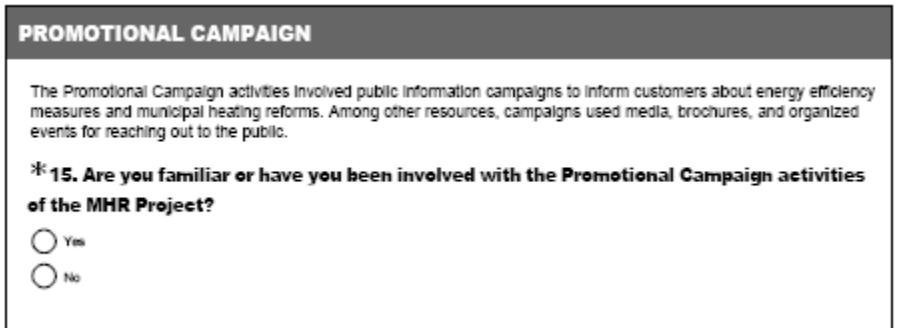
Please use the space below to include any comments you have on the effectiveness of this project activities.

SURVEY RESULTS FOR QUESTION #13



SURVEY RESULTS FOR QUESTION #14





PROMOTIONAL CAMPAIGN

The Promotional Campaign activities involved public information campaigns to inform customers about energy efficiency measures and municipal heating reforms. Among other resources, campaigns used media, brochures, and organized events for reaching out to the public.

* **15. Are you familiar or have you been involved with the Promotional Campaign activities of the MHR Project?**

- ◯ Yes
- ◯ No

SURVEY RESULTS FOR QUESTION #15

Yes: 18

No: 4

[Note: Next question was automatically skipped for respondents who answered "No".]

PROMOTIONAL CAMPAIGN

The questions below ask you about the relevance and effectiveness of the Promotional Campaign activities in achieving the project objective. (Reminder: The objective of the MHR project is to help Ukraine create a financially viable and sustainable municipal heating sector able to deliver quality services to the population, public institutions and local industries.)

***16. Please rate the relevance of the PROMOTIONAL CAMPAIGN activities to achieving the MHR Project objective.**

- ◯ Highly relevant
- ◯ Somewhat relevant
- ◯ Somewhat irrelevant
- ◯ Highly irrelevant
- ◯ Don't know

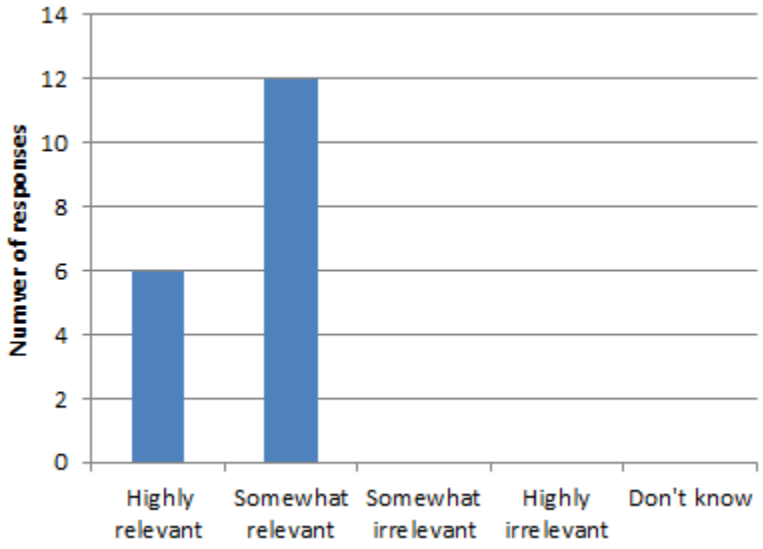
Please use the space below to include any comments you have on the relevance of this project activities.

***17. Please rate the effectiveness of the PROMOTIONAL CAMPAIGN activities in achieving the MHR Project objective.**

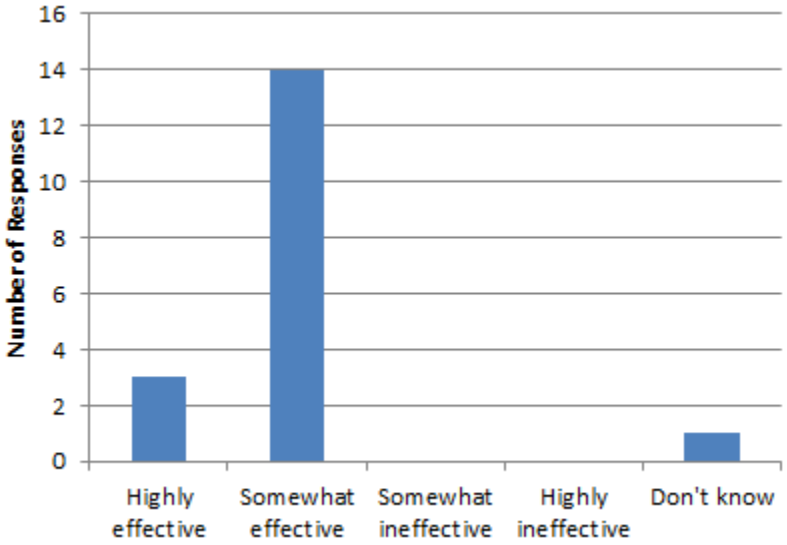
- ◯ Highly effective
- ◯ Somewhat effective
- ◯ Somewhat ineffective
- ◯ Highly ineffective
- ◯ Don't know

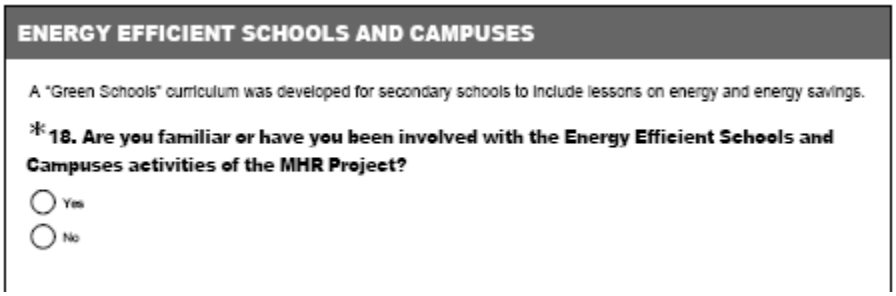
Please use the space below to include any comments you have on the effectiveness of this project activities.

SURVEY RESULTS FOR QUESTION #16



SURVEY RESULTS FOR QUESTION #17





ENERGY EFFICIENT SCHOOLS AND CAMPUSES

A "Green Schools" curriculum was developed for secondary schools to include lessons on energy and energy savings.

* **18. Are you familiar or have you been involved with the Energy Efficient Schools and Campuses activities of the MHR Project?**

◯ Yes
◯ No

SURVEY RESULTS FOR QUESTION #18

Yes: 14

No: 8

[Note: Next question was automatically skipped for respondents who answered "No".]

ENERGY EFFICIENT SCHOOLS AND CAMPUSES

The questions below ask you about the relevance and effectiveness of the Energy Efficient Schools and Campuses activities in achieving the project objective. (Reminder: The objective of the MHR project is to help Ukraine create a financially viable and sustainable municipal heating sector able to deliver quality services to the population, public institutions and local industries.)

***19. Please rate the relevance of the ENERGY EFFICIENT SCHOOLS AND CAMPUSES activities to achieving the MHR Project objective.**

- ◯ Highly relevant
- ◯ Somewhat relevant
- ◯ Somewhat irrelevant
- ◯ Highly irrelevant
- ◯ Don't know

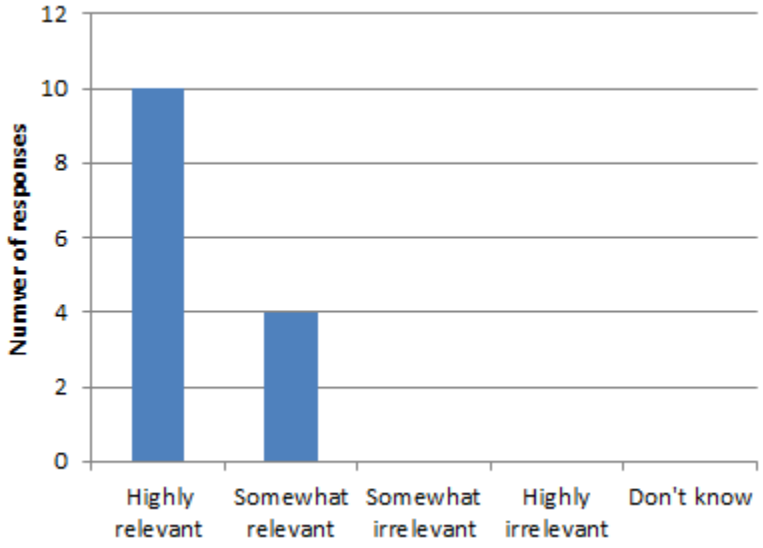
Please use the space below to include any comments you have on the relevance of this project activities.

***20. Please rate the effectiveness of the ENERGY EFFICIENT SCHOOLS AND CAMPUSES activities in achieving the MHR Project objective.**

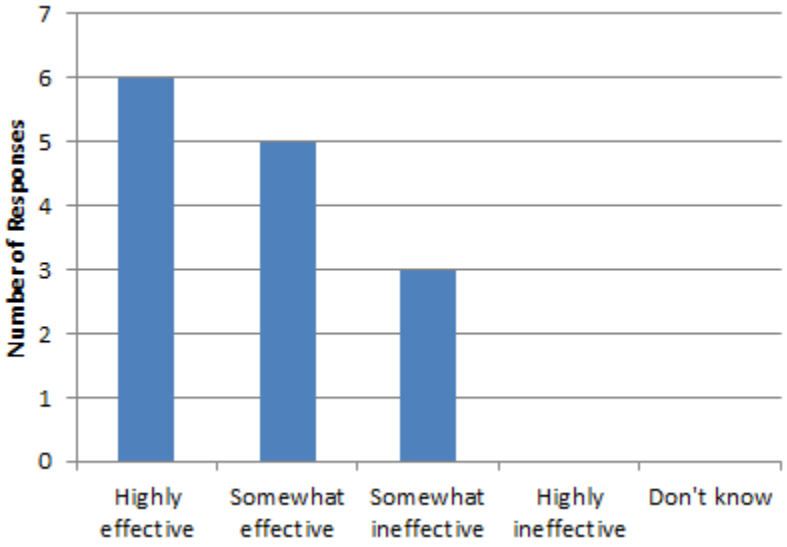
- ◯ Highly effective
- ◯ Somewhat effective
- ◯ Somewhat ineffective
- ◯ Highly ineffective
- ◯ Don't know

Please use the space below to include any comments you have on the effectiveness of this project activities.

SURVEY RESULTS FOR QUESTION #19



SURVEY RESULTS FOR QUESTION #20



REGIONAL TRAINING CENTERS

Regional training centers (RTCs) were organized in Kyiv, Lviv and Sevastopol to train energy managers, specialists and municipality staff in the following areas: energy audits, energy management, and municipal energy planning.

***21. Are you familiar or have you been involved with the Regional Training Centers activities of the MHR Project?**

◯ Yes
◯ No

SURVEY RESULTS FOR QUESTION #21

Yes: 13

No: 9

[Note: Next question was automatically skipped for respondents who answered "No".]

REGIONAL TRAINING CENTERS

The questions below ask you about the relevance and effectiveness of the Regional Training Centers activities in achieving the project objective. (Reminder: The objective of the MHR project is to help Ukraine create a financially viable and sustainable municipal heating sector able to deliver quality services to the population, public institutions and local industries.)

***22. Please rate the relevance of the REGIONAL TRAINING CENTERS activities to achieving the MHR Project objective.**

- ◯ Highly relevant
- ◯ Somewhat relevant
- ◯ Somewhat irrelevant
- ◯ Highly irrelevant
- ◯ Don't know

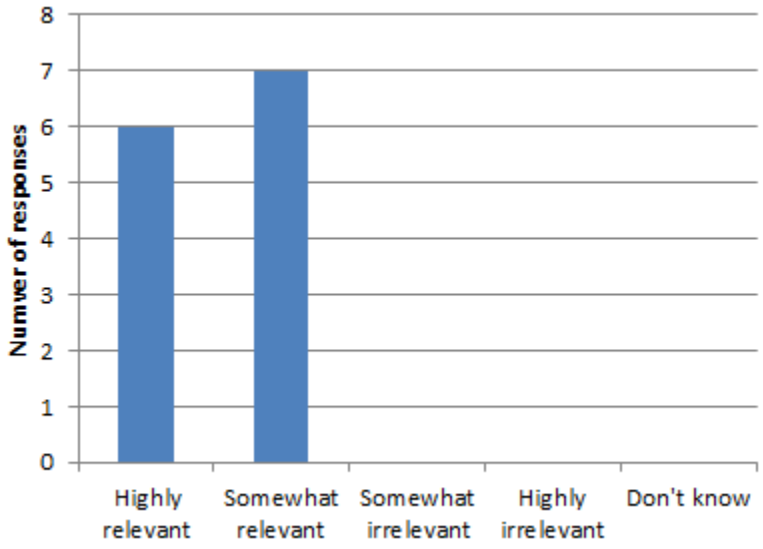
Please use the space below to include any comments you have on the relevance of this project activities.

***23. Please rate the effectiveness of the REGIONAL TRAINING CENTERS activities in achieving the MHR Project objective.**

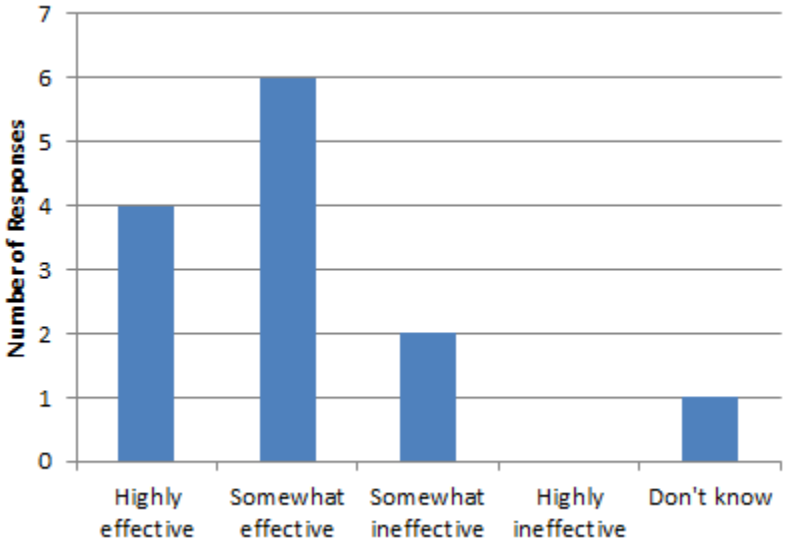
- ◯ Highly effective
- ◯ Somewhat effective
- ◯ Somewhat ineffective
- ◯ Highly ineffective
- ◯ Don't know

Please use the space below to include any comments you have on the effectiveness of this project activities.

SURVEY RESULTS FOR QUESTION #22



SURVEY RESULTS FOR QUESTION #23



LEGAL, REGULATORY, AND INSTITUTIONAL ADVISORY

The Legal, Regulatory, and Institutional Advisory activities focused on developing a national heating strategy and action plan, establishing an independent regulator for heat tariffs, improving regulation of tariffs, creating incentives to form HoAs, establishing mandatory metering of heat consumption, improving the basis of district heating companies to attract investment, and better defining relationships between heat suppliers and consumers.

***24. Are you familiar or have you been involved with the Legal, Regulatory, and Institutional Advisory activities of the MHR Project?**

◯ Yes
◯ No

SURVEY RESULTS FOR QUESTION #24

Yes: 17

No: 5

[Note: Next question was automatically skipped for respondents who answered "No".]

LEGAL, REGULATORY, AND INSTITUTIONAL ADVISORY

The questions below ask you about the relevance and effectiveness of the Legal, Regulatory, and Institutional activities in achieving the project objective. (Reminder: The objective of the MHR project is to help Ukraine create a financially viable and sustainable municipal heating sector able to deliver quality services to the population, public institutions and local industries.)

***25. Please rate the relevance of the LEGAL, REGULATORY, AND INSTITUTIONAL ADVISORY activities to achieving the MHR Project objective.**

- ◯ Highly relevant
- ◯ Somewhat relevant
- ◯ Somewhat irrelevant
- ◯ Highly irrelevant
- ◯ Don't know

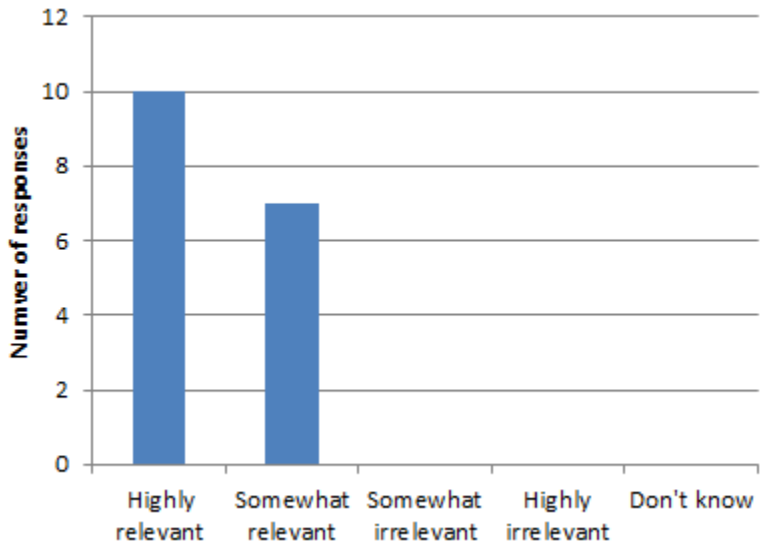
Please use the space below to include any comments you have on the relevance of this project activities.

***26. Please rate the effectiveness of the LEGAL, REGULATORY, AND INSTITUTIONAL ADVISORY activities in achieving the MHR Project objective.**

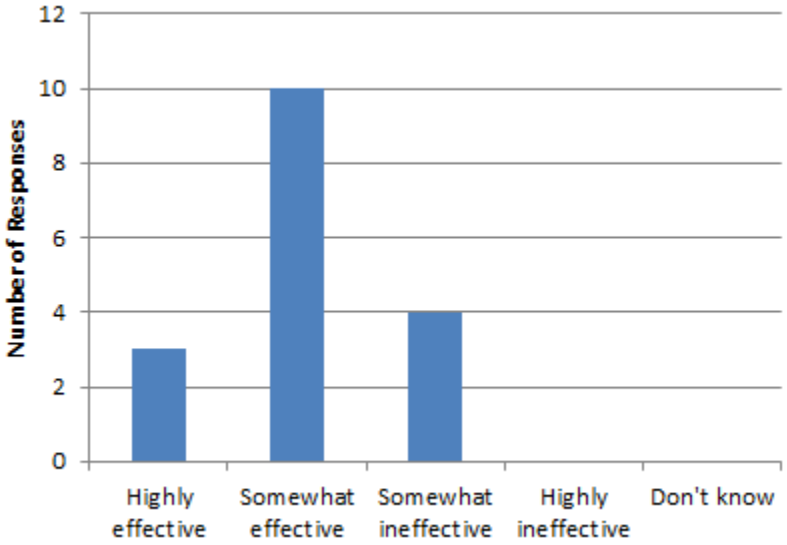
- ◯ Highly effective
- ◯ Somewhat effective
- ◯ Somewhat ineffective
- ◯ Highly ineffective
- ◯ Don't know

Please use the space below to include any comments you have on the effectiveness of this project activities.

SURVEY RESULTS FOR QUESTION #25



SURVEY RESULTS FOR QUESTION #26



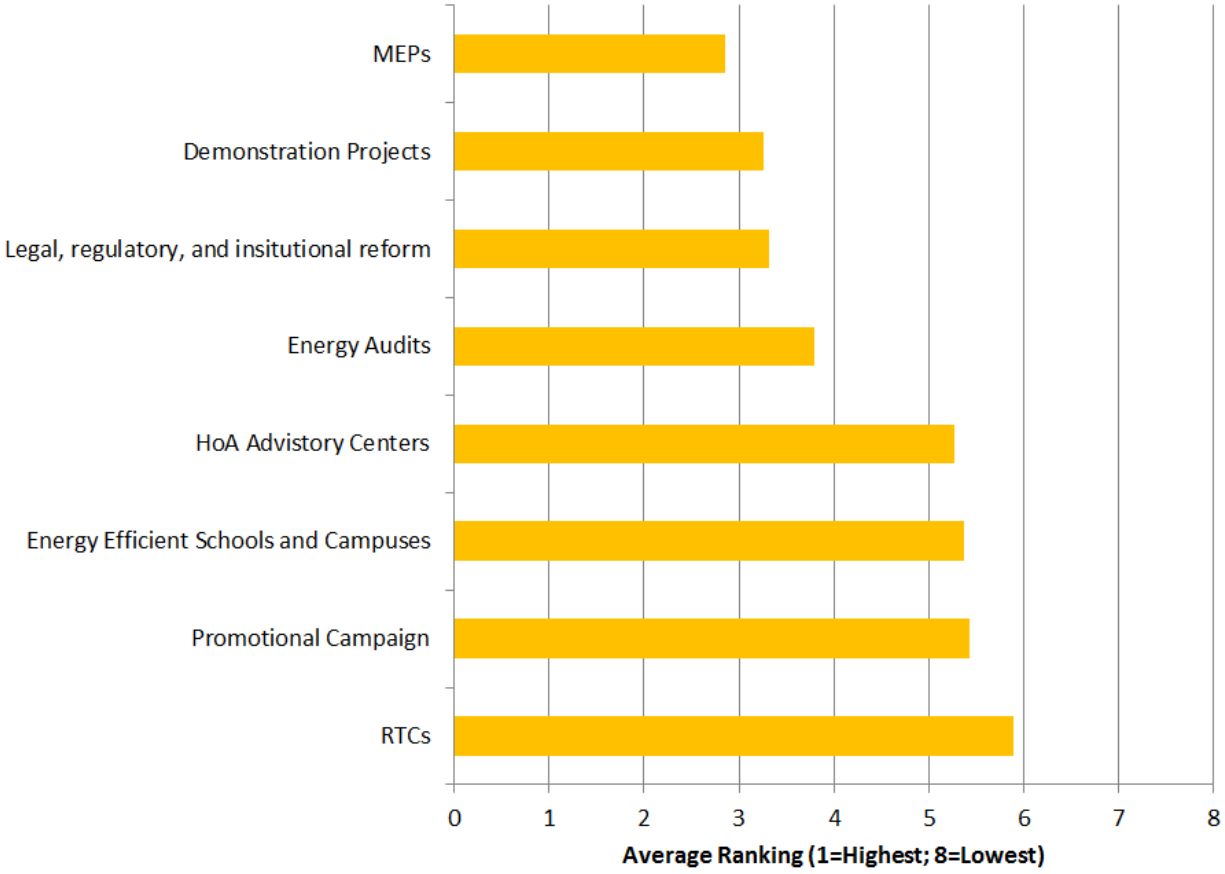
RELATIVE IMPORTANCE OF PROJECT ACTIVITIES

27. Please rank the MHR project activities in order of their importance in advancing the project's objective, where 1=most important and 8=least important. If you are not familiar with a particular project activity, please check the "N/A" box to the right of that activity.

(Reminder: The objective of the MHR project is to help Ukraine create a financially viable and sustainable municipal heating sector able to deliver quality services to the population, public institutions and local industries.)

☐	Legal, regulatory and institutional reforms	☐ N/A
☐	Promotional campaign	☐ N/A
☐	Energy efficiency schools and campuses	☐ N/A
☐	Demonstration projects	☐ N/A
☐	Regional training centers (RTCs)	☐ N/A
☐	Municipal Energy Plans (MEPs)	☐ N/A
☐	Homeowners Association (HoA) Advisory Centers	☐ N/A
☐	Energy Audits	☐ N/A

SURVEY RESULTS FOR QUESTION #27



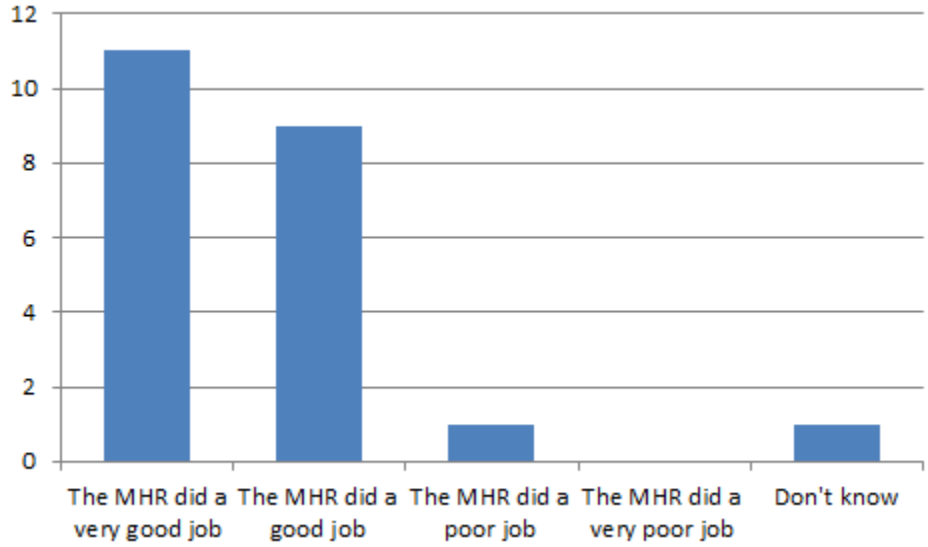
TARGETING OF KEY BENEFICIARIES AND COUNTERPARTS

28. How well has the MHR project targeted key beneficiaries and counterparts in order to achieve the project objective?

- ◯ The MHR did a very good job targeting key beneficiaries
- ◯ The MHR did a good job targeting key beneficiaries
- ◯ The MHR did a poor job targeting key beneficiaries
- ◯ The MHR did a very poor job targeting key beneficiaries
- ◯ Don't know

In the space below, please include any comments you have about the targeting of key beneficiaries and counterparts.

SURVEY RESULTS FOR QUESTION #28



SUSTAINABILITY OF COUNTERPARTS' AND BENEFICIARIES' PRACTICES

***29. Please indicate the extent to which you agree with the following statement: "MHR Project counterparts are adopting practices and behaviors critical for the sustainability of the municipal heating sector in Ukraine."**

- Strongly agree
- Somewhat agree
- Somewhat disagree
- Strongly disagree
- Don't know

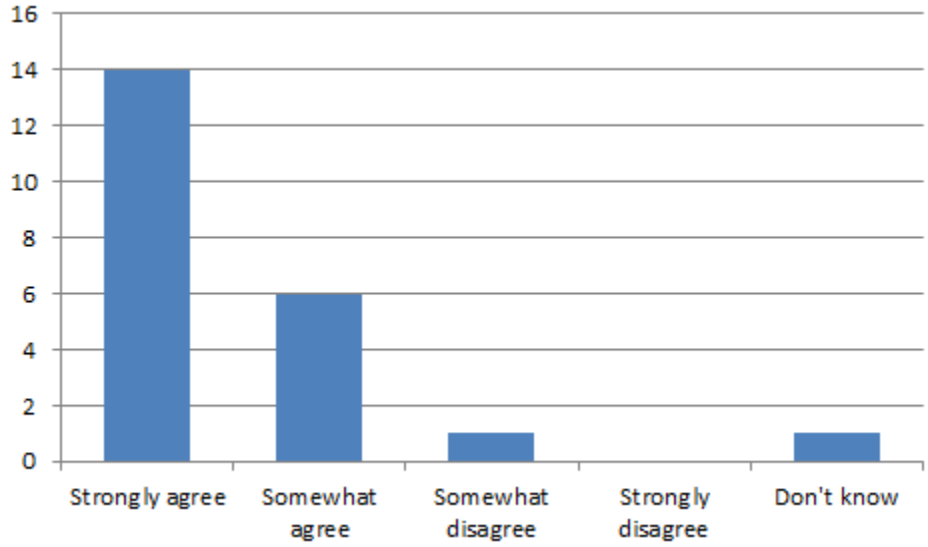
In the space below, please include any comments you have about the sustainability of practices and behaviors adopted by project counterparts and beneficiaries.

***30. Please indicate the extent to which you agree with the following statement: "MHR Project beneficiaries are adopting practices and behaviors critical for the sustainability of the municipal heating sector in Ukraine."**

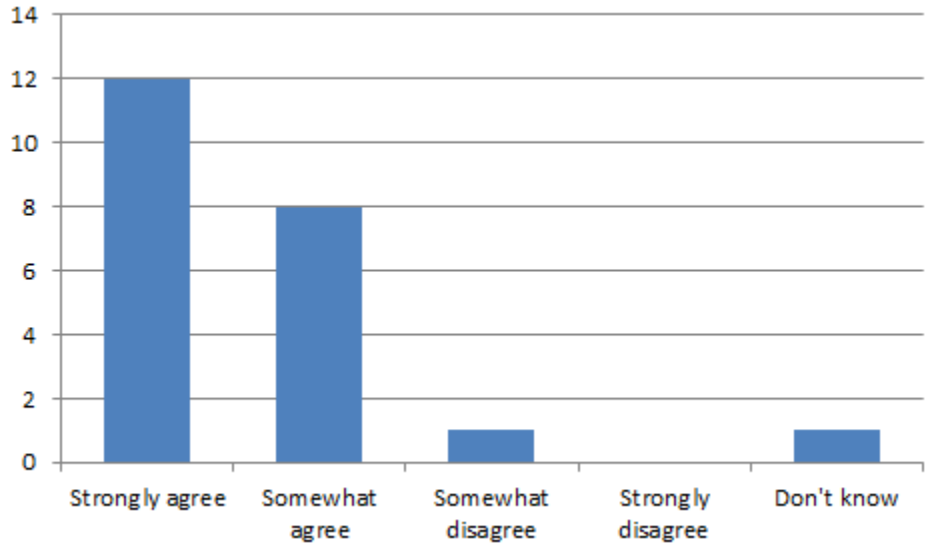
- Strongly agree
- Somewhat agree
- Somewhat disagree
- Strongly disagree
- Don't know

In the space below, please include any comments you have about the sustainability of practices and behaviors adopted by project counterparts and beneficiaries.

SURVEY RESULTS FOR QUESTION #29



SURVEY RESULTS FOR QUESTION #30



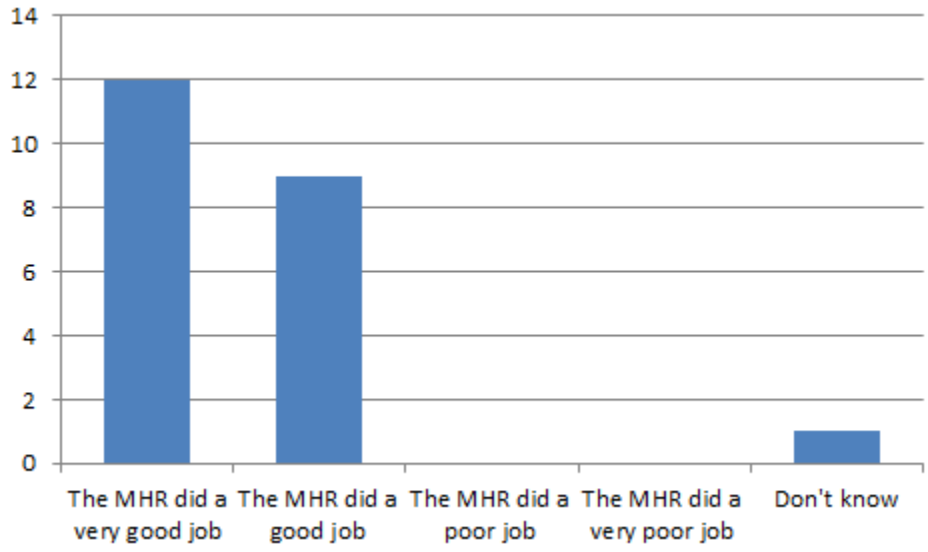
COORDINATION OF PROJECT TASKS

***31. How well did the MHR Project management coordinate implementation of project tasks?**

- ◯ The MHR Project did a very good job coordinating implementation of project tasks
- ◯ The MHR Project did a good job coordinating implementation of project tasks
- ◯ The MHR Project did a poor job coordinating implementation of project tasks
- ◯ The MHR Project did a very poor job coordinating implementation of project tasks
- ◯ Don't know

In the space below, please include any comments you have about the project's performance in coordinating the implementation of tasks.

SURVEY RESULTS FOR QUESTION #31



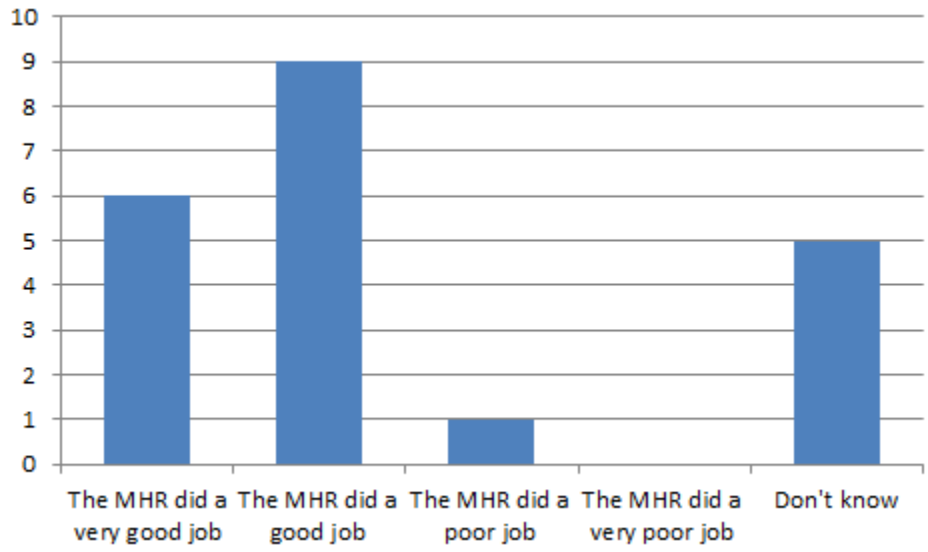
COLLABORATION WITH OTHER PROGRAMS

***32. How well did the MHR Project management coordinate with other (non-USAID) programs? (Other programs include: other donors' programs, programs implemented by agencies of the Government of Ukraine, or programs implemented by non-governmental organizations.)**

- ◯ The MHR Project management did a very good job coordinating with other (non-USAID) programs
- ◯ The MHR Project management did a good job coordinating with other (non-USAID) programs
- ◯ The MHR Project management did a poor job coordinating with other (non-USAID) programs
- ◯ The MHR Project management did a very poor job coordinating with other (non-USAID) programs
- ◯ Don't know

In the space below, please include any comments you have about the project's coordination with other (non-USAID) programs.

SURVEY RESULTS FOR QUESTION #32



Appendix I Individuals Interviewed

APPENDIX TABLE I.1: KEY INFORMANTS BY CATEGORY

		Kiev	Kurakhovo	Kramatorsk	Yevpatoria	Sevastopol	Lutsk	Lviv	Total
1.	Civil servants, including:								
	- central executive agencies	13							
	- municipalities	2	4	4	3		7	6	
	Subtotal	15	4	4	3		7	6	39
2	Communal Utilities			2	2	1			
	Subtotal			2	2	1			5
3.	Public organizations, including:								
	- associations	1					1	6	
	- NGOs	2							
	Subtotal	3					1	6	10
4.	Professionals, including:								
	- education workers		6	9			3		
	- energy auditors and energy managers					2	4	7	
	Subtotal		6	9		2	7	7	30
5.	IFO, donor programs	5							
	Subtotal	5							5
6.	Private companies	2							
	Subtotal	2							2

		Kiev	Kurakhovo	Kramatorsk	Yevpatoria	Sevastopol	Lutsk	Lviv	Total
7.	Project subcontractors	3						2	
	Subtotal	3						2	5
8.	Households, including:								
	- HOA		3	2	1		2	4	
	- non-HOA			13					
	- HOA Consulting centers			1	1			1	
	Subtotal		3	16	2		2	5	28

TOTAL: 126

APPENDIX TABLE I.2: LIST OF INDIVIDUALS INTERVIEWED[1]

Kyiv
World Bank Astrid Manroth - Senior Energy Specialist (Ukraine Office) Yadviga Semikolenova – Energy economist (Washington, DC)
IRG Bill Tucker – COP Andriy Mitskan, Deputy COP
Alliance to Save Energy Oleksandr Nikolaienko – energy program coordinator
National Electricity Regulatory Commission of Ukraine Vasyliy Volosheniuk - Head of Power Generation Department and other
Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine Dmytro Barzilovich - Director of the Department of Technical Regulation and Scientific and Technological Development Olga Romaniuk - Director of the Department of Interregional and International Cooperation Vira Radchenko - Deputy Director of the Department of Housing Policy Karina Zakharova - Senior Specialist of the Department of Interregional and International Cooperation Gennadiy Fareniuk - Director of State Enterprise "Scientific Research Institute for Building Structures"
National Committee which Performs State Regulation in the Field of Public Utilities Valeriy Saratov - Chairman Dmytro Arlachov - Director of Strategy Planning and Development of Utility Services Department Olexiy Korchmit - Deputy Director of Strategy Planning and Development of Utility Services Department Konstantin Samokisha - Senior Specialist of Legal Division

[1] The count of interviewees listed in this table may not match the count Appendix Table I.1 because, in some meetings and site visits, there were multiple individuals who provided input, but whose names we were not able to record at the time.

Ministry of Labor and Social Policy Vitaliy Muschynin – Director of the Department of State Social Assistance Vitaliy Muzychenko – Senior Specialist of Division of Assistance to Families Having Children of the Department of State Social Assistance Julia Yakubovska – Senior Specialist of Division of International Cooperation and European Integration of International Connections and Protocol Department
DTEK LLC Victoria Grib - Manager for CSR
Contour Global Svetlana Ostapchuk - Head of Procurements
EBRD Denis Gayoviy - Principal Banker and other
NEFCO Julia Shevchuk - Senior Investment Advisor
OPORA (NGO) Tetiana Boyko - Coordinator of Housing and Utility Programs, Board Member
IBSER (NGO) Iryna Scherbina – General Director
Kyiv City Administration Viacheslav Lisovyk - Head of Main Department of Energy, Energy Efficiency and Energy Saving Volodymyr Pecherskiy - Director of Communal Enterprise "Group Project on Energy Saving in Administrative and Public Buildings in Kyiv"
Association of Ukrainian Cities Viktor Antonenko - Deputy Director Margarita Yurchenko - Head of the Department of Knowledge Management and Public Relations and other
Municipal Development Institute Igor Slobodenyuk - Executive Director and other specialists
JurEnergoConsult

Olena Samborska - Director
Energy Consulting Company "ITCON" Igor Murashko - Director
State Agency on Energy Efficiency and Energy Saving of Ukraine (SAEE) Oleksandr GRYTSYK Head of International Cooperation and Investments Department
Yevpatoria
Yevpatoria City Administration Valeriy Savchuk - Deputy Mayor Dmytro Kuznetsov - Head of Economic Department of YCA Representatives of Department of Utilities Power Energy and Labor Protection
HOA "Parus" Oleg Miroshnichenko - Chairman of the Board
Local District Heating Utility – Subsidiary of CrimeaTeploEnergo Mykola Lysiy – Director Yuri Rudnev - Head of Production and Engineering Department
HOA Advisory Centre Tatiana Kireieva and other
Sevastopil
Fund "Sevastopil" Michael Yurlov – Director Michael Gordeev - Project Director
Communal Enterprise "Sevastopilenergo" of Sevastopil City Administration Sergiy Dorul - Deputy Director
Kurakhove
Kurakhove City Administration Sergiy Sagko – Mayor Roman Padun – Assistant Mayor

Inna Lebed - Assistant Mayor Alexey Romanchenko - Energy Manager and other
HOA "Brigantina" Lubov Schigoleva – Chairman of the Board
HOA "Almaz" Yuri Tkachuk – Chairman of the Board
HOA "Sharm" Peter Feschuk – Chairman of the Board
"Skazka" kindergarten Olena Prokopenko - Director
"Kosmonavt" kindergarten Natalia Moroz - Director
"Solnyshko" kindergarten Dina Borisova - Director
"Buratino" kindergarten Natalia Gerasimova – Director
Comprehensive school #5 Tatiana Petrovna - Principal and other teachers
Kramatorsk
Kramatorsk City Administration Andriy Pankov - Deputy Mayor Dmitriy Rozmaritsin - Advisor to the City Mayor on Energy Policy Tetiana Demyanenko - Housing and Energy Expert from Housing & Communal Department Sector Reform Department Natalia Stotskaya - Head of Housing & Communal Sector Reform Department and other
Kramatorskteploenergo LLC Igor Budnik – Head of Heat Network O&M Sergiy Kuznetsov - Billing Engineer

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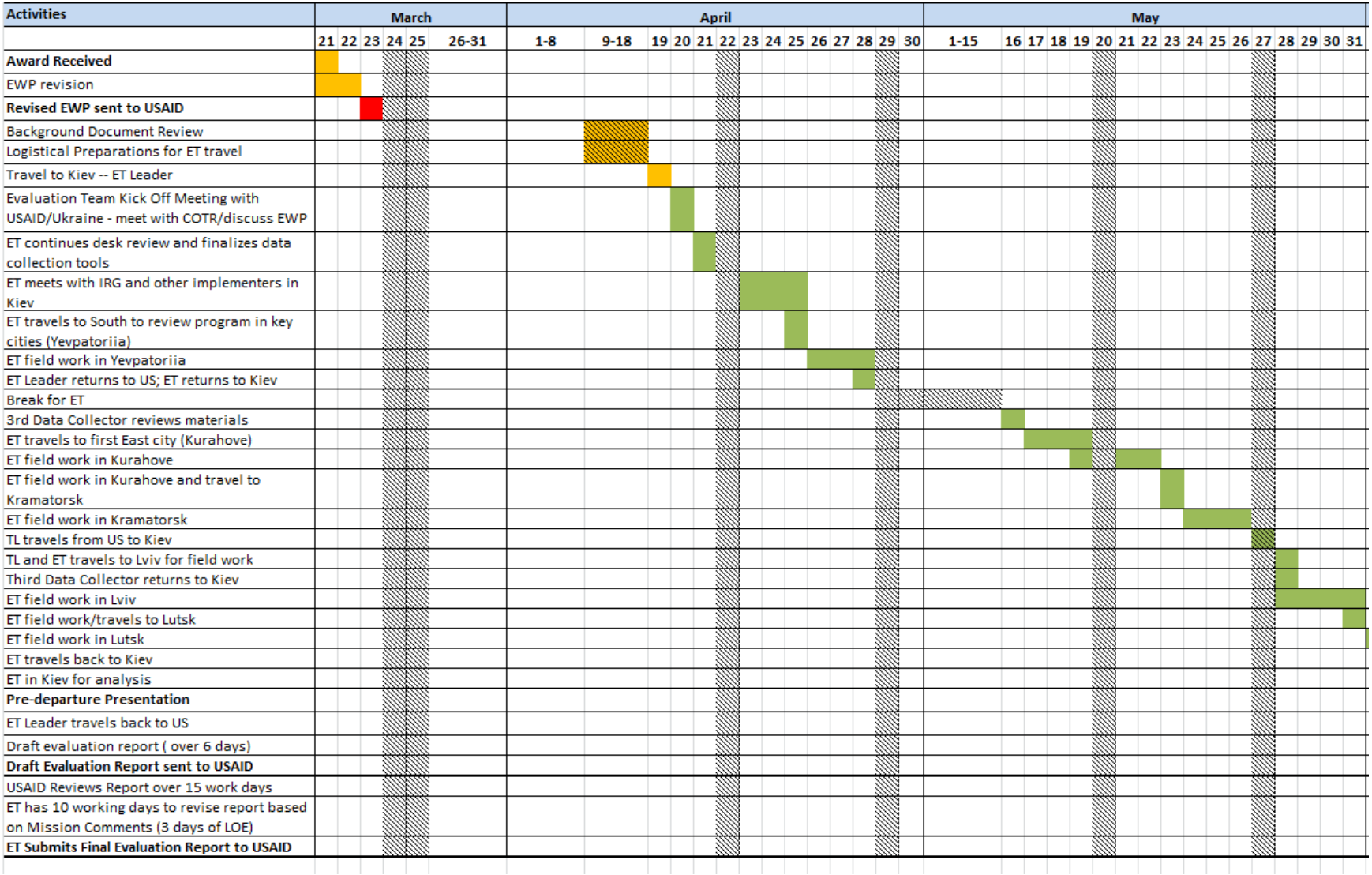
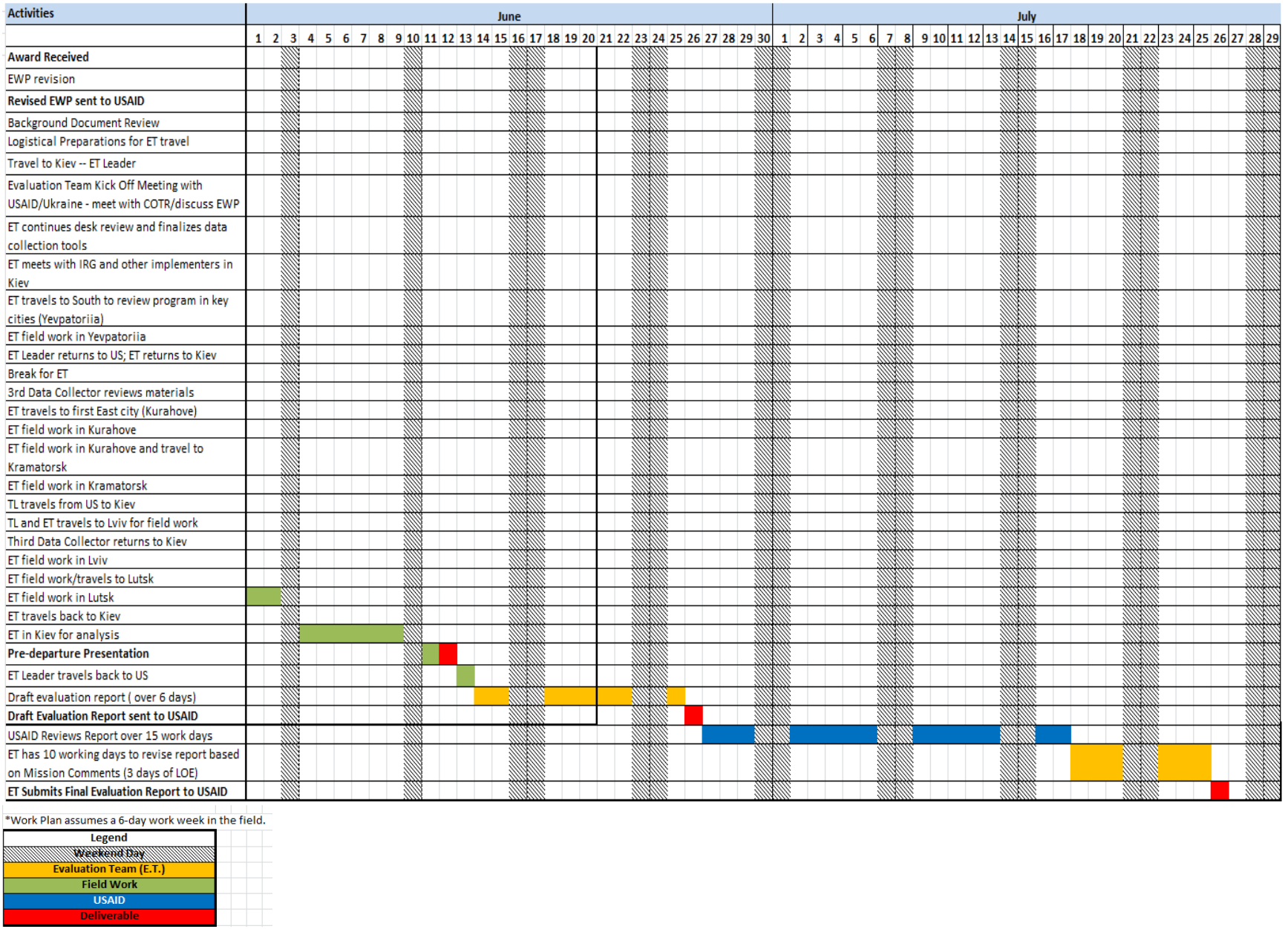
Comprehensive school №4 Irina Karakulova - Principal and other teachers
Comprehensive school №16 Leonid Shevchenko - Principal and other teachers
Comprehensive school №35 Mikhail Redosh - Principal and other teachers
Lviv
Lviv City Administration Vasylyna Gorban – Head of Energy Management Department Iryna Kulynych - Director of the Department of Economic Policy Taras Levytskiy – Senior Specialist of the Department of Energy Saving Galyna Kogut - Head of the Division for Support to Condominiums, Resource Center for the Development Tetiana Gordiyenko - Chief Specialist of the Division for Support to Condominiums Borys Bereziak - Head of the Department of Capital Repair of Lviv City Housing
HOA "Bilya Parku" Danuta Tarnavska - Chairman of the Board Vasyliy Yatsuk - Deputy Chairman of the Board

HOA "Mariya" Ivan Yatsun - Chairman of the Board
HOA "Kamenyar" Bogdan Dilay - Chairman of the Board
ArDeko, Ltd. (Contractor on pilot projects implementation in houses) Sergiy Sokhin, Director Sergiy Aksenov - Deputy Director
Association "Energy Efficient Cities of Ukraine" Anatoly Kopets – Executive Director Sergiy Kosharuk – Deputy Executive Director Oleg Garasevich –Projects and Programs Manager Dmitry Leskiv – Expert inEnergy Efficiency and Energy Saving Vitaliy Lesiuk – Financial Consultant Michel Vazquez – Peace Corps Volunteer, Consultant
Western Ukrainian Regional Training Centre Petro Mavko – Chairman of the Board of the Center, Project Manager Sergiy Tsukornik – Director of Lvivenergokomfort SPE Ltd. , Team Leader of the Audit Group in Chernivtsi city Roman Chaban – Engineer at Lvivenergokomfort SPE, Ltd, the Auditor Volodymyr Turnovsky – Associate Professor at Lviv Polytechnic University, MEP implementer in Ivano-Frankivsk city Mariana Prystupa – Independent Consultant, Project Coordinator, Lviv Oksana Kobyliuh – Lecturer at Lviv Polytechnic University, MEP implementer in Ivano-Frankivsk city, Kamenets-Podolskiy city, Chernivtsi city Vasyliy Yatsuk - Professor of Metrology Standardization and Certification Division of Computer Technologies, Automation and Metrology Department of Lviv Polytechnic University
Lutsk
Lutsk City Administration Mykola Romaniuk – Mayor

Vasyliy Baitsym – Deputy Mayor Yuri Kotsur - Engineer of Education Department Zinovia Leschenko – Head of the Division for Personnel and Methodological Support of Education Department Mykola Ivaniuk – Head of International Cooperation and Tourism Department Kostiantyn Patrakeiev – Head of Energy Saving Division of Economics Department Alexander Dei – Senior Specialist of Energy Saving Division of Economics Department
HOA "Luchany" Lilia Slupachyk - Deputy Chairman, Chairman of the Board of **HOA "Rosinka"**
HOA "Vidrodgennia" Julia Sabotyuk - Chairman of the Board
Energy Servicing Company (ESCO) "Lutsk Utility Systems" Georgiy Davydiyk – Director
Group of Companies Galspetsbud Alexander Kushnir - representative
Danfoss Ltd. Lubomyr Kozak – Regional Sales Representative in Western Ukraine, Heating Solutions
State Enterprise "Warm House" Volodymyr Bondar – Director
Volyn' Institute of Support and development of Public Initiatives Peter Lavriniuk - President
Kindergarten №13 "Dolphin" Iryna Kusyk –Governor Maria Bortnik – Matron Vasyliy Popov - Individual Heating Unit Operator

Appendix J Final Version of the Evaluation Work Plan (EWP)




Activities
June
July
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
Award Received
EWP revision
Revised EWP sent to USAID
Background Document Review
Logistical Preparations for ET travel
Travel to Kiev -- ET Leader
Evaluation Team Kick Off Meeting with USAID/Ukraine - meet with COTR/discuss EWP
ET continues desk review and finalizes data collection tools
ET meets with IRG and other implementers in Kiev
ET travels to South to review program in key cities (Yevpatoriia)
ET field work in Yevpatoriia
ET Leader returns to US; ET returns to Kiev
Break for ET
3rd Data Collector reviews materials
ET travels to first East city (Kurahove)
ET field work in Kurahove
ET field work in Kurahove and travel to Kramatorsk
ET field work in Kramatorsk
TL travels from US to Kiev
TL and ET travels to Lviv for field work
Third Data Collector returns to Kiev
ET field work in Lviv
ET field work/travels to Lutsk
ET field work in Lutsk
ET travels back to Kiev
ET in Kiev for analysis
Pre-departure Presentation
ET Leader travels back to US
Draft evaluation report (over 6 days)
Draft Evaluation Report sent to USAID
USAID Reviews Report over 15 work days
ET has 10 working days to revise report based on Mission Comments (3 days of LOE)
ET Submits Final Evaluation Report to USAID
*Work Plan assumes a 6-day work week in the field.
Legend
Weekend Day
Evaluation Team (E.T.)
Field Work
USAID
Deliverable

Appendix K Conflict of Interest Statements

Disclosure of Real or Potential Conflict of Interest for USAID Evaluations

Instructions:

Evaluations of USAID projects will be undertaken so that they are not subject to the perception or reality of biased measurement or reporting due to conflict of interest.[1] *For external evaluations, all evaluation team members will provide a signed statement attesting to a lack of conflict of interest or describing an existing conflict of interest relative to the project being evaluated.*[2]

Evaluators of USAID projects have a responsibility to maintain independence so that opinions, conclusions, judgments, and recommendations will be impartial and will be viewed as impartial by third parties. Evaluators and evaluation team members are to disclose all relevant facts regarding real or potential conflicts of interest that could lead reasonable third parties with knowledge of the relevant facts and circumstances to conclude that the evaluator or evaluation team member is not able to maintain independence and, thus, is not capable of exercising objective and impartial judgment on all issues associated with conducting and reporting the work. Operating Unit leadership, in close consultation with the Contracting Officer, will determine whether the real or potential conflict of interest is one that should disqualify an individual from the evaluation team or require recusal by that individual from evaluating certain aspects of the project(s).

In addition, if evaluation team members gain access to proprietary information of other companies in the process of conducting the evaluation, then they must agree with the other companies to protect their information from unauthorized use or disclosure for as long as it remains proprietary and refrain from using the information for any purpose other than that for which it was furnished. [3]

Real or potential conflicts of interest may include, but are not limited to:

1. Immediate family or close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.
2. Financial interest that is direct, or is significant/material though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.
3. Current or previous direct or significant/material though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.
4. Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.
5. Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.
6. Preconceived ideas toward individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation.

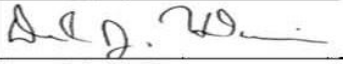
---

[1] *USAID Evaluation Policy (p. 8); USAID Contract Information Bulletin 99-17; and Federal Acquisition Regulations (FAR) Part 9.5, Organizational Conflicts of Interest, and Subpart 3.10, Contractor Code of Business Ethics and Conduct.*
[2] *USAID Evaluation Policy (p. 11)*
[3] *FAR 9.505-4(b)*

Disclosure of Conflict of Interest for USAID Evaluation Team Members

Name	Denzel Hankinson
Title	Consultant
Organization	IBTCI
Evaluation Position?	☒ Team Leader ☐ Team member
Evaluation Award Number *(contract or other instrument)*	AID-121-TO-12-00002
USAID Project(s) Evaluated *(Include project name(s), implementer name(s) and award number(s), if applicable)*	
I have real or potential conflicts of interest to disclose.	☐ Yes ☒ No
If yes answered above, I disclose the following facts: *Real or potential conflicts of interest may include, but are not limited to:* *1. Close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.* *2. Financial interest that is direct, or is significant though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.* *3. Current or previous direct or significant though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.* *4. Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.* *5. Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.* *6. Preconceived ideas toward individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation.*	

I certify (1) that I have completed this disclosure form fully and to the best of my ability and (2) that I will update this disclosure form promptly if relevant circumstances change. If I gain access to proprietary information of other companies, then I agree to protect their information from unauthorized use or disclosure for as long as it remains proprietary and refrain from using the information for any purpose other than that for which it was furnished.

Signature	
Date	June 26, 2012

Disclosure of Conflict of Interest for USAID Evaluation Team Members

Name	Oksana Dranyk
Title	Regulatory Expert
Organization	IMEPOWER.
Evaluation Position?	☐ Team Leader ☑ Team member
Evaluation Award Number *(contract or other instrument)*	
USAID Project(s) Evaluated *(Include project name(s), implementer name(s) and award number(s), if applicable)*	
I have real or potential conflicts of interest to disclose.	☐ Yes ☑ No
If yes answered above, I disclose the following facts: *Real or potential conflicts of interest may include, but are not limited to:* 1. *Close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.* 2. *Financial interest that is direct, or is significant though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.* 3. *Current or previous direct or significant though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.* 4. *Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.* 5. *Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.* 6. *Preconceived ideas toward individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation.*	

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Signature	
Date	23.04.2012

Disclosure of Conflict of Interest for USAID Evaluation Team Members

Name	Anastasia Nekrasova
Title	Lead Expert
Organization	Energy Consulting Group
Evaluation Position?	☐ Team Leader ☒ Team member
Evaluation Award Number *(contract or other instrument)*	
USAID Project(s) Evaluated *(Include project name(s), implementer name(s) and award number(s), if applicable)*	
I have real or potential conflicts of interest to disclose.	☐ Yes ☒ No
If yes answered above, I disclose the following facts: *Real or potential conflicts of interest may include, but are not limited to:* 1. *Close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.* 2. *Financial interest that is direct, or is significant though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.* 3. *Current or previous direct or significant though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.* 4. *Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.* 5. *Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.* 6. *Preconceived ideas toward individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation.*	

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Signature	
Date	23.04.2012

Disclosure of Conflict of Interest for USAID Evaluation Team Members

Name	Leonid Zhyvylo
Title	Lead Expert
Organization	Energy Consulting Group
Evaluation Position?	☐ Team Leader ☒ Team member
Evaluation Award Number *(contract or other instrument)*	
USAID Project(s) Evaluated *(Include project name(s), implementer name(s) and award number(s), if applicable)*	
I have real or potential conflicts of interest to disclose.	☐ Yes ☒ No
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Signature	
Date	23.04.2012

Appendix L Tools Used for Conducting the MHR Project Evaluation

The list of basic data needed to analyze the effectiveness of the Project

Metering Assessment

1) A list of existing tools for metering of thermal energy on heat sources, indicating the class of accuracy of metering. Separately - established with the assistance of the Project.
2) Number of existing metering tools of thermal energy installed for heat consumers by category: dwelling houses, budget organizations, business, industry, community facilities, and other consumers, with the proportion of the total in%. Separately - established with the assistance of the Project.
3) The presence of intra heating controls (regulators of thermal energy) and meters of thermal energy.
4) The presence of water temperature controls for hot water and hot water metering (number and% share of all consumers).
5) Suggestions for improving the work of the Project in this direction and proposals for development of the Project for the future

MEP`s, Energy, Audits & Investment Catalogues

1) Structure of the organization of heat energy supply system in the City: heat energy generation companies (enterprise), transportation and distribution heat energy by trunk and distribution heat networks, the exploitation of house heating systems
2) Is there an energy management structure in the municipality? The composition of the structure. Information about education of staff and the passage of energy management training (to provide the methodology and training program, the number of hours of study, information about the organization that provided training).
3) Information about the developers of a municipal energy plan (MEP). Who carried out an expertise of MEP?
4) The actual duration of the heating season 2008-2009, 2009-2010, 2010-2011. Estimated and actual heating temperature schedule, the schedule of the hot water systems.
5) The characteristics of heat consumers:
   • The number of heat consumers of centralized heating systems and number of heat consumers of individual systems. The calculated thermal capacity: houses, budget organizations, business, industry, community facilities, and other consumers. The amount and the calculated thermal load of consumers equipped with units of metering.
   • Information on the availability of solar thermal generators or other heat sources that do not use gas for heat production, the number of produced heat of heating and hot water.
6) Reports on results of energy audits of buildings before and after the implementation of energy efficiency measures (by the Project).
7) The actual indicators of heating system for each month of 2009, 2010, 2011. (In tabular form, the model below
8) Suggestions for improving the work of the Project in this direction and proposals for development of the Project for the future

APPENDIX TABLE L.1: TABLE REQUESTING TECHNICAL DATA ON MUNICIPAL HEATING SYSTEM

Indicator	unit	January	February	March	April	April	May	June l	July	August	September	October	November	December	Year, total
Natural gas consumption (for heat supply)	thousand. м^3														
Electricity consumption (for heat supply)	Thousand кWt*h														
Heat energy, generated by sources (released into the network)	Gcal														
Heat energy consumed (for heating)	Gcal														
Including metered	Gcal														
Consumed for hot water supply	Gcal														
Including metered	Gcal														
Heating water use	Ton														
Water replanishment supply	Ton														
including the raw water	Ton														
Temperature of water network supply	°C														
The temperature of feedback water of system	°C														
Air temperature	°C														

Demo Projects

1) The list is actually performed demonstration projects in the framework of the Project in 2009 – 2011 and activities to improve and enhance the economic efficiency of heating systems, improving the thermal efficiency of buildings and incentive consumers to save heat energy.
2) Calculation of actual energy savings and the actual investment costs for each of the executed under the Project activities
3) The actual heat consumption buildings before and after the implementation of measures to improve energy efficiency in meter readings at comparable outdoor temperatures. The actual temperature of the indoor air during the same periods.
4) Suggestions for improving the work of the Project in this direction and proposals for development of the Project for the future

RTC

1) The number of experts, which took part in the Project training in regional centers in the following areas: energy planning, energy audit. Which organizations they are working for and which positions are specialists trained in the centers?
2) Training methods and manuals
3) Suggestions for improving the work of the Project in this direction and proposals for development of the Project for the future

Energy Efficient Schools and Campuses

1) The list of schools and campuses and dormitories, in which, under the project, carried out activities to improve their energy efficiency
   Calculation of actual energy savings and the actual investment costs for each of the executed under the Project activities
2) The actual heat consumption buildings before and after the implementation of measures to improve energy efficiency in meter readings at comparable outdoor temperatures. The actual temperature of the indoor air during the same periods.
3) Suggestions for improving the work of the Project in this direction and proposals for development of the Project for the future

DH Improved Business operations

1) A list of boilers, which, under the project, carried out work to improve their technical and economic indicators. Describe the specific work.
2) The actual increase in efficiency (reduction in specific fuel consumption per unit of electricity and heat supply) after the Project implementation.
3) The characteristics of thermal networks from each of boiler: the average diameter, length, duration of operation, the volume of water in the networks and local systems
4) A list and description of parts of heating network, which carried out the work for replacement or repair of the Project. Assessment the economic effect obtained under the Project.
5) A list of heating units/points (central heat points and Individual heat points), reconstructed or newly constructed under the Project. Assessment of economic effect obtained under the Project
6) Suggestions for improving the work of the Project in this direction and proposals for development of the Project for the future

HOA Advisory Centers

1) Period of operation of the Advisory Center: from _____ to _____
2) Number of written requests to the Advisory Center during the period of its operation
3) Number of people taken at personal reception center professionals
4) Number of appeals for the establishment and registration of the new association
5) Number of OAH created as a result of the Advisory Center
6) Number of OAH that are currently in the process of registration of all necessary documents
7) Number of new initiatives, which are ongoing in the direction of the association of citizens, formation of an effective owner of housing and a further OAH
8) Does the municipality have the structure to work with the associations, condominiums (OAH)? The composition of the structure
9) Suggestions for improving the work of the Advisory Centre.

Business Planning

1) The quantity and quality of the project conducted training programs on business planning (date, venue, theme, materials);
2) Criteria for selection of pilot projects

3) Ensuring the participation and mechanisms for private sector participation in pilot projects, the use of public-private partnerships
4) Establishment of Energy Service Companies (municipal, private).
5) What is the Project part taken in the preparation of project pilot projects, in particular, in the preparation of project proposals, organization of seminars, community mobilization, organization of targeted review of project proposals, the selection, the beginning of the negotiation process and sign the contract, etc.
6) Suggestions for improving the work of the Project in this direction and proposals for development of the Project for the future

Public Information Campaign

2) Which advertising campaigns were carried out by the Project?
3) What were the target audiences, for which advertising campaigns are designed?
4) Instruments that were used in advertising campaigns (billboards, television, attracting star singers, children's drawing competitions, etc.)
5) Measurement quantifying the effectiveness of advertising campaigns (number OAH created as a result of advertising campaigns, the number of schools / classes, high schools, in which energy efficiency programs were actually implemented, the degree of provision of schools, higher education by textbooks on energy efficiency (%)
6) Rating of advertising campaigns on energy efficiency in the field:
   - Education;
   - Creation OAH;
   - Inform the public on energy saving;
   - Other (please specify).
7) Suggestions for improving the work of the project in this direction and prospects for development in this direction for the future.

Questionnaire for Target Group Discussion (after the Project implementation)

10. Do you notice any improvements resulting from the Project implementation?
    Yes
    No
11. Are there any changes in the room temperature after the Project implementation?
    Yes
    No
12. Is the room temperature after the Project your comfort temperature?
    Yes
    No
13. Is there any cost-saving with regard to heat payment after the Project implementation?
    Yes
    No
14. What, in your opinion, is an ideal heat supply services?
15. Do you consider installation of heat meters necessary in kindergarten?
    Yes
    No
16. Do you consider installation of temperature controllers necessary in each room?
    Yes
    No
17. Has the Project achieved its results? Should these measures be recommended to other buildings?
    Yes
    No.
18. What can you recommend to improve the Project

Appendix M Sources of Information

List of interviewees

Kyiv
World Bank Ukraine Country Office Astrid Manroth - Senior Energy Specialist
IRG Bill Tucker – COP Andriy Mitskan, Deputy COP
Alliance to Save Energy Oleksandr Nikolaienko – energy program coordinator
National Electricity Regulatory Commission of Ukraine Vasyliy Volosheniuk - Head of Power Generation Department and other
Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine Dmytro Barzilovich - Director of the Department of Technical Regulation and Scientific and Technological Development Olga Romaniuk - Director of the Department of Interregional and International Cooperation Vira Radchenko - Deputy Director of the Department of Housing Policy Karina Zakharova - Senior Specialist of the Department of Interregional and International Cooperation Gennadiy Fareniuk - Director of State Enterprise "Scientific Research Institute for Building Structures"
National Committee which Performs State Regulation in the Field of Public Utilities Valeriy Saratov - Chairman Dmytro Arlachov - Director of Strategy Planning and Development of Utility Services Department Olexiy Korchmit - Deputy Director of Strategy Planning and Development of Utility Services Department Konstantin Samokisha - Senior Specialist of Legal Division
Ministry of Labor and Social Policy Vitaliy Muschynin – Director of the Department of State Social Assistance

Vitaliy Muzychenko – Senior Specialist of Division of Assistance to Families Having Children of the Department of State Social Assistance Julia Yakubovska – Senior Specialist of Division of International Cooperation and European Integration of International Connections and Protocol Department
DTEK LLC Victoria Grib - Manager for CSR
Contour Global Svetlana Ostapchuk - Head of Procurements
EBRD Denis Gayoviy - Principal Banker and other
NEFCO Julia Shevchuk - Senior Investment Advisor
OPORA (NGO) Tetiana Boyko - Coordinator of Housing and Utility Programs, Board Member
IBSER (NGO) Iryna Scherbina – General Director
Kyiv City Administration Viacheslav Lisovyk - Head of Main Department of Energy, Energy Efficiency and Energy Saving Volodymyr Pecherskiy - Director of Communal Enterprise "Group Project on Energy Saving in Administrative and Public Buildings in Kyiv"
Association of Ukrainian Cities Viktor Antonenko - Deputy Director Margarita Yurchenko - Head of the Department of Knowledge Management and Public Relations and other
Municipal Development Institute Igor Slobodenyuk - Executive Director and other specialists
JurEnergoConsult Olena Samborska - Director
Energy Consulting Company "ITCON" Igor Murashko – Director

USAID Phillip Greene, Office of Economic Growth Michael Martin, Director, Office of Economic Growth Guy Martorana, Program Officer Tamara Palyvoda, Training/Education Program Coordinator Andriy Nesterenko, Senior Energy and Municipal Finance Specialist, Office of Economic Growth
Yevpatoria
Yevpatoria City Administration Valeriy Savchuk - Deputy Mayor Dmytro Kuznetsov - Head of Economic Department of YCA Representatives of Department of Utilities Power Energy and Labor Protection
HOA "Parus" Oleg Miroshnichenko - Chairman of the Board
Local District Heating Utility – Subsidiary of CrimeaTeploEnergo Mykola Lysiy – Director Yuri Rudnev - Head of Production and Engineering Department
HOA Advisory Centre Tatiana Kireieva and other
Sevastopil
Fund "Sevastopil" Michael Yurlov – Director Michael Gordeev - Project Director
Communal Enterprise "Sevastopilenergo" of Sevastopil City Administration Sergiy Dorul - Deputy Director
Kurakhove
Kurakhove City Administration Sergiy Sagko – Mayor

Roman Padun – Assistant Mayor Inna Lebed - Assistant Mayor Alexey Romanchenko - Energy Manager and other
HOA "Brigantina" Lubov Schigoleva – Chairman of the Board
HOA "Almaz" Yuri Tkachuk – Chairman of the Board
HOA "Sharm" Peter Feschuk – Chairman of the Board
"Skazka" kindergarten Olena Prokopenko - Director
"Kosmonavt" kindergarten Natalia Moroz - Director
"Solnyshko" kindergarten Dina Borisova - Director
"Buratino" kindergarten Natalia Gerasimova – Director
Comprehensive school #5 Tatiana Petrovna - Principal and other teachers
Kramatorsk
Kramatorsk City Administration Andriy Pankov - Deputy Mayor Dmitriy Rozmaritsin - Advisor to the City Mayor on Energy Policy Tetiana Demyanenko - Housing and Energy Expert from Housing & Communal Department Sector Reform Department Natalia Stotskaya - Head of Housing & Communal Sector Reform Department and other
Kramatorskteploenergo LLC Igor Budnik – Head of Heat Network O&M Sergiy Kuznetsov - Billing Engineer

HOA Advisory Center Andriy Litvinenko - Director of the Center and simultaneously Deputy Head of Housing and Public Utilities Department of Kramatorsk City Administration
HOA "Pokolinnya" Kirikiya Kandaurova - Chairman of the Board
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13 tenants from residential house at address 19 Partsiezda Str., 61 Suroveshko apt 44, Koryavikova apt 1, Frolova apt 22, Dubogray apt 30, Gren apt 24, Oleksenko apt 19, Solomko apt 20, Vorotynets apt 61, Stepanova apt 11, Tretiak apt 60, Matvienko apt 69, Matvienko apt 57, Vasik apt 80, Druziaka apt 33.
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Comprehensive school №35 Mikhail Redosh - Principal and other teachers
Lviv
Lviv City Administration Vasylyna Gorban – Head of Energy Management Department Iryna Kulynych - Director of the Department of Economic Policy Taras Levytskiy – Senior Specialist of the Department of Energy Saving Galyna Kogut - Head of the Division for Support to Condominiums, Resource Center for the Development Tetiana Gordiyenko - Chief Specialist of the Division for Support to Condominiums Borys Bereziak - Head of the Department of Capital Repair of Lviv City Housing
HOA "Bilya Parku" Danuta Tarnavska - Chairman of the Board Vasyliy Yatsuk - Deputy Chairman of the Board

HOA "Mariya" Ivan Yatsun - Chairman of the Board
HOA "Kamenyar" Bogdan Dilay - Chairman of the Board
ArDeko, Ltd. (Contractor on pilot projects implementation in houses) Sergiy Sokhin, Director Sergiy Aksenov - Deputy Director
Association "Energy Efficient Cities of Ukraine" Anatoly Kopets – Executive Director Sergiy Kosharuk – Deputy Executive Director Oleg Garasevich –Projects and Programs Manager Dmitry Leskiv – Expert inEnergy Efficiency and Energy Saving Vitaliy Lesiuk – Financial Consultant Michel Vazquez – Peace Corps Volunteer, Consultant
Western Ukrainian Regional Training Centre Petro Mavko – Chairman of the Board of the Center, Project Manager Sergiy Tsukornik – Director of Lvivenergokomfort SPE Ltd. , Team Leader of the Audit Group in Chernivtsi city Roman Chaban – Engineer at Lvivenergokomfort SPE, Ltd, the Auditor Volodymyr Turnovsky – Associate Professor at Lviv Polytechnic University, MEP implementer in Ivano-Frankivsk city Mariana Prystupa – Independent Consultant, Project Coordinator, Lviv Oksana Kobyliuh – Lecturer at Lviv Polytechnic University, MEP implementer in Ivano-Frankivsk city, Kamenets-Podolskiy city, Chernivtsi city Vasyliy Yatsuk - Professor of Metrology Standardization and Certification Division of Computer Technologies, Automation and Metrology Department of Lviv Polytechnic University
Lutsk
Lutsk City Administration Mykola Romaniuk – Mayor

Vasyliy Baitsym – Deputy Mayor Yuri Kotsur - Engineer of Education Department Zinovia Leschenko – Head of the Division for Personnel and Methodological Support of Education Department Mykola Ivaniuk – Head of International Cooperation and Tourism Department Kostiantyn Patrakeiev – Head of Energy Saving Division of Economics Department Alexander Dei – Senior Specialist of Energy Saving Division of Economics Department
HOA "Luchany" Lilia Slupachyk - Deputy Chairman, Chairman of the Board of **HOA "Rosinka"**
HOA "Vidrodgennia" Julia Sabotyuk - Chairman of the Board
Energy Servicing Company (ESCO) "Lutsk Utility Systems" Georgiy Davydiyk – Director
Group of Companies Galspetsbud Alexander Kushnir - representative
Danfoss Ltd. Lubomyr Kozak – Regional Sales Representative in Western Ukraine, Heating Solutions
State Enterprise "Warm House" Volodymyr Bondar – Director
Volyn' Institute of Support and development of Public Initiatives Peter Lavriniuk - President
Kindergarten №13 "Dolphin" Iryna Kusyk –Governor Maria Bortnik – Matron Vasyliy Popov - Individual Heating Unit Operator

List of documents received from MHR (on General Data Request)

25. Full List of Contracting Actions (2010-2012)
26. List of Deliverables for MHRP

27. MHR-Key Sub Contractors and Grantees
28. MHR- Project PMP Table Modification #5 October 2011
29. MHRP GOU Counterparts
30. MHRP-25-cities-key-partners
31. PMP Data Table
32. PMP_data_tbl_final_modif- Performance Indicators
33. MHR Draft Workplan Modification #5 Approved
34. MHR Workplan for Project, Year 1
35. MHR Project Workplan Year 2-Final
36. MHR Workplan for Project, Year 3 and 4
37. MHR Project Workplan for New Activities under Modification No3
38. MHR Quarterly Report No1
39. MHR Quarterly Report No2
40. MHR Quarterly Report No3
41. MHR Quarterly Report No4
42. MHR Quarterly Report No5
43. MHR Quarterly Report No6
44. MHR Quarterly Report No7
45. MHR Quarterly Report No8
46. MHR Quarterly Report No 9
47. MHR Quarterly Report No10
48. MHR Quarterly Report No11

List of Material Additionally Provided by the Project upon Individual Request (on Regulatory Issues)

36. Interim Report on the status of developing providing the National Municipal Heating Strategy, on the status of consulting support in the process of consideration of the draft Laws of Ukraine related to municipal heating and participation in a working group on improvement of the draft Law of Ukraine "On Energy Efficiency of Buildings", July 2010
37. Interim Reports on the status of consulting support within the project, August 2011, October 2011, January 2012
38. Guidelines for Improvement of District Heating Pricing Methodology, March 2010
39. Report on the Overview of the Tariff Setting Process and Tariff Methodology in the Sphere of Centralized District Heating in Ukraine, March 2010
40. Report on Tariff Regulation Options In the Sphere of Centralized District Heating, September 2009
41. Methodological guidelines for improvement of the government regulation system in the area of district heating (regarding identification of an entity and subject of regulation) as of 06.08.2010
42. Rationale of the need to change pricing system in the area of district heating
43. Municipal Heating Reform in Ukraine Project, June 1, 2010
44. Concept of provision of housing and municipal services to population (heat energy, DH, hot water, cold water, wastewater) – to established homeowners associations and individual owners of residential and nonresidential premises (residents of multi-apartment buildings) as of 06.08.2010

45. Methodological Principles of Improving the System of State Regulation in the Field of District Heating (in the part of identification of subject and object of regulation) as of 06.08.2010
46. Policy of Utility Services Provision (Thermal Energy, District Heating, Hot Water Supply, Cold Water Supply, Sanitation) to the Population - Organized (HOAs) and Unorganized Owners of Residential and Nonresidential Premises (for inhabitants of multistory buildings) as of 06.08.2010
47. Grounds for Changes in Pricing System in the Field of District Heat Supply as of June, 1, 2010
48. Report on the Results of Inspection of Customers of District Heating Services in Kramatorsk as of June, 2010
49. Report on the Results of Inspection of Customers of District Heating Services in Lviv as of June, 2010
50. Report on the Results of Inspection of Customers of District Heating Services in Lutsk as of June, 2010
51. Experience of the Cities on Issues of Pricing in the Field of Heat Supply, August, 2010
52. Interim Reports on the status of consulting support in the process of consideration of the draft Laws of Ukraine related to municipal heating, October, 2010; November 2010
53. Report on the Workshop "Methodology of Establishment of Two-Tier Tariffs. Automation of Calculation of Two-Tier Tariffs Based on the Software Model for Tariff Calculation" as of September 14 -15, 2010, Irpin, Kyiv Oblast
54. Suggestions and Comments to the Draft Resolution of the NERC "On Approval of the Procedure of Formation of Tariffs for Heat Production, Transportation, Supply" of 05.10.2010 p.
55. Information about the Process of Approval of Tariffs for Heating and Hot Water Supply Services in the Pilot Cities of the Municipal Heating Reform Project as of 01.02.2011
56. Report on the Results of the Workshops №№1, 2, 3 of Training Course "Formation of Tariffs for the Production, Transportation, and Supply of Heat According to the Requirements of the Resolution of the NERC № 242 of 17.02.2011. For the Representatives of Heat Supply Enterprises of Pilot Cities as of May-July, 2011
57. Legal Aspects of Establishment and Formation of Utility Services Tariffs. Features of Formation of Tariffs for Centralized Cold Water and Hot Water Supply, Sanitation and District Heating According to Current Legislation of 29.11.2011
58. Report on the Overview of the Tariff Setting Process and Tariff Methodology in the Sphere of District Heating in Ukraine, December 2011
59. Stocktaking Report on Current Legal and Regulatory Requirements for Benefits to Low-Income Households Related to Communal (Heat) Services, June, 2011
60. Housing Reform in Ukraine, Opora, 2011
61. Business Plan, Lviv, June, 2011
62. Business Plan, Yevpatoria, August 2011
63. Mechanisms of Formation of Tariffs in the Field of District Heating and Analysis of Effectiveness of Social Protection of Customers Subject to Application of the Two-Blocks Tariffs
64. Recommendations on improvement of the system of social protection of consumers of housing and communal services, August, 2011
65. Analysis and Suggestions on Financial Support at the Expense of Budget Funds for the Introduction of Energy Efficiency Measures for Low-Income Customers (Report), 2012

66. Policy of Implementation of Pilot Project on Energy Conservation at the Local Level with the Introduction of Measures on Social Protection of Low-Income Citizens, February, 2012
67. Comparison Table to the Draft Law of Ukraine "On Energy Efficiency of Residential and Public Buildings", (registration № 9683 in VRU), Prepared for the Second Reading (as of 23.05.2012)
68. Action Plan for the Introduction of Public Private Partnership into the Heat Supply Sector of Ukraine, June, 2011
69. ESCO and Energy Efficiency Contracts (Energy Services Contracts). Short Information, February, 2012
70. Methodology for the Implementation of ESCO Projects (General Guideline), February, 2012

List of Major Ukrainian Legislative Acts in the Field Heat Supply (Ukrainian legislation, used for preparation this Report on Regulatory issues)

31. The Law of Ukraine "On State Regulation in the Field of Utility Services"
32. The Law of Ukraine "On Local Governments in Ukraine"
33. The Law of Ukraine "On Heat Supply"
34. The Law of Ukraine "On Natural Monopolies"
35. The Law of Ukraine "On Licensing of Certain Types of Economic Activity"
36. The Law of Ukraine "On Associations of Apartment House Owners"
37. The Law of Ukraine "On Electricity"
38. The State Target Economy Program on Modernization of Communal Heating Power Sector for 2010-2014, approved by the Resolution of the CMU of 04.11.2009 №1216 (The Resolution is Void according to the Resolution of the CMU of 22.06.2011 №704)
39. The Energy Strategy of Ukraine until 2030, approved by the Resolution of the CMU of 15.03.2006 №145-p
40. The Program of Economy Reforms for 2010-2014 "Wealthy Society, Competitive Economy, Efficient State" of 02.06.2010, the Committee of Economic Reforms under the President of Ukraine
41. The National Action Plan for 2012 on the Implementation of the Program of Economy Reforms for 2010-2014 "Wealthy Society, Competitive Economy, Efficient State", approved by the Decree of the President of Ukraine of 12.03.2012 №187/2012
42. The State Target Economic Program on Energy Efficiency for the period 2010-2015, including the Action Plan of its Implementation by the Cabinet of Ministers of Ukraine CMU Instruction as of 01.03.2010 № 243
43. Regulation on the National Commission on State Regulation in the Utility Services Sphere, Approved by the Decree of the President of Ukraine of 23.11.2011 №1073
44. Regulation on the National Commission on State Regulation in the Energy Sphere approved by the Decree of the President of Ukraine of 23.11.2011 №1059
45. The Decree of the President of Ukraine "On Measures on Support of the National Commission on State Regulation in the Energy Sphere of Ukraine" of 14.03.1995 №213
46. Regulation on the State Agency on Energy Efficiency and Energy Saving of Ukraine, which established the functions of SAEEEC, approved by the Decree of the President of Ukraine of 13.04.2011 № 462/2011
47. Regulation on the Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine of Ukraine of 31.05.2011 №633

48. The Procedure for Review and Approval of Tariffs for the Licensees on Electric and Thermal Energy Production, approved by the Resolution of the NERC of 12.10.2005 №898
49. The Procedure for the Calculation of Tariffs for Electric and Thermal Energy, Produced by CHPs, TPPs, NPPs and RES, approved by the Resolution of the NERC of 12.10.2005 №896
50. The Procedure for the Calculation of Tariffs for Electric and Thermal Energy, Produced by Cogeneration Units, approved by the Resolution of the NERC of 12.10.2005 № 897
51. The Resolution of the CMU "On Ensuring a Unified Approach to the Formation of Tariffs for the Housing Utilities" of 01.06.2011 №869
52. Regulation about the Ministry of Energy and Coal Industry of Ukraine, approved by the Decree of the President of Ukraine of 06.04.2011 №382 and by the Resolution of the CMU of 02.11.2006 №1540
53. Concept of the State Target Program on Modernization of Heat Power Sector, approved by the Resolution of the CMU of 02.04.2009 №440-p.
54. The State Target Economy Program on Energy Efficiency and Development of energy production from renewable energy sources and alternative fuels for 2010- 2015, approved by the Resolution of the CMU of 25.01.2012 №105.
55. The National Program of Reforming and Developing of Housing and Communal Services for 2009-2014, defined by the Law of Ukraine
56. Sectoral Program on Energy Efficiency and Energy Saving in Housing and Communal Services for 2010-2014, approved by the Order of the Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine of 10.11.2009 №352
57. The Decree of the President of Ukraine "On optimization of the system of central executive bodies" of 06.04.2011 №370/2011
58. The Order of the State Committee of Ukraine for Regulatory Policy and Entrepreneurship, the Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine "On Approval of Licensing Conditions for the Economic Activities on Thermal Energy Production (Except for Thermal Energy Production by Combined Heat and Power Plants, Cogeneration Units and Power Plants that Use Non-Traditional or Renewable Energy Sources)" of 30.12.2008 №167/417
59. The Order of the State Committee of Ukraine for Regulatory Policy and Entrepreneurship, the Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine "On Approval of Licensing Conditions for the Economic Activities on Thermal Energy Transportation through Main and Local (Distribution) Heat Networks" of 30.12.2008 №168/418
60. The Resolution of the CMU "About New Size of Expenses for Housing and Communal Services, Purchase of Liquefied Gas, Solid and Liquid Furnace Domestic Fuel in the Event of Granting of Housing Subsidy" of 27.07.1998 №1156.

List of documents developed during the Project implementation that were reviewed by ET and inspected in the demo sites (on Energy Audit, MEP and Demo Projects issues)

№	Title	City, address	Contractor	Note
Yevpatoria				
1	Municipal energy plan	Yevpatoria	LLC ESCO Environmental	Approved in 2010 (city mayor)

			Systems	
2	Report on energy inspection of the heating system in Yevpatoria	Yevpatoria	Optim Energo, Kharkiv	
3	Report on energy audit of the city outpatient hospital	Yevpatoria, Nekrasova str. #39	CEC ESCO Center, Slavutich	Installation of a gas-fired boiler house
4	Report on energy audit of a residential building	Yevpatoria, Tuchina str. #1		Installation of a gas-fired boiler house
5	Report on energy audit of a residential building	Yevpatoria, May 9 str. #39 B, HOA Parus		
	Report on energy audit of a residential building	Yevpatoria, Pobedy prosp. #65		
6	draft	Yevpatoria, Internatsionala, #135 A, boiler house	Akva Ukraina, Kyiv	variable frequency control
Kurakhovo				
7	Municipal energy plan	Kurakhovo	Energy consulting company "ATCon", Poltava	**Not approved**
8	Report on energy inspection of the heating system in Kurakhovo	Kurakhovo	Optim Energo, Kharkiv	
9	Report on energy audit of kindergarten №21 Skazka	Kurakhovo, Pushkina str.#4	ARNIKA-Center, Kyiv	
10	Report on energy audit of kindergarten №18 Kosmonavt	Kurakhovo, Chapaeva str. #18B		
11	Report on energy audit of a residential building	Kurakhovo, Lenina str. #117, HOA «Almaz»,		

12	Report on energy audit of a residential building	Kurakhovo, Mechnikova str. #18 HOA Sharm		
13	Report on energy audit of a residential building	Kurakhovo, K. Marksa str. #10, HOA Brigantina		
Kramatorsk				
14	Municipal energy plan	Kramatorsk	LLC ESCO Environmental Systems	Approved in 2010 (city mayor)
15	Report on energy inspection of the heating system in Kramatorsk	Kramatorsk	Optim Energo, Kharkiv	
16	Report on energy audit of a residential building	Kramatorsk, 19 Partsiezda str. #57 (municipal housing office)	LLC ESCO Environmental Systems	
17	Report on energy audit of a residential building	Kramatorsk, 19 Partsiezda str. #51 (municipal housing office)	LLC ESCO Environmental Systems	
18	Design document "Installation of a ITP with weather regulation and metering"	Kramatorsk, five buildings	Private company "Energya-KU", Kramatorsk	
Lviv				
19	Municipal energy plan (part of the Program for Sustainable Energy Development of Lviv Till 2020")	Lviv	Working group of the Reconciliation Council	Approved in 2011 (city council session)
20	Report on energy inspection of the heating system of Lviv	Lviv	Optim Energo, Kharkiv	
21	Report on energy	Lviv,	CJSC KESK Rivne,	

	audit of a residential building	Pokhyka str. #3, HOA Near Park	Rivne	
22	Report on energy audit of a residential building	Lviv, Roksoliany str. #57, HOA Kameniar		
23	Report on energy audit of a residential building	Lviv, HOA Maria		
Lutsk				
24	Municipal energy plan	Lutsk	Regional training center "Local development Institute", Kyiv	Strategic development goals approved in 2010 (reconciliation committee of the city council)
25	Report on energy inspection of the heating system of Lutsk	Lutsk	Optim Energo, Kharkiv	
26	Report on energy audit of a residential building	Lutsk, prospekt Pobedy #10, HOA Binom	KP Group on Introduction of the Project on Energy Saving in Administrative and Public Buildings in Kyiv	
27	Report on energy audit of a residential building	Lutsk, prospekt Vozrozhdenia #22 A, HOA Vozrozhdenie		
28	Report on energy audit of a nursery school	Lutsk		
General documents				
29	Municipal Energy Planning General Framework Methodology		USAID	
30	Methodology of Monitoring of Decreased Energy Resources Consumption at Sites Where Energy Efficiency Measures Were Implemented		USAID	
31	Methodology of Conducting Energy Audits Using ENSI EAB application software		USAID	

32	Guidelines on preparation of building energy certificate for new build and rehabilitation. DSTU-N B A.2.2-5:2007	Minregionstroy of Ukraine, 2008	
33	Methodology and recommendations for the development of energy efficient and environmentally sound DH programs for Ukrainian cities	Approved by the Directive of Minstroy of Ukraine dated 26.10.2007, №147	
34	Integral inspection and energy audit methodology for building rehabilitation projects. MDS 13-20.2004	Central Research & Design Experimental Institute for Industrial Buildings and Facilities (Russia, Moscow, 2004)	
35	Structural design of buildings and facilities. Thermal insulation. DBN V,2,6-31:2006	Minstroy of Ukraine 2006	
36	DIRECTIVE 2010/31/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 May 2010 On The Energy Performance Of Buildings.	European Parliament, 2010	

Appendix N Description of Government Agency Responsibilities

State Agency on Energy Efficiency and Energy Conservation of Ukraine

The State Agency on Energy Efficiency and Energy Conservation (SAEEEC) of Ukraine was created as a result of reorganization of the National Agency of Ukraine on Ensuring Efficient Utilization of Energy Resources. The Provision on the State Agency on Energy Efficiency and Energy Conservation of Ukraine that identifies the functions of the SAEEEC was approved by the Decree of the President of Ukraine №462 dated April 13, 2011. The SAEEEC is a central executive body whose activities are identified and coordinated by the Cabinet of Ministers of Ukraine through the Minister of Economic Development and Trade of Ukraine. The main tasks of the SAEEEC include:

- Implementation of the state policy in the spheres of efficient utilization of fuel and energy resources, energy conservation, renewable sources of energy and alternative fuels, including confirmation of the alternative status of a fuel; qualification on cogeneration stations;
- State control in the sphere of efficient use of fuel and energy resources;
- Ensuring the increase of the share of renewable sources of energy and alternative fuels in the energy balance of Ukraine;
- Support for functioning of the system of energy audit and introduction of the energy management system;
- Approval of sectoral and regional reforms in the spheres of efficient use of fuel and energy resources, energy conservation, renewable sources of energy, and alternative fuels.

Ministry of Energy and Coal Industry of Ukraine

The Provision on the Ministry of Energy and Coal Industry of Ukraine was approve by the Decree of the President of Ukraine №382 dated April 6, 2011 and the Resolution of the Cabinet of Ministers of Ukraine №1540 dated November 2, 2006. The Ministry is a central executive body whose activities are identified and coordinated by the Cabinet of Ministers of Ukraine. The CMU

- Establishes the norms of use and distribution of natural gas by CHPs regardless of the form of ownership for production of electricity and heat energy;
- Approves and submits to the CMU for approval an annual budgeted balance sheet of the input and distribution of natural gas in Ukraine, and controls is implementation.

Furthermore, the Minister of Energy and Coal Industry of Ukraine was appointed the head of the reform area "Energy Reform" for implementation of the Economic Reform Program for 2010-2014 "Prosperous Society, Competitive Economy, Efficient State", and implementation of the National Action Plan for 2012 in the part related to implementation of this Program (Decree of the President of Ukraine №198 dated March 15, 2012). The MEC is a responsible for drafting of the Revised Energy Strategy for the Period Till 2030.

National Energy Regulatory Commission (NERC)

The Provision on the Commission was approved by the Decree of the President of Ukraine №1059 dated November 23. The Commission is a state collective body subordinate to the President of Ukraine and reporting to the Verkhovna Rada of Ukraine. NERC is a body responsible for state regulation of activities in the energy sphere whose main tasks include:

- State regulation of activities of the natural monopoly agents and economic agents working in the adjacent markets, namely in the spheres of energy and heating in the sectors related to production of heat energy by CHPs, TPPs, nuclear stations and cogeneration stations as well as stations using non-traditional or renewable sources of energy (hereinafter referred to as the heating sphere);
- Support for development of competition in the sphere of production and supply of electricity, in the natural gas market; creation of a competition environment in the heating sphere;
- Ensuring implementation of the price and tariff policy in the energy sphere and the oil-and-gas complex;

- Setting, upon approval from the Ministry of Economics and the Ministry of Finance, the margin prices for natural gas for economic agents producing heat energy, including bloc (module) boiler stations installed on the roof and built-on (based on the volume of natural gas used for production and provision of services to the population related to heating and hot water supply provided such agents have a separate metering and accounting reports for heat and hot water).

National Commission on State Regulation in the Utility Services Sphere.

The Presidential Decree "On National Commission on State Regulation in the Municipal Services Sphere" №1073 dated November 23, 2011 approved the Provision on the National Commission responsible for state regulation in the municipal services sphere. Pursuant to the Provision, the Commission:

- Ensures state regulation in the municipal services sphere, namely in the heating sector (except for the economic subjects involved in combined production of heat and electricity and/or using non-traditional or renewable sources of energy), central water supply and draining;
- Formation and ensuring predictability of the price and tariff policy in the markets that have the natural monopoly status as well as adjacent markets in the sphere of heating and central water supply and draining, support for introduction of incentive methods of regulation of prices;
- Licensing economic activities related to production of heat energy (except for activities related to production of heat energy by CHPs, TPPs, nuclear stations and cogeneration stations as well as stations using non-traditional or renewable sources of energy), transportation of heat energy through the main and local (distribution) heating systems, supply of heat energy in the volumes exceeding the level established by the conditions and rules of conducting economic activities (license conditions);
- Developed and approval of license conditions as well as the procedure for control of their implementation in the heating sphere;
- Licensing of economic activities on production of heat energy (except for activities related to production of heat energy by CHPs, TPPs, nuclear stations and cogeneration stations as well as stations using non-traditional or renewable sources of energy), transportation of heat energy through the main and local (distribution) heating systems, supply of heat energy in the volumes exceeding the level established by the conditions and rules of conducting economic activities (license conditions);
- Development and approval of license conditions and the procedure for control of their implementation in the heating sphere.

Appendix O Progress of Legal, Regulatory and Institutional Reform

APPENDIX TABLE O.1: DRAFT SCORECARD: MUNICIPAL HEATING REFORM PROJECT LEGISLATIVE AND REGULATORY ASSISTANCE – AUGUST, 2012

Laws/Regulations	Legal Ref.	Stages in legislation (A – Actual)							
		MHR Project is involved and is providing legislative and regulatory assistance	Drafts of amendments or new laws are ready and submitted for review by relevant agencies and organizations	Drafts are endorsed by agencies and organizations and submitted to the Parliament	Passed by Parliament	Enabling regulations are adopted	Implementation mechanism is established	General public has been informed	Implementation has commenced
		1	2	3	4	5	6	7	8
National Heating Reform Strategy and Action Plan	**No.1216 of 04.11.2009**		**A/2012**						
Law on Heat Supply	**No.4765 of July 6,2009 (see No.4434-VI of Feb.23,2012)**			**A/2012 Adopted in First Reading and withdrawn**					
Law on Housing and Communal Services	**Reg. No.4686 of June 23, 2009**			**A/2012 withdrawn**					
Law on Rent and Concession	**No.2624-VI of October 21,2010**								**A/2012**
Law on Local Self-Governance	**Amendments to the law prepared**		**A/2012**						
Law on Natural Monopolies	**Reg. No 10338, Law No 4998-VI, June 21, 2012**				**A/2012**				

Laws/Regulations	Legal Ref.	Stages in legislation (A – Actual)							
		MHR Project is involved and is providing legislative and regulatory assistance	Drafts of amendments or new laws are ready and submitted for review by relevant agencies and organizations	Drafts are endorsed by agencies and organizations and submitted to the Parliament	Passed by Parliament	Enabling regulations are adopted	Implementation mechanism is established	General public has been informed	Implementation has commenced
		1	2	3	4	5	6	7	8
Law on Condominiums and Home Owner Associations	**No.8474 March 15,2012**				**A/2012 Passed but vetoed**				
Law on National Regulatory Commission of Communal Services	**No.2479-VI of July 9,2010**								**A/2012**
Law on Licensing of Several Economic Activities	**Amendments to the law prepared**		**A/2012**						
Law on Local State Administrations			**A/2012**						
Law on State Program for Reform and Development of Housing and Communal Services for 2004-2014	**CMU Resolution #1216 of November 4, 2009 valid through June 22 2011**					**A/2012**			
Law on Prices and Pricing Policy			**A/2012**						
Law on Energy Efficiency in Buildings	**No 9683 of January 12, 2012**			**A/2012 First reading**					

Laws/Regulations	Legal Ref.	Stages in legislation (A – Actual)							
		MHR Project is involved and is providing legislative and regulatory assistance	Drafts of amendments or new laws are ready and submitted for review by relevant agencies and organizations	Drafts are endorsed by agencies and organizations and submitted to the Parliament	Passed by Parliament	Enabling regulations are adopted	Implementation mechanism is established	General public has been informed	Implementation has commenced
		1	2	3	4	5	6	7	8
Law on Cogeneration	**Amendments/Comments prepared**		**A/2012**						
Law on Energy Audits			**A/2012**						
Law on Alternative Sources of Energy	**Amendments/Comments prepared**		**A/2012**						
Law on PPPs	**No.2404-VI of July 6,2009**				**A/2012**				
Law on Tax on Profit of Enterprises, related to municipal utilities	**Amendments prepared, including Tax Code**		**A/2012**						
Energy Efficiency norms in Building Code	**Amendments prepared**			**A/2012 Accepted by GOU**					
Tariff Regulation Methodology	**NERC resolution No 242 of Feb.17,2011 NERC resolution No 606 of April 14, 2011 CMU Resolution No 584 of June 1, 2011**						**A/2012**		

Laws/Regulations	Legal Ref.	Stages in legislation (A – Actual)							
		MHR Project is involved and is providing legislative and regulatory assistance	Drafts of amendments or new laws are ready and submitted for review by relevant agencies and organizations	Drafts are endorsed by agencies and organizations and submitted to the Parliament	Passed by Parliament	Enabling regulations are adopted	Implementation mechanism is established	General public has been informed	Implementation has commenced
		1	2	3	4	5	6	7	8
Licensing Regulatory Procedures	**Amendments prepared**			**A/2012**					

Additional info (major legal acts/proposals not listed in the score card above):

- Amendments to the Budget Code of Ukraine on improving cities borrowing capacity adopted in 2011;
- Analysis / Proposals developed and submitted to GOU on ESCO related legislation amendments;
- Heat Metering Concept developed and accepted by the Ministry. Draft Law was prepared;
- Recommendations for regulation on certification and rating (labeling) of buildings.
- Recommendations (amendments) on improvement of social assistance system for consumers of housing and communal services developed

Appendix P MHR Project Statement of Difference

IBTCI Evaluation Report: MHR Project Comments

Kyiv, September 7, 2012

The MHR Project agrees with the overall Evaluation Team's (ET) conclusions that the USAID MHR Project was effective, efficient, well managed, and that most project goals were achieved.

We recognize the significant volume of work accomplished by the ET in collecting data, reviewing, assessing, and drawing conclusions in a short period of time, with limited resources, on broad and very complex issues relative to reforming Ukraine's heating sector.

However, our concern is that the wide scope of the evaluation, the extent and comprehensiveness of the MHR Project, and the complexity of heating reform issues, meant that the ET could not thoroughly assess and evaluate as many areas of Project activities as their experts would have wished. One result is that since some information is lacking and some data is misinterpreted, the casual or uninformed reader of the Evaluation Report may draw several incorrect conclusions

In this Memo and in the Track Changes version of the Evaluation Report (*attached*) we provide our comments, concerns, and clarifications in order to assist the ET in finalizing a best effort and current report.

GENERAL COMMENTS

- While we find the Report itself to be balanced, the Executive Summary leaves a somewhat negative impression if read as a stand-alone document. Our concern is that some readers will rely only on the Executive Summary and will therefore gain a lopsided impression and understanding of the effectiveness and accomplishments of the USAID Municipal Heating Reform Project. To better reflect the spirit and context of the Report itself, we recommend the ET and USAID revise the Executive Summary, adding more context (found in the Report itself) for some findings there presented. (*Please see comments and edits in our Track Changes version of the Evaluation Report).*
- Evaluation Report Figure 3.1: Average Ranking of MHR Project Activities is confusing. It is prominent in the Report because of its title, design, bold colors, and so on. The initial impression of Figure 3.1 is that municipal energy plans (MEPs) were ranked "highest" in importance of "advancing the project's purpose …" (whether by virtue of their success or effectiveness is unclear), and the Public Information Campaign was ranked as "lowest" by the ET. A more careful reading of the accompanying text in the Report indicates this figure may not represent the ET's professional opinion, but rather the subjective response of a random, un-weighted sampling of a small number of respondents (22), each of whom may have had a vested or biased interest or knowledge of only one or a few of the activities in question.

  We believe this attempt to identify or illustrate the most important or successful MHR Project activity is flawed due to:
  - a random and un-weighted sample, with a small number of respondents

- an apparent requirement that all activities be priority ranked (even though respondents may have believed that several (even all?) activities were equally successful at advancing the project)
- perceived lack of effectiveness in capturing the intent of this question, and clearly presenting or interpreting the meaning of the responses

The result is the bunching of all activities around a central value rather than ranging across the entire ranking spectrum, which suggests that each activity was ranked 1 or 2 by several respondents and also 7 or 8 by some other respondents. It appears every activity was rated as "highest importance" by some respondents, suggesting good overall MHR Project design (mix of activities) and good overall implementation and management of all listed activities. We do not find this interpretation clearly stated. We do not see value of presenting such an "Average Ranking of Activities." For these reasons, we believe figure 3.1 and associated comments do not add useful information to the Evaluation Report and, therefore, should be removed or significantly revised with respect to the meaning and importance of the figure.

COMMENTS ON EVALUATION METHODOLOGY

Sampling approach

The Evaluation Team selected six cities in four regions of Ukraine as the "sample cities."

The ET has correctly commented on their problematic choice of sample cities in the Report. However, the ET seems not to have taken into account our phased approach for MEP process training: first group of six fast-tracking cities (for pilot testing of all MHR Project activities, including MEP methodology in Ukraine and to train and build capacity of Regional Training Centers or RTCs); second group of 15 cities (to use lessons learned including adopted MEP methodology taught by local RTCs); third group of four cities (to provide and prove application and usefulness of demonstrations and other activities, plus MEP methodology in large cities).

Five of six cities selected by the ET are from the first testing group of MHR Project cities, where the Project tested new methodologies. Thus, some development assumptions did not work as intended. The RTCs were not fully operational in the ET sample cities, as these RTCs were themselves trainees relative to the first six pilot cities (first MEPs were developed as learning-by-doing methodology under training and coaching of EnEffect, MHR Project sub-contractor and co-author of EU energy planning methodology). IRG proposed this approach and USAID accepted it. Thus, for example, the Project applied the lessons learned in the first group of cities in the second and third groups of cities.

Selection of MHRP activities for evaluation

- With regard to the in-depth evaluation of RTCs and HOA Advisory Centers as typical Project tasks or activities, we note that establishment of RTCs and HOA Advisory Centers were not key Project activities but rather tools to facilitate capacity building and promote sustainability of Project activities in municipal energy planning and end-use energy efficiency. Therefore, as agreed with USAID, the establishment and operation of RTCs and HOA Advisory Centers were not measured by Project PMP indicators. Instead, the number of people involved in HOAs (since HOAs are considered a first step for end-use energy efficiency) was agreed as a key PMP indicator. The Project achieved and exceeded targets for this indicator, in part by developing HOA Advisory Centers, but mostly by a combination of national and local level efforts: policy

changes; numerous training workshops, seminars, and conferences; hot-line web-portal assistance to HOAs and their members; demo projects in HOA buildings; national public education/information campaign; and other related activities.

- Similarly with Regional Training Centers, the key PMP indicator for municipal energy planning was the number of cities that developed and implemented MEPs with USG assistance. This indicator was mostly achieved: 25 cities developed MEPs and 22 of them have already approved them and started implementation. The Regional Training Centers were an important tool to train and assist cities in municipal energy plan development. The Project selected (on a competitive basis) five local companies to become Regional Training Centers for municipal energy planning: MDI in Kyiv; Western Training Center in Lviv; Sevastopol Foundation in Crimea; ECOSYS in Zaporizhia; and, ITCON in Poltava. MHRP sub-contractor EnEffect trained and transferred EU MEP methodology to these RTCs. The RTC professionals were certified by EnEffect on municipal energy plans. Then, the RTCs cooperated with MHRP partner cities, under coaching of EnEffect, on MEP development.
- The RTCs were not responsible for energy audits (*unclear in the Evaluation Report on this*) and thus do not require SAEEC certification. Professional energy auditors, most of them SAEEC-certified, conducted the energy audits. MHR Project sub-contractor ENSI trained and certified these local energy auditors in the use of EU-recognized energy audit methodology of buildings. All of these local companies received customized knowledge, expertise, capacity and tools to implement energy efficiency auditing in Ukraine's communal sector. As a result, their expertise is requested by cities (to conduct audits and develop heating plans), by utilities (to develop business plans for bank lending), and by international financial institutions (IFIs) (to prepare feasibility studies for energy efficiency). All this contributes significantly to the sustainability of MHR Project efforts and activities.

Techniques and tools for data collection

- The ET states that only one **Focus Group Discussion (FGD)** was actually conducted, but refers to a second FGD (in Kramatorsk) in a way that is confusing.
- The number of demonstration projects related to metering in residential buildings is incorrect. According to the MHR Project classification and practice, a meter-controls project is the installation of heat metering and heat control equipment in five buildings in one partner city. The ET appears to have considered each building as a separate demonstration project, which leads to some confusion and bias in drawing conclusions about the efficacy of meter demonstration projects in particular, and overall demonstration project activity in general. For example, the ET may consider there were problems with five separate pilot metering demonstrations in Kramatorsk, but by MHR Project design, monitoring, counting and reporting, there was only one pilot metering demonstration carried out in Kramatorsk, which included five buildings. Similarly, the ET may presume they assessed more demonstration projects than they actually did, if they counted every building that received a meter and controls as one demonstration project.
- Key Informant Interviews (KIIs) with project implementers, beneficiaries, IFIs, and other stakeholders were an important tool for data collection and analysis. However, these group

classifications do not conform with the use of those terms in Ukraine for “counterparts,” “beneficiaries,” “partners,” etc. According to the Ministry of Economy’s formal classification for international assistance projects, MHR Project has a beneficiary (Ministry of Regional Development, Construction, Housing and Communal Services) and recipients (Ministry of Social Policy, National Regulatory Commission for Communal Services, partner city administrations and their utilities, a number of HOAs, etc.). While mostly semantic, we are concerned that these “classifications” could have led to some misstatements and misinterpretation of questions and of data received from different groups of interviewees and KIIs.