**Mid-term Evaluation Report**

**of the UNDP-GEF Project in Kazakhstan**

**'Removing Barriers to Energy Efficiency in Municipal Heat and Hot Water Supply'**

**PIMS 1281**

**By Dr. Adil Lari**

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This Mid-term Evaluation of the UNDP-GEF project ‘Removing Barriers to Energy Efficiency in Municipal Heat and Hot Water Supply' was carried out between May 18 and August 18, 2009.

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# ABBREVIATIONS AND ACRONYMS

AAO Association of Apartment Owners

APR Annual Project Report

AMC Municipal Antimonopoly Committees

AREM Agency of the Republic of Kazakhstan on Regulation of Natural Monopolies

AWP Annual Work Plan

BRC Bratislava Regional Centre (UNDP Europe and CIS)

CDM Clean Development Mechanism

CIS Commonwealth of Independent States

CHP Combined Heat and Power

CO UNDP Country Office

CO2 Carbon Dioxide

DH District Heating

EBRD European Bank for Reconstruction and Development

EE Energy Efficiency

EPC Energy Performance Contract

ESCO Energy Service Company

EU European Union

FSP Full Size Project

GDP Gross Domestic Product

GEF Global Environment Facility

GHG Greenhouse Gas

HOB Heat Only Boiler

IA Implementing Agency

LFA Logical Framework Approach

Logframe Logical Framework Matrix

M&E Monitoring and Evaluation

MEMR Ministry of Energy and Mineral Resources

MoU Memorandum of Understanding

MTE Mid-term Evaluation

NGO Non-Government Organization

PD Project Director

PM Project Manager

PIR Project Implementation Review

RTA Regional Technical Advisor

SME Small and Medium Enterprises

TA Technical Advisor

TJ Terajoules

TOR Terms-of-Reference

TPR Tripartite Review

UNDP United Nations Development Programme

UNFCCC United Nations Framework Convention on Climate Change

USD United States Dollars

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# Executive summary

## Brief description of the project

The UNDP-GEF Full-sized Project for Kazakhstan 'Removing Barriers to Energy Efficiency in Municipal Heat and Hot Water Supply' started in December 2006 and is currently planned to close in December 2011. The project is funded by the GEF (USD 3.29 million) with planned co-financing (USD 7,18 million) from Government and private sources. The project falls under the GEF Focal Area Climate Change (CC) and the GEF Operational Programme OP5: Removal of barriers to energy efficiency and energy conservation.

The objective of the project is to reduce greenhouse gas (GHG) emissions from the municipal heat and hot water supply systems in Kazakhstan and to lay the foundation for the sustainable development of these services taking into account local as well as global environmental considerations. Within this framework, the project will (i) assist the Government of Kazakhstan in reviewing and improving the legal and regulatory framework dealing with the heat and hot water supply sector, with a specific emphasis on the tariff issues and consumption based billing to motivate energy efficiency; (ii) build the capacity of the local heat supply companies to develop and manage their services on a commercial basis and to attract financing for the investments needed; (iii) build the capacity of the local tenants and home owner associations to manage the heat and hot water supply services and to implement cost-efficient energy saving measures at the building level; (iv) introduce and gain experience on new institutional and financing arrangements such as Energy Service Companies (ESCOs) and reduce the risks and uncertainties of energy efficiency investments in the heating sector otherwise by facilitating the implementation of selected pilot activities, and v) monitor, evaluate and disseminate the project results and lessons learnt thereby facilitating their effective replication.

The National Executing Agency is the Agency of the Republic of Kazakhstan on Regulation of Natural Monopolies (AREM). The project manager and project team has been selected by competitive selection and are housed within the offices of AREM in Astana.

## Context and purpose of the evaluation

This Mid-term Evaluation has been conducted on behalf of UNDP Kazakhstan in accordance with the UNDP/GEF Monitoring and Evaluation Policy. This evaluation has been conducted by an independent international reviewer. A mission to Almaty and Astana was conducted from June 20 to June 26, 2009 during which interviews with all relevant project stakeholders including the UNDP CO, project staff, government representatives and others were carried out. Details of persons interviewed and documents reviewed are listed in the Annexes.

## Main conclusions

While the project continues to be relevant to Kazakhstan and there has been considerable interest demonstrated to develop both the policy and institutional mechanisms to increase Energy Efficiency in the heating sector, a number of factors - both external and internal - have slowed the progress and influence of the project.

Changing Development Context

The project PDF-A and PDF-B phases were approved in 1998 and 1999. The Full-sized Project proposal was prepared in 2004 and approved in December 2006. Several project activities and co-financing partnerships (most notably those dealing with the Kokshetau DH plants) had been cancelled at the project start. The Inception Workshop held in September 2007 was used primarily to analyse the country situation, to validate the relevance of project objective and activities and to reassess project opportunities for cooperation and impact. While the project direction was clarified during the Workshop, new structured agreements between the parties had still to be prepared and endorsed. Lengthy and, in many cases, continuing negotiations with project partners (most notably with the City of Almaty where municipal elections resulted in changes to key posts) have delayed or threatened the implementation of key project activities and outcomes.

Policy Development and Enactment

The Project seeks to support legal and regulatory framework changes to provide incentives for the improvement of energy efficiency in the heat sector. The project team has sought cooperation in the development of the new Law on Energy Saving and in the restructuring of heat tariffs. Despite efforts by the project team (participation in policy development forums, preparation of drafts, and lobbying) recommendations have generally not been incorporated into policy development and the progress towards enactment of legislation has been slow. Artificially low heat tariffs and the resulting long pay-back periods also for low-cost EE investments continue to pose a major barrier to energy efficiency on both the supply and demand side.

AAOs (Association of Apartment Owners)

The interest and involvement of AAOs has been very positive in the project implementation.

Pilot Projects

Two pilot projects in Astana involving heat system installations in existing buildings (one school and one apartment building) have successfully demonstrated reduced heat consumptions (some 20-25%), moderate investment costs (20-25 thousand USD per building) and payback periods between 6 and 9 years. The technical solution has a broad application and involves;

* a building-level heat flow meter (currently required by law)
* a building-level heat flow reduction valve controlled by outdoor temperature sensors
* a new heat point (location where the building receives heat from the DH system) which more effectively utilizes the heat delivered to the building

Substantial interest in pilot project results on the part of municipalities, private ESCOs and AAOs is evident.

Almaty Municipal ESCO

The establishment of the Almaty Municipal ESCO has been delayed due to administrative changes and budget shifts but also because of poor planning on the part of the project. In particular, the ESCO Business Plan prepared under the project to provide practical guidance to Almaty Municipal Government suggests the municipality establish and manage a revolving fund. However, under the present law, a revolving fund cannot be established by a municipality. Such basic local conditions should clearly have been addressed during the business plan preparation phase to ensure the credibility and relevance of the final ESCO Business Plan. The qualification for alternative financial arrangements has caused interruptions in negotiations with the municipality and additional delays in project implementation. A financial institution to manage the revolving fund has not yet been identified.

Project Management

The Project Manager was replaced in May 2009 and the National Project Director at AREM was replaced in 2008. Although both the new Project Manager and the new National Project Director have been actively involved in the project implementation (both were involved in the Inception Workshop), there is a gap in the management of the project which must be addressed immediately.

Financial

The gaps created when activities and co-financing related to Kokshetau municipality disappeared are substantial and while prospects of attracting major co-financing sources still exist, these have not been secured. In addition, the co-financing resources promised by Almaty municipality (1 million USD) are delayed and no longer certain. The new activities and project-related investments in Astana Municipality are modest in comparison.

## Recommendations

1. Involve private sector ESCOs in project activities. The project activities and outputs (including building audits and feasibility studies) currently directed to Almaty Municipality ESCO (not yet established) should be adapted for implementation by private sector ESCOs. This will facilitate the realization of energy efficiency improvements in demonstration projects according to the project schedule and the broader application of the successes already demonstrated in pilot projects. Planned training activities should be open to private sector ESCOs to improve their capacity to realize EE projects in the public and private sector. The ESCO Business Plan already prepared under the project should be revisited and encompass the local experience of private sector ESCOs.
2. Identify and engage financial institutions to support project activities. The EBRD has recently provided training and capacity support regarding EE investment to 2 local banks in Kazakhstan. These banks should be informed and, where possible, involved in activity planning and implementation. In particular, the financial management support for ESCO activities and EE programme implementation should be attained.
3. Implement first 'pilot projects' with billing by consumption at the apartment level. The clear relationship of utility costs to individual energy consumption is an important incentive for energy conservation. Radiator valves and heat cost allocators are low-cost measures which enable tenants to control and measure heat consumption in the different rooms of an apartment. The pilot action should involve training and operational assistance to AAOs to ensure accurate and transparent calculation of consumption and fair billing according to international experience.
4. Strengthen project management. Ensure the Project Manager has the following capacities;

* uses Result-based Management and Risk Assessment to achieve the project objective and outcomes.
* has an excellent overview of budget and scheduling constraints
* has adequate technical, financial and management capacity to direct the institutional and financial models being implemented

Since April 1, 2009, the project has engaged an International Technical Advisor responsible for supervising project implementation and providing objective quality control and reporting The project team needs further training to improve knowledge of UNDP/GEF project management, monitoring procedures and requirements

1. Establish project cooperation with Ministry of Energy and Mineral Resources (MEMR) in the implementation of the Integrated Plan of Energy Saving for 2009-2010 (1st stage). The programme is designed to achieve a minimum reduction in energy consumption of 10% by 2015. Capacity building and training activities of the UNDP-GEF project have the potential to increase the effectiveness of actions and increase energy savings by up to 14%.
2. Bring an International Building EE Expert on board to calculate CO2 emission reduction targets with direct reference to Logframe activities and outcomes and to ensure indicators and mechanisms which validate progress towards targets.
3. It is recommended to update the project website. The webpage offers a useful source of base knowledge for municipalities and AAOs.
4. Because of a shift in the project focus from heat and hot water supply side issues towards demand side issues, AREM is no longer considered the optimal national executing partner for this project. As a government agency, AREM's field of responsibility does not encompass the current key objective pursuits of the project - namely reduced heat consumption in municipal and residential buildings. It is recommended that a new national executing partner with definitive common interest to cooperate on the project outcomes and objective be identified and brought on board. The newly formed Agency for Construction and Housing Utilities (CHU Agency) is one potential candidate. The Agency has been delegated responsible for state management of building and construction activity, housing relations and communal services as well as the development of state regulation policy in the areas of energy and heat supply.
5. Cooperation with government counterparts, particularly with the MEMR, needs to be intensified to ensure the legal and regulatory recommendations are agreed upon, incorporated in laws and amendments and submitted for adoption. Subsequently, a lobbying mechanism should be in place to support adoption of laws and amendments

## Lessons learned

1) The selection process for project management and staff should be optimized with the goal of forming the capacity necessary to start the project implementation quickly.

2) The need to largely redefine the project scope due to the absence of a key project component has caused considerable delays in project implementation and continues to impede effective project implementation.

3) Changing project management has also caused delays in the project implementation. Transfering operational and institutional knowledge to a new PM should be planned for

4) In view of the substantial changes to the project, it should be confirmed that all stakeholders are still the optimal project partners.

5) Project planning, reporting and monitoring of progress lack need to focus on progress towards end results.

6) The project strategy has essentially shifted from support activities for EE improvements on the heat supply side towards support for EE improvements on the demand (building) side. Clearly the project could not have proceeded as initially conceived without the actual EE rehabilitation of a DH utility in Kokshetau or in another municipality.

7) Unfortunately, there are still a number of barriers and risks to attaining sustainable results on the demand side; among others, DH tariffs are still largely subsidized in Kazakhstan.

8) Timely federal and municipal level decisions, commitments and action are necessary for key outputs. Delays resulting from government decision-making processes have put achievement of expected results at risk.

9) The situation analysis research into the local context in the first few months of project implementation is generally viewed to have been useful.

10) The government partners expect the project to deliver state-of-art with regard to information and knowledge which requires adequate international technical consulting

11) Pilot projects should introduce of innovation technologies or processes.

# Introduction

## Project Background

The UNDP-GEF Full-sized Project for Kazakhstan 'Removing Barriers to Energy Efficiency in Municipal Heat and Hot Water Supply' started in December 2006 and is currently planned to close in December 2011. The project is funded by the GEF (USD 3.29 million) with expected co-financing (USD 7,18 million) from Government and private sources. The project falls under the GEF Focal Area Climate Change (CC) and the GEF Operational Programme OP5: Removal of barriers to energy efficiency and energy conservation.

## Purpose of the evaluation

The mandate of this report is the Mid-term Evaluation of the UNDP-GEF Full-sized Project for Kazakhstan 'Removing Barriers to Energy Efficiency in Municipal Heat and Hot Water Supply' which started in December 2006.

This Mid-term Evaluation has been conducted on behalf of the UNDP Kazakhstan in accordance with the UNDP and GEF Monitoring and Evaluation Policy, applying the criteria set out in the Terms of Reference (see Annex 1). The primary goal has been to assess the progress of the project, to check whether it is proceeding on schedule and whether it is on the way to achieving the expected results and impacts.

This Mid-term Evaluation intends to assess the relevance, performance and success of the project. It has three major objectives:

a) to look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals

b) to identify and document lessons learned and make recommendations that may improve design and implementation of the project.

c) To identify opportunities for related activities or further projects in the region which would support replication and sustainability of project impact.

This Mid-term Evaluation is based on five major criteria as outlined in the GEF Monitoring and Evaluation Policy;

1. Relevance – the extent to which the activity is suited to development priorities and organizational policies, including changes over time.

2. Effectiveness – the extent to which an objective has been achieved or how likely it is to be achieved.

3. Efficiency – the extent to which results have been delivered with the least costly resources possible.

4. Results – the positive and negative, and foreseen and unforeseen, changes to and effects produced by a development intervention. In GEF terms, results include direct project outputs, short- to medium-term outcomes, and long-term impact including global environmental benefits, replication effects and other, local effects.

5. Sustainability – the likely ability of an intervention to continue to deliver benefits for an extended period of time after completion. Projects need to be environmentally as well as financially and socially sustainable.

## Key issues addressed

Particular emphasis is put on the current project results and the possibility of achieving all the objectives in the given timeframe, taking into consideration the speed with which the project is proceeding. More specifically, the evaluation assesses the following issues:

**Project concept and design**

The evaluation assesses the project concept and design. The problem addressed by the project and the project strategy is reviewed, encompassing an assessment of the appropriateness of the objectives, planned outputs, activities and inputs as compared to cost-effective alternatives. The executing modality and managerial arrangements is also analysed. The evaluation addresses achievement of indicators and the review the work plan, planned duration and budget of the project.

**Implementation**

The evaluation assesses the implementation of the project in terms of quality and timeliness of inputs and efficiency and effectiveness of activities carried out. Also, the effectiveness of management and the quality and timeliness of monitoring and backstopping by all parties to the project is evaluated. In particular, the evaluation assesses the project team’s use of adaptive management in project implementation. The evaluation exercise measures the level of achievement of the project’s objective. It also identifies which interim results have been achieved and how they have contributed to meeting the ultimate project outcomes.

**Project outputs, outcomes and impact**

The evaluation assesses the outputs, outcomes and impact achieved by the project. This encompasses an assessment of the achievement of the immediate objectives and the contribution to attaining the overall objective of the project against the Project’s logical framework. The evaluation also assesses the extent to which the implementation of the project has been inclusive of relevant stakeholders and to which it has been able to create collaboration between different partners. The evaluation also examines if the project has had significant unexpected effects, whether of beneficial or detrimental character.

**Project Management and Administration:**

The evaluation collects, documents and assesses the relevant elements and processes including: (i) Administrative procedures related to the project; (ii) Key decisions and interim results; and (iii) The main project implementation documents specifying how useful have the documents and reports been.

## The Outputs of the Evaluation and How they will be Used

The Mid-term Evaluation serves as an agent of change and plays a critical role in supporting accountability. Its main objectives are:

* To strengthen the adaptive management and monitoring functions of the project;
* To ensure accountability for the achievement of the GEF objective;
* To enhance organizational and development learning;
* To enable informed decision-making

Tasks:

* To evaluate the overall project activities in relation to the objectives and expected outcomes as stated in the project document and the other related documents
* To evaluate the project effectiveness and cost-efficiency
* To analyze the arrangements of project management and implementation
* To evaluate the progress attained so far in relation to the project outcomes
* To investigate the strategies and plans intended for the timely achievement of the overall project goal
* To list and document the first lessons learned in respect of the project design, its implementation and management
* To assess the sustainability of project interventions;
* To assess the relevance in relation to the national priorities
* To provide the recommendations for the future project activities and, where necessary, for the project implementation and management arrangements.

In particular, the mid-term evaluation exercise should assess the progress of creating the basic information, alleviation of barriers and identification of any constraints to the project implementation and their causes. It intends also to provide the recommendations for corrective measures to be undertaken. An effective measure to correct the problem areas identified, constraining the project implementation, will be required before the decision to be made in relation to the project continuation.

The report will be intended to meet the needs of all the related parties (GEF, UNDP, Agency of Natural Monopolies(AREM), Ministry of Environmental Protection (MEP), Ministry of Energy and Mineral Resources (MEMR), Ministry of Economy and Budget Planning (MEBP), Administrations of Almaty and Astana cities the project’s National Steering Committee, local communities and other related parties in Kazakhstan)).

## Methodology of the Evaluation

This Mid-term Evaluation was implemented according to the following procedure:

1) Preliminary documentation review

The initial stage involved a general review of project documentation and associated documents (Listed in Annex 4.) The documents were provided by the UNDP CO, the Project Manager, the UNDP Bratislava Regional Centre or downloaded from the internet.

2) Preparations for the mission

Through discussions with the Project Manager, Mr. Alexandr Belyi, representatives of key stakeholders (UNDP CO, AREM, MEMR, the Akimats of Almaty and Astana) and a broad sample of other project stakeholders were selected and contacted for interviews. Additionally, a general interview format (Annex 5) was drafted and forwarded to the Project Manager and UNDP prior to the mission for review.

3) Mission

The local mission in Kazakhstan was conducted between June 20 and June 26, 2009. The itinerary (Annex 2) consisted of interviews with project management, key stakeholders and beneficiaries as well as excursions to pilot project sites. The Project Manager, Mr. Alexandr Belyi, and the project team assisted the evaluator by arranging meetings and translation as necessary.

(a) Base project information and mission coordination with the Project Management

Information and coordination meetings with the Project Management were carried out

* upon arrival in Almaty (evaluator met with PM on June 21)
* upon arrival in Astana (evaluator met with UNDP CO and project team on June 24)
* at the end of the mission (evaluator met with UNDP CO and project team on June 26)

(b) Stakeholder interviews

Annex 3 contains a list of interviews completed

(c) Field visits to pilot project

Two apartment buildings were visited; AAO «Saryarka 7» and AAO «Komfort»

(d) Collection of additional documentation

Additional data and documents were made available by the project management and stakeholders during the mission.

4) Telephone interviews

On Monday, June 29 a follow-up telephone interview was conducted with Ms. Marina Olshanskaya, UNDP Regional Technical Advisor for the project and on Tuesday, June 30 with Mr. Vesa Rutanen, who led the Inception Workshop and prepared the Inception Report in 2007.

5) Data analysis

Following the mission, the collected documentation, data and opinions were compiled and analyzed. Multiple, sources of information were assessed to ensure an evaluation according to GEF/UNDP Monitoring and Evaluation Policy.

6) Reporting

This Final Evaluation is based the interviews with the relevant stakeholders as well as the review of available documentation. This Report includes relevant comments and suggestions raised by UNPD, the project team and the national stakeholders interviewed as well as the findings and opinions of the author.

## Structure of the evaluation

The structure applied in this evaluation is based on a performance assessment approach guided by the principles of Results-based Management. The evaluation tracks and assesses impact according to the project's Logical Framework Matrix. The contribution of project outputs and project management is evaluated with reference to progress towards achieving the project outcomes and overall objective. This Mid-term Evaluation reviews the implementation of the project in question against the project document endorsed by GEF, including any changes made during imple-mentation.

# The Project and its Development Context

According to 2001 data, the total GHG emissions in Kazakhstan were estimated at 154.9 million tons CO2eq, placing the country among the top 15 CO2-emitting GEF programme countries. The energy sector was responsible of some 79.2 % of the total emissions, of which the share of energy production (electricity and heat) was about 41%.

Due to its cold climate, Kazakhstan uses significant quantities of energy for space heating. In 2002, the heat demand for buildings constituted 160 million Gcal or about 60% of the total consumption of energy (heat and power). More than 60% of heat energy is consumed in the cities, and approximately 80% of that within the residential sector.

District heating (DH) is very common in Kazakhstan. Over 50% of the urban heating demand is covered by DH. There are 42 large DH systems connected to 38 large co-generation plants (CHPs) and 30 big central heat only boilers (HOBs). The efficiency of the DH systems is generally low with heat losses reaching up to 50% of the primary energy used. The high level of heat losses is primarily due to old, obsolete equipment (typically having reached an age between 25 and 40 years) and inadequate maintenance. By improving the energy efficiency of the existing DH systems and by further promoting co-generation, the total conservative GHG emission reduction potential has been estimated at about 4,6 million tons of CO2eq. per year.

## Project Start and Duration

The UNDP-GEF Full-sized Project for Kazakhstan 'Removing Barriers to Energy Efficiency in Municipal Heat and Hot Water Supply' was signed by the GEF in December 2006. After an initial period in which a Project Manager and Technical Experts were selected, implementation effectively began in April 2007. The Inception Workshop was help in September 2007. The original planned implementation period was 4 years. After an extension agreed upon early in the project implementation, it is currently planned to close in December 2011.

## Problems that the Project Seeks to Address

The general problem

DH systems are a significant part of the urban energy infrastructure in Kazakhstan, supplying about 60% of heat energy consumed. However, DH companies face severe technical and economic difficulties with out-dated equipment and high heat losses (up to 50%). Low tariffs combined with poor payment collection contribute to a situation where DH companies are neither able to work on a financially sustainable basis nor do they have the financial resources necessary for essential system rehabilitations or energy efficiency improvements. Municipalities are typically required to support or absorb DH companies to ensure their sustained operation.

On the demand side, the existing building stock is characterized by poor thermal performance and inadequate heat regulation. Although building-level heat metering is now required by law, the incentive to comply is lacking; apartment owners typically have no means to regulate their heat use and in some pilot installations, actual metered consumption has been higher than normative consumption. Low tariffs contribute to a situation where building-level energy efficient investments generally require unreasonably long pay-back periods.

Specific barriers:

There are a number of barriers, which despite the existence of general policy supporting energy efficiency and some positive developments in tariff-setting and institutional areas, prevent many energy efficiency investments to take place in practice. Based on the experiences gained from the heating sector restructuring efforts in other countries, one of the most important measures and fundamentals for providing incentives for both the end users and the heat suppliers to improve their energy efficiency is to shift from a flat fee or normative tariff and billing system to a consumption based billing. In order to leverage financing for the actual investments, there is also a need to improve the payment collection rate so that the heat supply companies can demonstrate the full cost recovery of their services and to convince the potential financiers of the returns the investments will make.

While supporting the commercial operation of the DH companies by revised tariff structure and enforcement of the payments, there is a continued need for the Government to also support the poorest part of the population to cover their expenses for these basic services. A common approach that has been recommended in other countries is that instead of subsidizing all the consumers through artificial low tariffs or by allowing no or partial payments for the services received, the heat supply companies should be allowed and obliged to operate according to the normal commercial principles. When state subsidies are needed, they should be targeted to support directly those families that really need them. In parallel, there is a need for technical measures that allow the consumers individually and/or collectively at the building level to regulate their heat consumption according to their solvency and comfort requirements.

Taking into account the above, the identified key barriers to improving the energy efficiency of the heat and hot water supply systems in Kazakhstan are:

Legal, regulatory and policy related barriers

While the current legislation, including the “Law on Energy” and “Law on Energy Saving” provides the general framework for promoting sustainable development of the heat and hot water supply services in Kazakhstan, there are several other legal and regulatory provisions and technical standards from the past that need to be reviewed and, as applicable, revised to make them consistent with the objectives of the above mentioned legislation. Areas, in which the legal and regulatory framework would need to be further developed include:

Ensuring that adequate financial incentives exist for the DH companies to improve the energy efficiency of their DH systems to the extent that these investments can be economically justified. Despite the recent improvements adopted by the Antimonopoly Agency in their tariff determining policy, further work is needed to explore the remaining legal and regulatory barriers and the changes in tariff regulation to increase economic stimulus of both DH companies and the final end users to invest in energy efficiency and to encourage the shift to consumption based billing. A key feature of the revised tariff policy should be that the tariffs reflect the full costs of the service (including capital costs) and any additional support needed for the low income part of the population will be arranged through a separate social support scheme;

Introduction and enforcement/promotion of heat metering and consumption based billing. The current billing procedures for heat supply services are mainly based on a flat rate fee per m2;

Enforcement of payments (covering technical, institutional and legal instruments) and streamlining the mechanisms and procedures for solving eventual disputes and conflicts between the heat supply companies and clients. In order to enforce the payment collection, there needs to be a legal foundation and streamlined technical and other mechanisms for the heat supplier to cut off the service and/or bring the non-paying customers to the court in the case of non-payment. In parallel, the tariff setting and billing principles have to be made transparent, so that the consumers know what they are actually paying for;

Strengthening the Associations of Apartment Owners (AAOs) as credible, legally and financially responsible contracting counterparts for commercial heat service providers, including the review of the legal and regulatory provisions governing the relationship between the AAOs and the tenants;

Review of and changes in the social support schemes, allowing the increase of the tariffs up to the level of full cost recovery, while at the same time ensuring that adequate support is available for the low-income families to cover their basic heating and other needs; and

Reviewing and updating the outdated technical standards and regulations, which sometimes prevent the use of new, more efficient equipment and installation techniques.

Financial and related institutional barriers

While as a result of the positive economic development, the possibilities to obtain public sector financing for the necessary municipal infrastructure rehabilitation investments have significantly improved in Kazakhstan during the past few years, there is also a continuing need to attract private sector financing to complement the resources of the municipal and state budgets. This private sector investment is needed to facilitate implementation of the targeted energy efficiency investments at the consumer side as well as for improving the energy efficiency of the supply side managed by private heat supply companies or by companies, which are under municipal ownership, but work more or less as independent commercial entities with their own account and liabilities.

In respect to the above, the identified key barriers can be summarized as follows:

Lack of experience of the financial sector and high perceived risks of investing into energy efficiency projects in Kazakhstan leading to high expected rates of return, high interest rates, high collateral requirements and short payback periods of the available commercial or semi-commercial financing sources making them practically unusable for most energy efficiency investments;

* Weak financial status and low creditworthiness of the targeted consumer groups and the existing DH companies;
* Difficulties for private or semi-private DH companies in obtaining state or municipal guarantees required by most international “soft” loan providers; and
* Absence and/or lack of experience using new institutional and financial mechanisms for developing, financing and implementing energy efficiency investments in both supply and demand side, such as Energy Service Companies (ESCOs), private-public partnerships, vendor credits, leasing etc.;
* General institutional and capacity related barriers

Finally, there are institutional and capacity related barriers, including:

* Lack of local capacity to formulate “bankable” energy efficiency project proposals, to structure financing for them and to manage the development and the implementation of the EE projects otherwise;
* Lack of experience and capacity to create and manage new institutional and financing mechanisms such as Energy Service Companies (ESCOs), Performance Contracts and private-public partnerships;
* Lack of tradition and capacity among the apartment owners in organizing the heat and hot water supply and other building related tasks and services in a most feasible way at the building level (including investments into energy efficiency, when economically feasible); and
* Lack of general awareness and information of the different stakeholder groups on the available, cost-effective energy saving technologies and measures

## Immediate and Development Objectives of the Project

The objective of the project is to reduce GHG emissions from the municipal heat and hot water supply systems in Kazakhstan and to lay the foundation for the sustainable development of these services by taking into account local and global environmental considerations. The project will build the capacity and create incentives for the implementation of new institutional and financing mechanisms with the target to leverage new, local sources of financing for the energy efficiency investments needed. The project results, experiences and lessons learnt can be used as a basis for replicating similar measures in other transitional economies

The project aims to tackle the above mentioned overall objective through 3 main project outcomes:

1. Legal and regulatory changes: A supportive legal and regulatory framework to promote and provide incentives for the improvement of energy efficiency of the heat and hot water supply services in Kazakhstan
2. New institutional and financing models (AAOs, ESCO, Municipal Energy Efficiency Plan) introduced for leveraging financing for EE investments and enhanced capacity of the local stakeholders to support their further implementation and replication
3. Compilation, analysis and dissemination of the project experiences and lessons learnt and initiation of their effective replication in Kazakhstan and other CIS countries/municipalities with comparable situation.

Key activities to attain these outcomes and the overall objective are:

* Contribute in the development and enactment of the Law on Energy Saving, rules on heat energy supply, and the Law on Housing Relations.
* Establishment of an ESCO in Almaty municipality to realize EE investments in municipal buildings and infrastructure
* Development and implementation of the Astana Municipal Energy Efficiency Programme
* Support and training of AAOs in Almaty and Astana including pilot projects.
* Promotion and replication of project results

## Main Stakeholders

The main direct stakeholders and beneficiaries of the project are;

*Municipal heat supply companies and the municipal administrations*. Although some heat supply companies have been privatized, organizing adequate heat and hot water supply is still broadly perceived as the responsibility of the municipalities, which have a direct interest in reducing their current spendings by improving the energy efficiency of the system. While Almaty and Astana have been selected as sites for the first pilot projects, other Kazak municipalities will be involved in the dissemination and, as applicable, replication of the results and lessons learnt. The project intended to enhance their capacities in the field of energy management and energy efficiency via trainings, consultations, information materials and documentations. The most important tool to mobilize their activities in modernizing their energy use was to provide funding for the audits and feasibility studies that formed the basis for actual investments.

The *consumers and Associations of Apartment Owners (AAOs)* are the direct counterparts for heat suppliers and the ones with the potential to initiate energy efficiency measures at the building level. As above, while the consumers and AAOs in Almaty and Astana are the first target group, AAOs in other cities will be involved in the dissemination and, as applicable, replication of the results and lessons learnt. The project has produced a guidebook for AAOs to replicate pilot project results including processes to encourage tenant participation, sources of financing and subsidies

*The Agency of the Republic of Kazakhstan on Regulation of Natural Monopolies (AREM)* is responsible for the legal and regulatory matters in the area of tariffs. Municipal Antimonopoly Committees (AMC) are responsible for consideration and adoption of tariffs for local monopolies.

*The* *Ministry of the Environment,* is responsible for environment related activities and matters. It is also serves as the focal point of the Government of Kazakhstan to the GEF and the UN FCCC.

*The Ministry of Energy and Mineral Resources* is the government body responsible for the energy sector strategy development and for regulatory functions, including issues related to the promotion of co-generation. It was the Government counterpart for the PDF phase of the project.

The *Science Institute for Ecology* *and Climate* and the *Science Institute for Energy*

*Centre for Energy Efficiency and Clean Production, Almaty*

*Local SMEs and financial institutions* involved in implementation of energy efficiency projects

## Results Expected

The project is expected to result in carbon emission reductions of at least 30,000 tCO2e per yearand new projects/programmes initiated and the financing leveraged for them at the amount of at least USD 10 million by the end of the project.

The project focuses on attaining the following results:

1. Adoption and enforcement of the proposed legal and regulatory changes by the end of the project
2. Almaty ESCO established, staff recruited and trained, capitalized (1,5 mln USD in total) and at least 3 Energy Performance Contracts signed
3. Astana Municipal EE Programme developed by end of 2008 and implemented by 2014, institution established/strengthened for its implementation and monitoring
4. At least 4 fully operational AAOs with trained staff, action-plans and financing
5. At least 2 new municipal EE programmes initiated, 4 AAOs established and 3 new EPCs with ESCO signed for implementing EE investments in other cities or city districts leveraging at the amount of at least USD10 million

# Situation Analysis

## Outcomes and Outputs

A situation analysis performed early in the project implementation recognized that a number of activities outlined in the project document dealing with improvements to supply side energy efficiency should no longer be pursued due to changes in the political and financial climate in the country. In particular, it was clear that rehabilitation projects of the heat supply sector in the municipalities of Kokshetau and Almaty would not be initiated within the life of the project. At the same time, new opportunities for the project to assist in the formulation of key programmes and legislation (ie. the Astana Energy Efficiency Programme and the new Law on Energy Saving) were identified. During the Inception Workshop and in subsequent months the project scope was redefined with a general shift of focus from activities to improve energy efficiency from the heat and hot water supply side to activities aimed to improve energy efficiency on the demand (building) side. Several project activities were redefined or replaced within the first year of project implementation and a revised project logical framework was finalized in June 2008. The following review is based on the Outcomes, Outputs and Targets outlined in the June 2008 revised project logical framework.

***Outcome 1*** *- Legal and regulatory changes*

Expected results at project end:

-A supportive legal and regulatory framework in place to promote and provide incentives for the improvement of the energy efficiency of the heat and hot water supply services in Kazakhstan

-The proposed legal and regulatory changes (Outputs 1.1 to 1.4 below) formally adopted and effectively enforced by the end of the project creating sufficient incentives for various stakeholders (municipalities, AAOs, residents) to implement EE measures.

Status at mid-term:

-recommendations prepared by the project have been issued to government counterparts for review but generally these have not been incorporated into the laws and regulations.

***Output 1.1*** *- Proposal for improvements in existing DH tariff policy developed and endorsed by the Government*

Expected results at mid-term:

-draft new Law on Energy Saving finalized and submitted to Parliament and

-a comprehensive proposal for improved tariff and billing policy developed (for endorsement within the coming year)

Actual results at mid-term:

-Text of the new Law on Energy Saving has been finalized by the government (MEMR). Adoption is expected at the end of 2009. Despite considerable time and resources spent by the project to develope recommendations and to participate in discussions, the proposed new Law on Energy Saving does not adequately incorporate these recommendations or address the concerns outlined by the project.

-Recommendations on tariff regulation in heat supply sector were submitted for consideration.

-In 2008, draft rules on heat energy supply were developed, agreed with the Association of Heat Companies and submitted to MEMR for approval.

-In 2008, the new methodology on “Calculation of specific norms of heat flow for small heat boilers” was developed and presented for approval by the Antimonopoly Committee.

***Output 1.2*** *- Social support scheme to support the most vulnerable group of the population developed and endorsed by the Government*

Expected results at mid-term:

-Proposal on social support scheme developed (for discussion and endorsement by key stakeholders within the coming year)

Actual results at mid-term:

-Draft Concept on social support of vulnerable people was developed and discussed with stakeholders (AAOs, Ministry of Industry and Trade).

-Recommendations for the Rules of Housing Aid with aim of compensation of costs of low-income families by installation and maintenance of energy saving equipment in residential multi-apartments have been prepared and submitted

***Output 1.3*** *- Legal and regulatory changes to strengthen the role of the Associations of Apartment Owners (AAOs) in managing building and associated heat and hot water supply services developed and endorsed by the Government*

Expected results at mid-term:

-A package of legal and regulatory changes to introduce specific incentives for and strengthen the role of AAOs in managing building and associated heat and hot water supply services developed (for discussion and endorsement by key stakeholders within the coming year)

Actual results at mid-term:

-Project supported the development of the “Concept for development of Housing and Municipal Utilities” which was approved by the Government in May 2009. In particular, specific provisions were incorporated which support:

- effective maintenance of residential buildings,

- the role of condominiums in implementation of energy saving projects in residential buildings,

- ESCOs as viable financial mechanisms to realize energy efficiency projects in buildings

-The Law on Housing Relations was revised and adopted in June 2009 incorporating provisions promoted by the project including obligatory registration of condominiums and the right to open an accumulative bank account by the AAO, both of which are necessary for the effective management of common property and the implementation of energy saving measures.

-The project has developed a number of other recommendations and is cooperating with newly established Agency for Construction and Housing Utilities (CHU) on their incorporation in legislation, specifically:

- defining the responsibility of apartment owners with respect to common property including heat points;

- to improve the self-management in condominiums for energy saving by the owners;

- to develop financial mechanisms for the implementation of energy saving measures.

- the project is developing recommended revisions to the Rules for Provision of Municipal Services and Heat Supply in order to incorporate incentives for more rational energy consumption by owners and to assist in creating an enabling environment for implementation of energy efficiency projects in residential buildings.

***Output 1.4*** *- Provisions allowing municipalities to create revolving funds/accounts to re-invest energy saving revenues into further EE activities developed and endorsed by the Government and/or targeted municipalities*

Expected results at mid-term:

A package of legal and regulatory changes to introduce respective provisions developed (for adoption and enforcement in the coming year)

Actual results at mid-term:

Draft legal and regulatory documents for creation of Revolving Funds by the municipalities are under approval by stakeholders\beneficiaries;

***Output 1.5*** *- Mechanism to monitor implementation and impact of the adopted laws and regulations developed and agreed with key stakeholders*

Expected results at mid-term: none stated

Expected results at project end: Adequate information on the impact of the adopted laws and regulations is available

***Output 1.6*** *- Training provided to key stakeholders responsible for effective implementation and enforcement of the adopted policy*

Expected results at mid-term: Targeted stakeholder groups identified

Expected results at project end: Training provided to at least 50 targeted stakeholders

Recommendations Outcome 1:

-cooperation with government counterparts needs to be intensified to ensure the legal and regulatory recommendations are agreed upon, incorporated in laws and amendments and submitted for adoption.

-subsequently, a lobbying mechanism should be in place to support adoption of laws and amendments.

-Bring an International Building EE Expert on board to calculate CO2 emission reduction benefits with direct reference to outputs and outcomes and to ensure indicators and mechanisms which validate progress towards these targets.

***Outcome 2*** *- New institutional and financing models introduced for leveraging financing for EE investments and enhanced capacity of the local stakeholders to support their further implementation and replication*

Expected results at project end:

-Leveraged financing (Public: 1 mln USD, Private: 200,000 USD, Tenants: 10,000 USD)

-Cumulative GHG mitigation from demo projects: 30,000 tCO2/year

Actual results at mid-term

-Leveraged financing (Public: 0,2 mln USD, Private: 16,000 USD, Tenants: 39,300 USD)

-Cumulative GHG mitigation from demo projects: 76 tCO2/year

***Output 2.1*** *- Astana Municipal EE Programme*

Expected results at mid-term:

-MoU with Astana Municipality

-Programme design, implementation arrangements and budget finalized

-Training programs and modules designed (for delivery within coming year)

-Demo-projects (resulting in at least 9,800 tCO2/yr reduction) implemented or ready for implementation within the coming year

Expected results at project end:

-Institution established/strengthened for implementation and monitoring of Astana Municipal EE Programme (to be implemented by 2014)

-Programme implementation monitored, results documents and lessons analyzed and reported

Actual results at mid-term:

-after considerable time and resource investment in developing the Astana EE Program (including drafts, cost estimates, financing mechanisms and pilot project selection), the municipality is not implementing the programme due to recent regulatory changes at the national level; all regions in Kazakhstan have been mandated to create Regional Comprehensive Plans for Energy Savings. Project efforts are now directed to assisting Astana in developing its Plan. The extent to which aspects from the Astana EE Program can be incorporated into the Astana Municipal Regional Comprehensive Plan is not clear.

-MoU between Astana Akimat and UNDP was signed in June 2009

-Astana Municipal Energy Saving Plan is under development with expected adoption in 3rd QR 2009

-Municipal Working Group to develop the Plan includes project experts; assistance is focused on chapters regarding energy saving in heat supply.

-the legal feasibility and commitment of Astana Municipality to create a Revolving fund within the municipal budget for energy efficiency projects is still not clear. A concept has been submitted to the municipality, but no formal response has been received.

-Project has assisted in implementation of a demo-project at School #15. The project is monitoring of saving and reduction of GHG emissions. PR campaign with TV was conducted

-5 additional schools were selected as demo-projects

***Output 2.2*** *- Almaty ESCO*

Expected results at mid-term:

-ESCO is legally set-up

-ESCO staff hired and trained

-Business plan developed and approved by ESCO Board

-Marketing strategy and outreach for ESCO developed and organized

Expected results within the next year:

-Almaty ESCO operational with trained staff, capital (1,5 mln USD) and at least 3 signed EPC

-Completed pilot projects resulting in at least 20,000 tCO2/yr reduction

Actual results at mid-term

-MoU between Almaty and UNDP was signed November 2008

-After delays caused by elections and budget shifts, ESCO is currently expected to be set-up by the end of 2009

-Draft statutory documents for ESCO have been prepared

-Almaty municipality has been unable to provide 1 mln USD capital for ESCO in 2009. The municipality has agreed to provide 0,2 mln USD in 2009 and remaining 0,8 mln USD in 2010

-Training Program for ESCO personnel and training modules have been developed. training for personnel will start after ESCO is legally set up.

-ESCO Business Plan was prepared by the project in 2008. Negotiations with the municipality have revealed problems in the plan with regards scheduling and financing of projects

-The project is cooperating with the Centre for Energy Efficiency and Cleaner Production in Almaty (established with ESNI funding and includes trained energy auditors.)

-Energy audits of 28 residential houses were conducted with the aim of selecting pilot projects

***Output 2.3*** *- AAOs*

Expected results at mid-term:

-AAO awareness strategy designed and successfully implemented

-Buildings and AAOs participating in pilot projects selected and staff trained

-Training/Communication programme developed (for delivery by end of project)

Expected results by project end:

-Pilot projects implemented and monitored resulting in at least 200 tCO2/yr reduction

Actual results at mid-term:

-Energy audits of 3 residential houses and 2 schools in Astana, and of 28 residential buildings in Almaty were conducted (2008 status)

-2 AAOs in Astana have initiated pilot projects, training on implementation and reporting completed

-An additional Astana AAO has prepared an application with realization expected to start in August 2009

-10 AAOs in Almaty and 24 AAOs in Astana were involved in training and 10 AAOs confirmed their intentions to participate in pilot projects in Almaty (2008 status).

-Almaty AAOs are evaluating proposals to establish a Consulting Centre on Energy Saving;

-Volume 1 of Manual for AAOs was developed and prepared for publication

Comment: This component has been quite successful in raising the awareness and the capacities of AAOs to implement energy efficiency projects, to mobilize support from tenants, AAOs and the private sector and in identifying mechanisms and sources of financing.

Recommendations:

-in order to support wider interest and support for energy efficienct rehabilitation, the environmental, social and economic benefits of pilot projects should be documented and presented to government. For example, increased health and well-being of tenants, lower utility costs, lower pollution levels, the creation of new jobs and SMEs are all important added benefits of energy efficiency activities.

***Outcome 3*** *- Compilation, analysis and dissemination of the project experiences and lessons learnt and initiation of their effective replication in Kazakhstan and other CIS countries/ municipalities with comparable situation*

Expected results by project end:

At least 2 new municipal EE programme initiated, 4 AAOs trained and 3 new EPCs with ESCO signed for implementing EE investments in other cities or city districts leveraging at the amount of at least USD 10 million

Actual results at mid-term:

-Consultations with stakeholders have been initiated in Pavlodar, Kapshagai and Jezkazgan.

-MoU with Karaganda is expected by the end of 2009 regarding creation of private ESCO and AAOs

***Output 3.1*** *- A system for monitoring/ recording the GHG emission reductions of the first pilot projects and the project as a whole.*

Expected results at mid-term:

-GHG emission monitoring and verification protocol developed and the operating personnel of the projects trained for compiling the required information

Expected results by project end:

-An assessment of the GHG reduction resulting from the project implementation completed

Actual results by mid-term:

-Report and monitoring methodology for GHG emissions was finalized. Project personnel was trained how to calculate the emissions reduction and how to work with calculation information.

-GHG emissions reduction monitoring commenced to be applied in the initiated demo projects in AAOs.

-Baseline scenarios of heat sector for Almaty and Astana were developed for the period of up to 2020. The potential of GHG emissions reduction up to 2010 has been estimated as 9% including for Astana as 72,000 tons of CO2, and for Almaty 180,000 tons of CO2 accordingly

***Output 3.2*** *- Analyses of the experiences and lessons learnt under the project and recommendations for their effective replication*

Expected results at mid-term: none stated

Expected results by project end:

-Project report documenting the results, experiences and lessons learnt and recommendations for their effective replication.

***Output 3.3*** *- Training and other capacity building activities completed for the management and, as applicable, operating personnel of other municipalities and heat supply companies, including, as applicable, establishment of an information exchange network.*

Expected results at mid-term: none stated

Expected results by project end:

-At least 6 additional municipalities and/or heat supply companies contacted and trained

***Output 3.4*** *- Project overall results, experiences and lessons learnt discussed and disseminated at the national and regional level*

Expected results at mid-term: none stated

Expected results by project end:

-The draft report disseminated to the key stakeholders.

-A regional seminar organized to present and discuss the results

-Other public outreach activities such as articles and TV programs

***Output 3.5*** *- Consultations for replicating the project experiences in other cities or city districts and leveraging financing for that completed*

Expected results at mid-term: none stated

Expected results by project end:

At least three expressions of interests to replicate project activities at the national and/or regional level received by the end of the project.

Actual results at mid-term

-Consultations with stakeholders have been initiated in Pavlodar, Kapshagai and Jezkazgan.

-MoU with Karaganda is expected by the end of 2009 regarding creation of private ESCO and AAOs

Comments Outcome 3

Project team is continuously engaged in awareness raising and education activities on EE. Dissemination activities included an International Round Table “Application of institutional and financial mechanism models for energy effective service in heat supply”, with participation of AREM, MEP, Akimats of Astana and Almaty cities, Almaty and Karaganda oblasts, Department of AREM in Astana and Almaty cities, NGOs, heat supply companies in Astana and Almaty, Companies for heat metering and automation equipment, mass media, etc. To participate and share their experiences, the representatives of JSC Mytyschinskaya teploset (Moscow, Russia), ESCO-Rivne (Rivne, Ukraine), UNDP Ukraine (Kiev, Ukraine) and international advisor (Oslo, Norway) were also invited;

Recommendations Outcome 3

-considerable project effort and resources have already been directed towards awareness raising, promotional activities and materials. Keeping in mind the efforts and resources still needed to acheive the project's global environmental and CO2 targets, the Project Management should re-assess and balance awareness raising activities in respect to the overall project resources and schedule.

## Partnership Strategy

A number of key partners dropped out of the project in its initial stages because of changes in the political and financial climate in the country which occurred between the submission of the Project Document in 2005 and the project start in 2007. In particular, Kokshetau Municipality and Kokshetau DH who together had committed some 6 mln USD co-financing to the project earmarked for rehabilitations to the municipal heat supply utility were not able to proceed with the project. At the Inception Workshop and during the first year of project implementation, new partnership opportunities were sought and identified including those with Astana Municipality and diverse AAOs in Astana and Almaty. Subsequently, the terms of cooperation were negotiated and, where appropriate, MoUs between UNDP and the partners signed.

National Executing Partner

The Agency of the Republic of Kazakhstan on Regulation of Natural Monopolies (AREM) agreed to act as national executing partner during the project preparation phase. The Agency's field of responsibilty includes heat supply tariff issues and operational and management issues related to the heat and hot water supply utilities. These fit well with original project targets and activities. However, due to the shift in project focus from heat and hot water supply side issues towards demand side issues, AREM's role in the project has been reduced substantially as most of the activities now fall outside their field of influence. The project has prepared recommendations for tariff policy revisions and submitted them to AREM for review. An official response has not been issued. Although raising the price of heat and hot water to substantially cover production and operation costs would provide considerable incentive for consumers to realize energy efficiency renovations, the prospects of a tariff policy revision within the scope of the project is recognized as unlikely.

Recommendation: AREM is not considered the optimal national executing partner for the project in its revised form. As a government agency, AREM's field of responsibility does not encompass the current key objective pursuits of the project - namely reduced heat consumption in municipal and residential buildings. It is recommended that a new national executing partner with definitive common interest to cooperate on the project outcomes and objective be identified and brought on board. The newly formed Agency for Construction and Housing Utilities (CHU Agency) is one potential candidate. The Agency has been delegated responsible for state management of building and construction activity, housing relations and communal services as well as the development of state regulation policy in the areas of energy and heat supply.

Government Partners:

Ministry of Energy and Mineral Resources (MEMR)

Text of the new Law on Energy Saving has been finalized by MEMR with adoption expected at the end of 2009. Despite considerable time and resources spent by the project to develope recommendations and to participate in discussions, the submitted new Law on Energy Saving does not adequately address project concerns and recommendations. The poor cooperation can be traced back to a number of issues;

-general lack of commitment on the part of the MEMR to engage in energy efficiency issues

-project recommendations were generally prepared without MEMR cooperation

In 2008, draft rules on heat energy supply were developed, agreed with the Association of Heat Companies and submitted to MEMR for approval. An official response has not been issued.

Recommendation: Cooperation with government counterparts, particularly with the MEMR, needs to be intensified to ensure the legal and regulatory recommendations are agreed upon, incorporated in laws and amendments and submitted for adoption. Subsequently, a lobbying mechanism should be in place to support adoption of laws and amendments.

Astana Akimat

A Central Government decree from 2007 requiring that each municipality prepare an Energy Efficiency Programme formed the original basis for cooperation between UNDP and Astana Akimat. Considerable project time and resources had already been invested in developing the Astana EE Program (including drafts, cost estimates, financing mechanisms and pilot project selection) when, in 2008, the Central Government decided to prepare a National Energy Efficiency Plan requiring the creation of Regional Comprehensive Plans for Energy Savings which effectively displaced the development of municipal programmes. Project efforts are now directed to assisting the municipality in developing the Astana Municipal Regional Comprehensive Plan. The Municipal Working Group to develop the Plan includes project experts; assistance is focused on chapters regarding energy saving in heat supply. The extent to which aspects from the Astana EE Program can be incorporated into the Astana Municipal Regional Comprehensive Plan is not yet clear. The Plan is under development with expected adoption in 3rd QR 2009.

Recommendation: A strategy to realize the Astana EE programme needs to be developed with municipal counterparts including financial mechanisms and realization of pilot projects.

Almaty Akimat

The process of setting up the Almaty Municipal ESCO has been slower that anticipated. Municipal elections and budget developments have delayed the meeting of scheduled agreements and financial commitments; the MoU between UNDP and the Municipality was signed in November 2008 but the 1 mln USD municipal funding for capitalization of the ESCO won't be available this year. At the same time, it is felt that the Project Management has not adequately engaged the government counterparts in the relevant project activities; the ESCO Business Plan for example, was prepared by the project with little cooperation of the municipality

Private sector Partners

Association of Apartment Owners (AAO)

The project has cooperated with a number of AAOs in Astana and Almaty to identify and implement potential pilot projects. As part of the project, 3 AAOs in Astana have initiated pilot projects. The project has provided training and guidance for implementation including: planning the measures, working with tenants, financing, tendering and realizing the measures. The pilot projects are financed in part by tenants themselves (20-35%), by the GEF Small Grants Program and by the project.

In addition, the project has produced a guidebook for AAOs to realize energy efficient measures in their buildings with practical tips regarding measures, proceedures and financing. Considering the interest in project results shown by other AAOs, these guidebooks will support the replication of project results.

The project has realized a pilot project to modernize the heating equipment at Astana School #15 with support from private companies including Encom-ST Ltd and Danfoss Ltd. Other local companies have expressed interest in cooperating with the project. Companies are being considered by the project management as candidates for the creation of a private micro ESCOs. The project has held a private micro ESCO workshop in Almaty.

In cooperation with PF EcoIdea, the project has realized two PR campaigns to disseminate information on energy efficiency. The first campaign «Heat Saving Day” was held in large household appliance stores, at universities and at trade shows and exhibitions. The second campaign –«Energy and Environment» involving a drawing competition, was held throughout the Republic

# Key Findings and Conclusions

## Project formulation

The project design is consistent with the objectives of the GEF Operational Program # 5 “Removal of Barriers to Energy Efficiency and Energy Conservation” and with the GEF strategic priority CC2 “Increased Access to Local Sources of Financing for Renewable Energy and Energy Efficiency”.

This project results from negotiations with local stakeholders as far back as 1999. The Project Document was submitted for GEF review in 2005 and was approved in December 2006. A situation analysis performed in the first year of in the project implementation recognized the need to adjust the project scope based on changes in the political and financial climate in the country. In particular, it was clear that a key project component - the pilot project for the rehabilitation of the DH utility in the municipality of Kokshetau - would not be initiated within the life of the project. At the same time, new opportunities for the project to assist in the formulation of key programmes and legislation (ie. the Astana Energy Efficiency Programme and the new Law on Energy Saving) were identified. During the Inception Workshop and in subsequent months the project scope was redefined with a general shift of focus from activities to improve energy efficiency of the heat and hot water supply side to activities aimed to improve energy efficiency on the demand (building) side. Several project activities were redefined or replaced within the first year of project implementation and a revised project logical framework was issued in June 2008.

The project strategy is well structured and incorporates a broad range of activities including legislative changes, financial mechanisms and pilot projects, all of which should contribute to building an enabling environment for improving energy efficiency in the country. The project document does, however, rely heavily on the successful implementation of the 'pilot project' DH utility rehabilitation in Kokshetau to justify GEF involvement both in terms of project co-financing (6 mln USD from local sources) and in terms of GHG emission reduction (28 600 tCO2 emission reduction per year were attributed to this pilot project alone from the 'about 30 000 tCO2' targeted for the whole project.) The absence of this key project component has seriously undermined the overall project concept. In the revised project logical framework, new project components (in particular the Astana EE Programme) and previously subordinate project components (the municipal ESCO and cooperation with the AAOs) are now expected to cover the originally targetted GHG emission reduction benefits (30 000tCO2/yr) and leveraged financing (10 mln USD) by the end of project implementation.

This is substantial change in project strategy which is not adequately linked to the project document itself. Nor, beyond the revised project logical framework, has a revised holistic project concept been formulated with revised budget and workplans, GHG emission reduction calculations and incremental cost analysis.

### Implementation approach (according to Project Document)

The project addresses an urgent need in Kazakhstan to improve the Energy Efficiency in DH systems. The predominant focus of activities and inputs in the project document is creating the enabling environment to improve energy efficiency in the heat and hot water supply side.

##### Analysis of Logical Framework Approach (project strategy, indicators)

The project logical framework was revised in June 2008. The objective, outcomes and many of the original outputs have been retained but several key project outputs related to energy efficiency improvements to the DH supply sector have been discarded;

**Output 1.2** Model master plans prepared for Almaty and Kokshetau and a proposal for legal and regulatory provisions to promote heat sector planning based on integrated resource planning principles at the municipal and national level submitted for Government approval, including a program for increasing the share co-generation.

**Output 1.3** A proposal for the revision of outdated technical standards submitted for Government approval

Also, within Outcome 2, the original project strategy foresaw pilot activities in the municipality of Kokshetau to support the development and management of DH supply rehabilitation. In the project document this component provides substantial GHG emission reduction benefits (28 600 tCO2eq/year)

Despite the deletion of these project components, the revised project logical framework retains original project targets for expected results (GHG emission reduction benefits of 30 000 tCO2/year and leveraged financing for replication amounting to 10 mln USD by the end of the project). In part, this is acheived by introducing new project outputs (in particular, the Astana Energy Efficiency Programme which contributes 9800tCO2/yr) and, in part, by specifying targets for the retained outputs (Almaty ESCO­: 20 000tCO2/yr and AAO pilot projects: 200tCO2/yr).

Within the first year of project implementation, considerable project effort and resources were dedicated to a situation analysis, to the identification of new project partners and to the revision of the project strategy. This overlap of project preparation activities with actual implementation has caused delays which put the acheivement of project results at risk.

Recommendation: As discussed above, under Project Formulation, a holistic project concept which supports the revised Logical Framework should be formulated including the problems addressed, key stakeholders, revised budget and workplans, GHG emission reduction calculations and incremental cost analysis. There is a need to clarify and elaborate the calculation basis for the main success indicators (quantity of GHG emission reductions, involvement of private investors in the investment project financing).

##### Lessons from other relevant projects incorporated into project implementation.

During the first half of 2004, UNDP financed two studies in order to compile experiences and lessons learnt from both non-GEF and UNDP/GEF funded heat sector projects in order to find answers to questions such as:

* + Do the experiences and lessons learnt encourage the continuation of the UNDP/GEF interventions in the heat sector; and
  + What are the specific experiences and lessons learnt that could be used to improve the design and to enhance the impact of new heat sector projects?

In general, both studies confirmed the rationality of maintaining the heat sector as a logical priority area for UNDP/GEF funded climate change projects in Europe and CIS countries with major greenhouse gas emissions reduction opportunities, while simultaneously contributing to the overall UNDP country strategies and cross-sectoral work dealing with good governance, poverty reduction and overall institutional strengthening and capacity building.

At the Inception Workshop in September 2007, relevant related projects were studied and their results evaluated. In particular the following projects were discussed;

-In 2006, a joint EBRD/Government of Japan project 'Network Infrastructure Regulatory Development' made recommendations concerning tariff setting policy. The projects local counterpart, AREM, was unsatisfied with the conclusions and the recommendations were not subsequently adopted.

-UNDP/GEF project in Rivne, Ukraine which focuses on the formation of a municipal ESCO. Representatives from this project were on hand at the IW to discuss progress and lessons learned.

-Heat meter installation pilot project in the Orbita district of Almaty which caused considerable dissatisfaction among tenants because other heat system improvements were not implemented at the same time and in many cases the consumptions were actually higher than normative.

The project has cooperated closely with the Centre for Energy Efficiency and Clean Production (CEECP) in Almaty. Originally set up with the assistance of the Norwegian government through ENSI, CEECP worked with almaty municipality to develop the Almaty Energy Efficiency Plan 2006-2016 to improve the energy efficiency of public buildings and continues to assist in its implementation. Through contributions to the project by CEECP experts, the procedural and technical solutions are being integrated into the project.

### Country ownership / Drivenness / Relevance

Energy efficiency has gained additional attention by public authorities and is increasingly brought up by the Government officials as an important topic to be addressed to facilitate further development of Kazakhstan’s economy. This observation is supported by interviews and the development of policies during the first period of project implementation.

Kazakhstan has ratified the UNFCCC on 17 May 1995 and as a country with the economy in transition is eligible for UNDP/GEF funding.

The proposed project is supporting the Government of Kazakhstan in implementing the National Energy Saving Programme and the energy-related legislation, such as the Energy Law and the Energy Saving Law, which have identified the improvement of the energy efficiency of the heating sector as a priority measure.

Key opportunities resulted from the Government decision to develop a new Law on Energy Saving; the new energy efficiency programs of the Almaty and Astana Akimats as well as the ongoing discussion on the need to strengthen the role of the apartment owners in the building management in general.

### Stakeholder Participation

UNDP developed the project proposal based on wide and lengthy stakeholder discussions as far back as 1999. Government and municipal officials, NGOs, and other national stakeholders were well involved in the project preparation.

At the project start in 2007, it was clear that the key project partners in Kokshetau were not available to participate in the project. During the first year of project implementation it was necessary to identify new project partners. Astana municipality agreed to cooperate in the development of their Energy Efficiency Plan.

Cooperation and commitment from government counterparts has proven problematic and is responsible for delays in meeting project targets. In particular, both the ESCO creation in Almaty and the EE Programme development in Astana are proceeding slowly due to budget shifts, administrative changes and conflicting decrees from the national level. Project recommendations for legislative and regulatory changes have been largely ignored. Despite intense project efforts, the MEMR has developed and submitted the new Law on Energy Saving without incorporating project recommendations.

### Replication approach

Taking into account the climatic conditions in Kazakhstan, the existing and planned energy infrastructure and the increasing emphasis on reducing energy consumption and GHG emissions, it can be concluded that DH in Kazakhstan has a secure future. Government Energy Sector Development Programmes envisage an increase in the share of centralized heating in cities and in the share of cogenerated heat from CHPs. Thus the identification of cost-effective technical, institutional and financing solutions to increase energy efficiency in DH systems is relevant to other municipalities in Kazakhstan.

The replication strategy of the project is based on the following features of the project design:

* technical assistance activities that are intended to lay the necessary foundation of a supportive legal and regulatory framework, institutional structures and national capacities to initiate, develop and manage sustainable heating and hot water supply services.
* evaluating the feasibility for and establishing a network of Kazakh municipalities to be used as a channel for training, capacity building and information exchange;
* implementation of selected pilot activities to support public awareness and capacity building activities and to gain experience on appropriate service delivery models and thereby reduce the risks of the implementation of similar projects in other areas;
* close monitoring and evaluation of the project implementation and results, thereby providing lesson learned for future action; and
* ongoing public awareness raising efforts and effective dissemination of the project results.

Activities to disseminate the project’s approaches in other CIS countries are incorporated to have a regional impact where possible. For example, training materials developed by the project will be made available to other countries with similar training needs.

### Cost-effectiveness

The Total GEF contribution to the project is: 3.29 million USD.

At project initiation, the co-financing was agreed at 7.18 million USD. A major part of this, namely 6.0 million USD, was associated with renovations to DH infrastructure in Kokshetau City, a project component which was deleted at the project start. Another 1.0 million USD is still committed to the project by the city of Almaty towards ESCO capitalization, although delays in payment continue to slow down implementation and put project targets at risk.

Alternative financial investments were investigated to replace co-financing related to Kokshetau. The Astana Energy Efficiency Programme intended long-term investments in the range of 16 mln USD. Currently, 86 000 USD is committed to the project from Astana Municipality. The future of the Programme, however, is currently not clear due to a national degree which has shifted the focus of the municipality towards creating a Regional Comprehensive Plan for Energy Savings which is to be submitted in 2009.

The direct GHG emission reductions benefits from pilot activities were estimated at about 30 000 tCO2/yr at project end or 0,67 million tCO2 over the next 20 years. The cumulative GHG emission reduction potential through replication was estimated at 46 million tCO2 over the next 20 years.

In the GHG benefit calculations in the project document (Section 1 Part II), the estimate is supported as follows;

-for Almaty ESCO creation - 3350 tCO2/yr at project end or 100 000 tCO2 over the next 20 years (considering 7.4 year investment payback) and

-for EE rehabilitation of the Kokshetau DH plant - 28 600 tCO2/yr at project end or 570 000 tCO2 over the next 20 years.

The revised project logical framework from June 2008 retains overall targets but, with the Kokshetau component absent, redistributes expected results from project components as follows;

- for Almaty ESCO creation - 20 000 tCO2/yr at project end

- demo projects for the Astana EE Plan - 9800 tCO2/yr at project end and

- for AAO pilot projects in Almaty and Astana - 200 tCO2/yr at project end

Without any corresponding changes to parameters, the expected impact resulting from the Almaty ESCO is six times higher in the June 2008 revised project strategy. Despite repeated requests, a comprehensive GHG benefit calculation to support the revised logical framework has not been submitted for review. Investment and GHG benefit data from audits for 4 AAO pilot projects in Almaty and Astana and from the completed pilot project in Astana School no. 15 do not support expected results.

Recommendation: As discussed earlier, a comprehensive project concept with GHG benefit calculations which supports the revised Logical Framework should be formulated. There is a need to clarify and elaborate the calculation basis for the main success indicators (quantity of GHG emission reductions, local involvement in project financing).

### UNDP comparative advantage

The project builds upon the UNDP's active participation and experiences in projects and programmes supporting building sector EE and municipal capacity building in the CIS. These countries share a common heritage which has resulted in similarities in infrastructure, economic development and government structures. UNDP regional management is committed to the exchange of experience and lessons learned between projects and countries. Project teams from similar UNDP/GEF projects in neighbouring countries (for example, the ESCO project in Ukraine and the new building EE project in Kyrgyzstan) and from other national UNDP/GEF initiatives (the wind energy project and the building EE project under development) are brought together to refine strategies. In addition, the UNDP is acknowledged for its strong ability to work at the local level with local stakeholders. As evident in this and other regional projects, UNDP is in a favourable position to assist Kazakhstan and neighbouring CIS countries in energy sector and policy development.

### Linkages between the project and other interventions within the sector

At the Inception Workshop in September 2007, a number of key opportunities to cooperate in national initiatives were identified. These included plans for a new Law on Energy Savings being developed by MEMR and the recent Central Government decree requiring the preparation of Municipal Energy Efficiency Programmes. Cooperation with the MEMR proved difficult and project recommendations were not included in the text of the new Law on Energy Saving which has been submitted and expected to be adopted in 2009.

Cooperation between UNDP and Astana Akimat in the preparation of their Municipal Energy Efficiency Programme has also been slowed by differing instructions at the national level. After the initial decree in 2007 requiring municipalities to develope EE Programmes (which were linked to the new Law on Energy Savings), in 2008, the Central Government initiated the preparation of a National Energy Efficiency Plan requiring the creation of Regional Comprehensive Plans for Energy Savings, effectively displacing the Municipal Energy Efficiency Programmes. Considerable project time and resources had already been invested in developing the Astana EE Program (including drafts, cost estimates, financing mechanisms and pilot project selection.) Project efforts are now directed to assisting the municipality in developing the Astana Municipal Regional Comprehensive Plan. The Municipal Working Group developing the Plan includes project experts but the extent to which aspects from the Astana EE Program can be incorporated into the Astana Municipal Regional Comprehensive Plan is not yet clear. The Plan is under development with expected adoption in 3rd QR 2009.

Recommendation: A strategy to realize the sustainable EE initiatives of the Astana EE Programme needs to be developed with municipal counterparts including the planned financial mechanisms and the realization of pilot projects.

### Management arrangements

The project is supervised and managed by the following bodies:

* UNDP CO Kazakhstan
* National Project Director (AREM)
* Project Manager (chosen by selective competition)
* Steering Committee

Management arrangements outlined in the project document are consistent with UNDP/GEF policies and procedures.

The Project Manager was replaced in May 2009 and the National Project Director at AREM was replaced in 2008. Although both the new Project Manager and the new National Project Director have been actively involved in the project implementation (both were involved in the Inception Workshop), there is a gap in the management of the project which must be addressed immediately.

In particular, it is essential to the Project Manager should

• employ result-based management and risk assessment to achieve the project objective and outcomes.   
• have an excellent overview of budget and scheduling constraints  
• have adequate technical, financial and legal capacity to direct the institutional and financial models being implemented

## Implementation

### Implementation approach

Significant delays have occurred in the first period of project implementation. Although, the project was approved by the GEF in December 2006, the Implementation Workshop was not held until September 2007. The preparation phase included the hiring of project staff and expert consultants by competitive selection and the drafting of reports for the situation analysis. The recruitment of a number of experts with small contracts to contribute to the initial situation analysis was considered as a good start offering the possibility to: i) check and collect the available information from various sources; ii) test and evaluate the level of work that can be expected from different local experts, who are to be considered as candidates to contribute also for the remaining project; and iii) to use this information for defining the future support needs and tasks to be finalized. The Inception Workshop was well attended by a broad range of key stakeholders and potential partners.

At the Inception Workshop the project was re-considered from the point of view of recent developments in Kazakhstan. Several of the Activities were dropped (in particular, activities supporting DH utilities) or revised to better suit available opportunities (for example, the drafting of the new Law on Energy Saving and the development of an EE program in Astana)

The biggest source of co financing and potential GHG emission reduction (DH utility investments of 6.0 million USD in Kokshetau) disappeared. Activities in Astana Akimat were introduced to replace those in Kokshetau, with expected leveraged investment levels estimated at 16 million USD.

The Inception Workshop and Report still left several questions open concerning project focus, activities, partnerships, co financing and means of verifying CO2 emission reduction targets. The Project Logframe was adjusted to reflect a shift in project activities and the changes agreed with the project team and the UNDP + UNDP/GEF representatives during the mission.

In preparation for the first PIR (June 2008) the following aspects were identified and defined;

* *Defining project scope*: the decision is to focus on final consumers of heat and hot water in residential (primarily Almaty) and public (primarily Astana) buildings and therefore leave energy production and distribution, including initial idea to support co-generation technology, outside of the project scope;
* *Clarifying outputs*: one of the key project components (outcome) envisage introduction of “*new financial and institutional mechanisms to promote energy efficiency*”. In consultation with project team it was agreed that these new mechanisms will be a) Energy Service Company (ESCO) in Almaty; b) Municipal Energy Efficiency Programme in Astana; and c) Association of Apartment Owners. It was further agreed that the list of specific “*legal and regulatory changes*” envisaged under Component 1 of the project would be prepared taken into account the need for legal changes and amendments to promote and ensure sustainability for each of the three project-supported mechanisms.
* *Finalizing logframe*: in light of the agreements above the project logframe needs to be refined.
* *Adjusting project implementation structure*: while it was appropriate for the initial phase of the project to recruit a relatively high number of local experts to undertake initial review and analysis, with the transition of the project from analytical to implementation stage it is critical to have the structure of project team and responsibilities within it fully aligned with project logframe so it is clear who, how and by when is responsible for the delivery of specific project outputs.

Changes to the project scope, logframe and project team were reviewed and approved by the Steering Committee in June 2008. The expected GHG savings associated with individual project Outcomes in the revised logframe document have been adjusted from those in the original project document but are not adequately supported by calculations (refer to the discussion above under Cost-Effectiveness.) Nor does the financial and GHG benefits data of pilot projects currently being implemented support these expectations. While the document elaborates the time schedule to acheive project outputs, it is not specific enough about yearly targets for the performance indicators which ensure the long-range impact and sustainability of the project; main performance indicators - GHG and leveraged investment targets - are defined for the project end only.

### Financial Planning

GEF funding is budgeted yearly according to annual workplans and keeping in mind the adjusted project timetable with expected end in December 2011. In 2007 and 2008 actual annual expenditures corresponded quite closely to annual budgets.

The biggest source of co financing and potential CO2 emission reduction (DH utility investments of 6.0 million USD in Kokshetau) disappeared at the project start. While activities in Astana Akimat were introduced to replace those in Kokshetau, the level of municipal co-financing which was expected for development of the Energy Efficiency Programme is much lower (0.87 million USD). The Programme was expected to involve EE investments of 16 mln USD. Unfortunately, Astana municipality has recently stopped implementation of the Energy Efficiency Programme while they focus on development of a Municipal Regional Comprehensive Plan for Energy Savings. Project experts are on the municipal Working Group currently preparing the Plan but it is not yet clear if key components of the municipal EE Programme can be integrated into the Plan.

### Monitoring and evaluation

The revised project logical framework is detailed in providing a schedule for project activities and outputs but is less precise in defining targets and deadlines for performance indicators. In particular, the targets for GHG benefits and leveraged financing for replication projects are defined for the project end only whichout intermediate benchmarks. This and the adjustments to the project scope and Logical Framework which occurred after the first year of implementation have made it difficult for M&E activities to be applied towards adaptive management. Project management has been focused on trying to complete project activities and not on achieving long-term results.

|  |  |  |
| --- | --- | --- |
| Indicator | Target | Realized |
| Status and level of enforcement of the proposed legal and regulatory changes | ***Adoption and enforcement*** of the proposed legal and regulatory changes by the end of the project | project efforts to incorporate specific mechanisms and incentives for EE in the new Law on Energy Saving have so far failed. |
| The status of the supported institutional and financing models for EE and associated GHG reduction impact | Successful completion and continuation of the financially sustainable operation of the pilot activities in Astana and Almaty at the end of the project with annual reduction of greenhouse gas emissions at least by **30,000 tons of CO2 per year** | the establishment of both the ESCO in Almaty and the EE Programme in Astana have been delayed. Pilot activities with AAOs (in cooperation with GEF SGP) have generated energy and GHG savings calculated at **686** tCO2 per year |
| Agreements on the implementation of EE investments in pilot cities and other cities districts | New projects/programmes initiated and financing leveraged for them at the amount of at least ***USD 10 million*** by the end of the project | **no agreements** on the implementation of EE investments in pilot cities and other cities districts |
|  | Almaty ESCO established, staff recruited and trained, capitalized (1,5 mln USD in total) and at least 3 EPC signed | **Almaty ESCO establishment and municipal investments delayed** |
|  | Astana Municipal EE Programme developed by end of 2008 and implemented by 2014, institution established/strengthened for its implementation and monitoring | **development of Astana Municipal EE Programme delayed because of central government decisions to prepare national plan and subsequently to revisit it due to financial crisis** |
|  | AAOs –at least 4 fully operational with trained staff, action-plans and financing | **progress with AAOs have been positive and pilot projects have generated positive results.** |

Delays in the implementation of the Almaty ESCO and the Astana Municipal EE Programme and their corresponding building EE pilot projects place the acheivement and verification of expected results at risk. Building EE projects require time to implement and the energy effects are only clearly evident after a monitoring period (minimum one heating period). This means EE pilot projects associated with the Almaty ESCO and the Astana EE Plan and with total expected GHG benefits of 28 000 tCO2 should be substantially completed by the end of 2010 to allow for monitoring and verification.

### Execution and implementation modalities

Project progress reporting to UNDP is sporadic. Two Standard Progress Reports (2007 and 2008) and one APR/PIR (May 2007 to June 2008) have been completed. A request has been made in March 2009 by the UNDP RTA to resume quarterly project reporting.

While the Standard Progress Reports 2007 and 2008 are exhaustive in their description of activities, the document structure makes it difficult to ascertain the relevance of activities with reference to the project logical framework and ultimately to the project targets and focus; under Results, project activities and acheivements are listed under the 3 main project outcomes without adequate reference to project outputs, benchmarks or workplans. Financial reports are similarly structured so that a measurement of project effort and investment against acheivement is difficult.

The project team has not made adequate efforts to keep the UNDP CO informed about its achieved results in the form of reports or meeting notes. This poses a problem in terms of monitoring project implementation. There were issues with meeting the important deadlines by the project team that affected the work of other UNDP CO units. The project work plans were often revised, the delivery figures were low and the procurement plans were not achieved in its entirety though the progress and improvements in work planning and budgeting capacity are obvious.

### Management by the UNDP country office

The UNDP Country Office has been sufficiently involved in project implementation. Project activities and impacts as well as financial spending are being tracked by the UNDP CO. In addition, the UNDP CO has used its influence and assumed involvement in negotiations with key government bodies involved in the project.

### Coordination and operational issues

Gaps exist, particularly with understanding and applying a complex set of international project management rules and procedures, as well as specific GEF and UNDP requirements. Key shortcomings, where further improvements needed, are:

-Detailed and focused project planning and reporting. Currently combined work and financial plans are prepared on an annual basis only. Budget allocations are not clearly associated with activities and the activities are not clearly positioned within project Outputs and Outcomes

-Coordination and cooperation with government counterparts needs to be improved. Recommendations for legislative changes, programmes and financing models should be developed and co-authored with the government stakeholders. Submitting documents and recommendations for review by government agencies is not producing the desired results.

-Improved coordination with UNDP including delivery of regular (quarterly) detailed and focused reports to the UNDP CO and UNDP RTA clearly positioning activities and progress in relation to project Outputs and Outcomes as well as current status of assumptions and risks.

The only APR/PIR completed for the project so far was issued in June 2008. The project team is currently preparing the second APR/PIR; a draft version was made available to the evaluator after the submission of the Mid Term Evaluation Draft.

### Risk Management

External factors play a considerable role in this project in achieving expected results. In particular, timely federal and municipal level decisions, commitments and action are necessary to implement key outputs especially the Almaty ESCO and the Astana EE Programme. Both these outputs are experiencing delays resulting from government decision-making processes. This in turn, has put expected results at risk.

In most cases where government decisions or delays counter to project assumptions have occurred, alternative commitments between the project and government counterparts have been successfully negotiated and agreed upon (in particular, a further 1 year delay for the greater part of the ESCO capital from Almaty municipality and the participation of the project in preparation of the Astana Comprehensive Plans for Energy Savings as an alternative to development of the Astana EE Programme.) However, the effects of these delays and changes to project scope on achieving the expected results within the project lifetime has not been adequately considered by project management. In the original project document for example, the ESCO is assumed to be operational by the end of the first year of project implementation in order to realize and validate the first lot of financed EE rehabilitation projects by the end of the project; a delay in establishing the ESCO shifts the realization of the first lot of building projects, at least partially, beyond the project lifetime.

As previously reported, revisions to the Project Logframe in June 2008 without clearly formulated background support (i.e. CO2 calculations, risk assessment and incremental cost analysis) for the revisions have made it difficult for M&E activities to be applied for risk management. Project management has primarily focused on completing planned activities and not on achieving results.

# Results

The project is expected to result in carbon emission reductions of at least 30,000 tCO2e per year and new projects/programmes initiated with financing leveraged of at least USD 10 million by the end of the project.

There is currently inadequate progress towards achieving the expected project results within the timeframe of the project. Delays in establishment and implementation of 2 key project components - the Almaty ESCO and the Astana EE Programme - further put the achievement of project CO2 and financing goals at risk.

Several pilot projects have been successful so far in generating energy and GHG savings at the building level. Two pilot projects in Astana involving heat system installations in existing buildings have successfully demonstrated reduced heat consumptions (some 20-25%), moderate investment costs (20 - 25 thousand USD per building) and payback periods between 6 and 9 years. The technical solution has a broad application and involves;

* a building-level heat flow meter (currently required by law)
* a building-level heat flow reduction valve controlled by outdoor temperature sensors
* a new heat point (location where the building receives heat from the DH system) which more effectively utilizes the heat delivered to the building

Substantial interest in the pilot project results on the part of municipalities, technology and finance providers and AAOs is evident.

Significant delays have occurred in the first period of project implementation. Inadequate progress has been made on most key project components including;

* Outcome 1. “Legal and regulatory changes”
* Outcome 2.1 “Astana Municipal EE Programme developed and implemented”
* Outcome 2.2 “Almaty ESCO established and operates successfully ”:

With regards Output 2.3 “AAOs”; although pilot activities in Almaty and Astana have been very quite successful in building the capacity of AAOs to realize EE investments, according to the project logframe, this output is expected to deliver less than 1% of the total expected project CO2 benefits.

With regards Outcome 3 “Compilation, analysis and dissemination of project results”, the project has published considerable PR material, conducted interviews on television and radio and conducted key base research including research on social attitudes toward energy and energy conservation. However, progress towards meeting the replication targets identified under this outcome is not evident. The project logframe identifies the following targets by project end;

At least 2 new municipal EE programmes initiated, 4 AAOs established and 3 new EPCs with ESCO signed for implementing EE investments in other cities or city districts leveraging at the amount of at least USD 10 million.

Delays in establishment of the Almaty ESCO and the Astana EE Programme which were to act as the examples for the activities in other municipalities, negatively affect the potential for achievement of these replication goals within the project timeframe.

### Prospects of Sustainability

The UNDP project on municipal heat supply has made relevant research and technological findings which have good potential for generating sustainable GHG savings. It is essential that implement mechanisms (ESCOs, EE Programme, financing possibilities) are put in place in the final phase of project implementation in order to realize this potential.

Several pilot projects have been successful so far in generating energy and GHG savings at the building level. At one building, a multi-storey school built in the 1960s, aging equipment and piping at the heat point (the place where the building receives heat from the district heating network) had led to severe energy waste and comfort problems, causing some classrooms to be too cold and others too hot. With cooperation from the Danish firm Danfoss and its local distributor, the project oversaw the installation of new heat point equipment with programmable thermostatic regulation. The school is now saving energy and money, with constantly and uniformly comfortable conditions throughout the building. School officials also expressed satisfaction with new maintenance arrangements, in which two entities have assumed responsibility for adjoining parts of the system, with each effectively increasing the accountability of the other.

Another pilot project is in a complex of multi-storey residential buildings. Here, the heat point, though relatively new, has failed because of design flaws. Much energy is wasted at the heat point (the room where it is located is uncomfortably hot), while apartments do not receive sufficient heat. Appallingly, the prevailing indoor temperature in winter in one first-floor flat is only 12 degrees Celsius (53.6 degrees Fahrenheit), while apartment owners still pay full tariffs, and even penalty fees, to the heat-supply company.

As the residents of the apartment complex collectively own all common spaces and equipment, including the heat point, it is their responsibility to find ways to remedy such situations. This complex has an owners’ association (AAO), which is about two years old. The director of the AAO found out about this UNDP project on the Internet and sought to participate. UNDP agreed to collaborate with this AAO, which agreed to finance the replacement of the heat point. The director of the association expressed great optimism that this will be the last winter of cold, wasted energy, and lost money for residents.

# Conclusions and Recommendations

While the project continues to be relevant to Kazakhstan and there has been considerable interest demonstrated to develop both the policy and institutional mechanisms to increase Energy Efficiency in the heating sector, a number of factors - both external and internal - have slowed the progress and influence of the project.

Changing Development Context

The project PDF-A and PDF-B phases were approved in 1998 and 1999. The Full-sized Project proposal was prepared in 2004 and approved in December 2006. Several project activities and co-financing partnerships (most notably those dealing with the Kokshetau DH plants) had been cancelled at the project start. The Inception Workshop held in September 2007 was used primarily to analyse the country situation, to validate the relevance of project objective and activities and to reassess project opportunities for cooperation and impact. While the project direction was clarified during the Workshop, new structured agreements between the parties had still to be prepared and endorsed. Lengthy and, in many cases, continuing negotiations with project partners (most notably with the City of Almaty where municipal elections resulted in changes to key posts) have delayed or threatened the implementation of key project activities and outcomes.

Policy Development and Enactment

The Project seeks to support legal and regulatory framework changes to provide incentives for the improvement of energy efficiency in the heat sector. The project team has sought cooperation in the development of the new Law on Energy Saving and in the restructuring of heat tariffs. Despite efforts by the project team (participation in policy development forums, preparation of drafts, and lobbying) recommendations have generally not been incorporated into policy development and the progress towards enactment of legislation has been slow. Artificially low heat tariffs and the resulting long pay-back periods also for low-cost EE investments continue to pose a major barrier to energy efficiency on both the supply and demand side.

AAOs (Association of Apartment Owners)

The interest and involvement of AAOs has been very positive in the project implementation.

Pilot Projects

Two pilot projects in Astana involving heat system installations in existing buildings (one school and one apartment building) have successfully demonstrated reduced heat consumptions (some 20-25%), moderate investment costs (20-25 thousand USD per building) and payback periods between 6 and 9 years. The technical solution has a broad application and involves;

* a building-level heat flow meter (currently required by law)
* a building-level heat flow reduction valve controlled by outdoor temperature sensors
* a new heat point (location where the building receives heat from the DH system) which more effectively utilizes the heat delivered to the building

Substantial interest in pilot project results on the part of municipalities, private ESCOs and AAOs is evident.

Almaty Municipal ESCO

The establishment of the Almaty Municipal ESCO has been delayed due to administrative changes, budget shifts and legal barriers. Under the present law, the revolving funds proposed in the ESCO Business Plan cannot be established by the Municipality. In addition, the financial institutions to back project investments have not been defined.

Project Management

The Project Manager was replaced in May 2009 and the National Project Director at AREM was replaced in 2008. Although both the new Project Manager and the new National Project Director have been actively involved in the project implementation (both were involved in the Inception Workshop), there is a gap in the management of the project which must be addressed immediately.

Financial

The gaps created when activities and co financing related to Kokshetau municipality disappeared are substantial and while prospects of attracting major co-financing sources still exist, these have not been secured. In addition, the co-financing resources promised by Almaty municipality (1 million USD) are delayed and no longer certain. The new activities and project-related investments in Astana Municipality are modest in comparison.

## Recommendations

1. Involve private sector ESCOs in project activities. The project activities and outputs (including building audits and feasibility studies) currently directed to Almaty Municipality ESCO (not yet established) should be adapted for implementation by private sector ESCOs. This will facilitate the realization of energy efficiency improvements in demonstration projects according to the project schedule and the broader application of the successes already demonstrated in pilot projects. Planned training activities should be open to private sector ESCOs to improve their capacity to realize EE projects in the public and private sector. The ESCO Business Plan already prepared under the project should be revisited and encompass the local experience of private sector ESCO operation.
2. Identify and engage financial institutions to support project activities. The EBRD has recently provided training and capacity support regarding EE investment to 2 local banks in Kazakhstan. These banks should be informed and, where possible, involved in activity planning and implementation. In particular, the financial management support for ESCO activities and EE programme implementation should be attained.
3. Implement first 'pilot projects' with billing by consumption at the apartment level. The clear relationship of utility costs to individual energy consumption is an important incentive for energy conservation. Radiator valves and heat cost allocators are low-cost measures which enable tenants to control and measure heat consumption in the different rooms of an apartment. The pilot action should involve training and operational assistance to AAOs to ensure accurate and transparent calculation of consumption and fair billing according to international experience.
4. Strengthen project management. Ensure the Project Manager has the following capacities;

* uses Result-based Management and Risk Assessment to achieve the project objective and outcomes.
* has an excellent overview of budget and scheduling constraints
* has adequate technical, financial and management capacity to direct the institutional and financial models being implemented

Since April 1, 2009, the project has engaged an International Technical Advisor responsible for supervising project implementation and providing objective quality control and reporting. Project team needs further training to improve knowledge of UNDP/GEF project management, monitoring procedures and requirements

1. Establish project cooperation with Ministry of Energy and Mineral Resources (MEMR) in the implementation of the Integrated Plan of Energy Saving for 2009-2010 (1st stage). The programme is designed to achieve a minimum reduction in energy consumption of 10% by 2015. Capacity building and training activities of the UNDP-GEF project have the potential to increase the effectiveness of actions and increase energy savings by up to 14%.
2. Bring an International Building EE Expert on board to calculate CO2 emission reduction targets with direct reference to Logframe activities and outcomes and to ensure indicators and mechanisms which validate progress towards targets.
3. It is recommended to update the project website. The webpage offers a useful source of base knowledge for municipalities and AAOs.
4. Because of a shift in the project focus from heat and hot water supply side issues towards demand side issues, AREM is no longer considered the optimal national executing partner for this project. As a government agency, AREM's field of responsibility does not encompass the current key objective pursuits of the project - namely reduced heat consumption in municipal and residential buildings. It is recommended that a new national executing partner with definitive common interest to cooperate on the project outcomes and objective be identified and brought on board. The newly formed Agency for Construction and Housing Utilities (CHU Agency) is one potential candidate. The Agency has been delegated responsible for state management of building and construction activity, housing relations and communal services as well as the development of state regulation policy in the areas of energy and heat supply.
5. Cooperation with government counterparts, particularly with the MEMR, needs to be intensified to ensure the legal and regulatory recommendations are agreed upon, incorporated in laws and amendments and submitted for adoption. Subsequently, a lobbying mechanism should be in place to support adoption of laws and amendments

## Actions to strengthen or reinforce benefits from the project

The UNDP project on municipal heat supply identified relevant research and technological findings which have good potential for generating sustainable long term GHG savings in the Housing Sector in Kazakhstan. It is essential that implement mechanisms (ESCOs, EE Programme, financing possibilities) are put in place in the final phase of project implementation in order to realize this potential.

## Proposals for future directions underlining main objectives

UNDP is currently preparing the project (PPG) on Energy Efficiency in the Construction Sector (PIMS 4131) which is in a position to benefit from the research and findings of the current project.

The project has a broad potential to further the impact of this project.

# Lessons learned

Implementation and Management Lessons

1) Implementation of the project was initially delayed by about half a year while the project management was formed. After the project document was approved by the GEF in December 2006, the UNDP CO required several months to identify the Project Manager and a small number of project experts through quality selection.

The selection process for project management and staff should be carried with the goal of creating the capacity necessary to start the project implementation quickly. Where appropriate, UNDP should cooperate closely with the team at this stage, providing training as necessary to ensure effective production from the beginning of the project.

2) The need to largely redefine the project scope due to the absence of a key project component - namely EE rehabilitation of Kokshetau DH utility - has caused considerable delays in project implementation and continues to impede effective project implementation.

According to the project document submitted for GEF review in 2005, the major part of the project co-financing (6 mln from a total of 7 mln USD committed co financing) was bound with the implementation of this component. It's realization was also expected to contribute the major part of project CO2 emission reduction benefits (28 600 tCO2/yr of some 30 000 tCO2/yr expected by project end). When the project was signed by the GEF in December 2006, it was already evident that the identified partners - Kokshetau municipality and Kokshetau Power - could not deliver the committed co financing and that this component would not proceed.

The major effort in the first year of project implementation was focused on identifying and securing an appropriate replacement for the core project component and redefining the project based on this; a new situation analysis was prepared by a number of contracted experts; Inception Workshop discussions focused on identifying appropriate partners, investments and outcomes; new MoUs were negotiated between UNDP and government counterparts. The revised project logframe defining the new project concept was finally prepared and issued in June 2008 - well over a year after the project start. In a four year project with a compact strategy for achieving results such a delay is difficult to compensate.

The project concept as identified in the revised logframe is no longer adequately linked to the project document with its supporting documentation (CO2 calculations, co financing, incremental cost analysis, activities). This level of project definition is necessary to support the new project concept and logframe. In particular, the establishment of the Almaty ESCO which according to the project document was expected to deliver benefits of 3350 tCO2/yr, is expected to delivery 6 times that amount (20 000 tCO2/yr) in the revised logframe without the corresponding changes to parameters.

Logframes should be reviewed, targets justified and related activities scheduled so that the project team can work result-oriented with consideration of external risks and in order to appreciate the negative effect of delays or omissions on the project results.

Because of the projects’ limited time frame and desired efficiency, strong adherence to detailed workplans and time schedules should be enforced. Clear M&E activities are required to measure the progress of the project and to keep a general overview over its progress.

3) Changing project management has also caused delays in the project implementation. Based on experience, it is not common that one Project Manager will see a project through from beginning to end and precautions must be taken. Where it is possible, the continuity of the project implementation and relations to partners should be supported by a period of operational overlap. In particular, the exiting Project Manager should transfer operational and institutional knowledge to the new PM in an effective and efficient manner.

A project with four years duration is dependent on a skilled project management to achieve its goals. Knowledge should not be concentrated with a Project Manager and then lost.

4) In view of substantial changes to the project, it should be considered if the stakeholders participating still are appropriate partners, since an important aspect of the cooperation with the stakeholders is that they support the framework for a project. A stakeholder who is not directly or only marginally involved in the project, will not very much engage in such an undertaking. There should be a clear strategy obtained from the implementing partner, to ensure the capacity and continuity of the project and to avoid delays or gaps in time.

Because of the shift in the project scope from heat and hot water supply side issues towards demand side issues, AREM is no longer considered the optimal national executing partner for this project. As a government agency, AREM's field of responsibility does not encompass the current key objective pursuits of the project - namely reduced heat consumption in municipal and residential buildings.

5) Project planning, reporting and monitoring of progress lack focus on movement towards end results. Annual reports group project activities under outcomes without a clear indication of their position and necessity within the logical framework or project workplan. Project workplans are prepared annually again without adequate reference to overall project schedules and expected results. Reports should not only concentrate on the outcome but also include the outputs and activitiesin order to be able to measure and compare the progress of the project with reference to time schedule and financial plan. A discussion focussing on the outcome without considering outputs and time schedules reduce the effectiveness of the reporting.

Project Strategy

6) The project strategy has essentially shifted from support activities for EE improvements on the heat supply side towards support for EE improvements on the demand (building) side. The large-scale EE improvements to DH utilities identified in the project document require substantial capital investment, without which little GHG reduction benefits could be expected. Clearly the project could not have proceeded as initially conceived without the actual EE rehabilitation of a DH utility in Kokshetau or in another municipality. In this period of Global Financial Crisis, the prospect of identifying partners for such an investment is limited.

On the consumer side, the project team has made progress working with AAOs and with municipalities in implementing small-scale EE improvements in residential buildings and schools. The benefits are promising (20-25% reduction in heating) applying simple measures to the existing heat system at moderate costs (20-25 thousand USD per building). The pilot projects have attracted the attention of other AAOs and municipalities, industry and financing partners. The project has produced guidelines for AAOs to replicate pilot project processes and measures. Despite these successes, there is not yet a clear indication that these initiatives will achieve the project targets for sustainable GHG emission reduction.

7) Unfortunately, there are still a number of barriers and risks to attaining sustainable results on the demand side; among others, DH tariffs are still largely subsidized in Kazakhstan meaning longer payback periods for EE measures, building owners lack the capital or incentive to invest, and paying by consumption is still a new idea which many municipalities and building owners view as risky. The project has produced and submitted recommendations for tariff policy changes and recommendations for support schemes for the poor but because these themes are politically sensitive, the prospect for implementation within the project timeframe is quite low.

8) External factors play a considerable role in this project in achieving expected results. In particular, timely federal and municipal level decisions, commitments and action are necessary to implement key outputs especially the Almaty ESCO and the Astana EE Programme. Both these outputs are experiencing delays resulting from government decision-making processes. This in turn, has put expected results at risk.

Working with municipalities on building EE improvement mechanisms has several advantages; they have a large building stock under a concentrated ownership and a good potential to attain the capital for investment. Once a mechanism to implement EE investments in municipal buildings is operational, it normally has a good potential to develop an effective dynamic and produce sustainable results. On the other hand, as evident in this project, there are numerous risks of delay or change of commitment associated with budget development, organizational changes

9) The situation analysis research into the local context in the first few months of project implementation is generally viewed to have been useful. Not only has it provided a good basis for the Inception Workshop and aided subsequent project definition, but other EE projects have also benefited from the insights.

10) The government partners expect the project to deliver state-of-art with regard to information and knowledge. Without adequate international technical consulting interest in the project is weakened. If the project management does not have the necessary accumulated competence concerning the technical and financial measures it can readily lead to ineffective effort of manpower and information. This has a negative influence on communication with the stakeholders and the ultimate achievement of goals.

11) Pilot projects are intended to serve the introduction of innovation technologies or processes demonstrating the course of realization and results. Use of terminology is important for the implementation of a project. The use of the term “pilot project” may be misleading for a project (heat station) which has already been implemented 120 times in the country. People expect a pilot project to demonstrate state of the art with an implemented vision which is unique, to show new ways and create a new framework.

### Project Rating

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PROJECT COMPONENT OR OBJECTIVE** | **Rating scale** | | | | **RATING** |
|  | **U** | **MS** | **S** | **HS** |  |
| **Project Formulation** |  |  | **x** |  | **S** |
| **Conceptualization/Design** |  | x |  |  | **MS** |
| **Stakeholder participation** |  |  | x |  | **S** |
| **Project Implementation** |  | **x** |  |  | **MS** |
| **Implementation Approach** |  | x |  |  | **MS** |
| The use of the logical framework |  | x |  |  | **MS** |
| Adaptive management |  | x |  |  | **MS** |
| Use/establishment of information technologies |  |  | x |  | **S** |
| Operational relationships between the institutions involved |  | x |  |  | **MS** |
| Technical capacities |  |  | x |  | **S** |
| **Monitoring and evaluation** |  | x |  |  | **MS** |
| **Stakeholder participation** |  |  | x |  | **S** |
| Production and dissemination of information |  |  | x |  | **S** |
| Local resource users and NGOs participation |  |  | x |  | **S** |
| Establishment of partnerships |  |  | x |  | **S** |
| Involvement and support of governmental institutions |  | x |  |  | **MS** |
| **Project Results** |  | **x** |  |  | **MS** |
| **Progress towards Attainment of Outcomes/ Achievement of objective** |  | x |  |  | **MS** |
| Progress towards Achievement of objective |  | x |  |  | **MS** |
| Outcome 1 Legal and Regulatory Changes |  | x |  |  | **MS** |
| Outcome 2.1 Astana municipal EE Programme developed and implemented |  | x |  |  | **MS** |
| Outcome 2.2 Almaty ESCO established and operates successfully |  | x |  |  | **MS** |
| Outcome 2.3 AAOs |  |  | x |  | **S** |
| Outcome 3 Compilation, analysis and dissemination of the project experiences |  |  | x |  | **S** |
| **OVERALL PROJECT ACHIEVEMENT & IMPACT** |  | x |  |  | **MS** |

Highly Satisfactory (HS), Satisfactory (S), Marginally Satisfactory (MS), and Unsatisfactory (U)