**MID-TERM EVALUATION REPORT**

of the

UNDP/GEF Full Size Project

 **Republic of Kazakhstan:**

**Energy-Efficient Design and Construction**

**of Residential Buildings**

Atlas Project ID: 00059795

PIMS: 4133

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**Profile of the consultants:**

This mid-term evaluation was performed by a team consisting of an international and a national consultant.

International consultant, Mr. Jiří Zeman, has 20+ years of professional experience in energy efficiency, renewables, climate change and energy utilities primarily in Central and Eastern Europe and Central Asia. He has served as a Deputy Director of a leading energy efficiency consulting organization SEVEn, The Energy Efficiency Center in Prague, the Czech Republic, as a Solution Architect at a Utility Competence Center of Hewlett Packard for Central and Eastern Europe, Middle East and Africa, and since 2009 he serves as a freelance consultant. Mr. Zeman has developed, implemented and evaluated a series of UNDP/GEF energy efficiency projects in the region of Central and Eastern Europe and Central Asia.

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National consultant, Ms. Natalya Panchenko, has over 10 years of professional experience in environmental management, including energy efficiency and climate change. She assisted the government of Kazakhstan in identifying and formulating climate mitigation and adaptation efforts by focusing on carbon neutral design and construction of residential and public buildings; reduced energy intensity and greenhouse gas (GHG) emissions from urban transport systems; the use of energy efficient appliances. Conducted a cost-effectiveness analysis of UNDP pilot projects in district heating in Astana, Almaty and Karaganda and summarized key lessons learned and experience of a UNDP/GEF project on removing barriers to energy efficiency in district heating.

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# Abbreviations and acronyms

AAO Association of Apartment Owners

APR Annual Project Review

ADS ZhKH Agency of the Republic of Kazakhstan on Construction and Housing and Municipal Infrastructure

AWP Annual Work Plan

CHP Combined Heat and Power (equivalent to co-generation)

CO UNDP Country Office

DH District Heating

EA Executing Agency

EBRD European Bank for Reconstruction and Development

EE Energy Efficiency

GASK State Architectural and Construction Oversight Agency (from Russian **Г**ос**а**рх**с**трой**к**онтроль)

GEF Global Environment Facility

GHG Greenhouse Gas

KazGASA Kazakhstan Leading Architectural and Construction Academy (from Russian **Каз**ахская **Г**оловная **А**рхитектурно-**С**троительная **А**кадемия)

LogFrame Logical Framework Matrix

M&E Monitoring and Evaluation

MEMR Ministry of Energy and Mineral resources of Republic of Kazakhstan

MTE Mid-Term Evaluation

NGO Non-Governmental Organization

PIMS Project Information Management System (UNDP GEF)

PIR Project Implementation Review

PIU Project Implementation Unit

PPP Public Private Partnership

RK Republic of Kazakhstan

SNiP Building Code and Regulations (from Russian **С**троительные **Н**ормы и **П**равила)

SN RK Building Code of the Republic of Kazakhstan (from Russian **С**троительные **Н**ормы **Р**еспублики **К**азахстан)

ToR Terms of Reference

UNDP United Nations Development Programme

US AID United States Agency for International Development

# Executive summary

GEF Project ID: 4133

GEF Agency Project ID: 00059795

Country: Kazakhstan

Project Title: Energy-Efficient Design and Construction of Residential Buildings

GEF Agency: UNDP

Other Executing Partner: Agency for Construction and Housing and Municipal Infrastructure of the Republic of Kazakhstan – implementing partner

The project development started by GEF pipeline entry on August 29, 2008 with two resubmissions in October and December in the same year. The PPG along with the PIF was finally approved on December 23, 2008. The project proposal entitled ***Kazakhstan Energy Efficient Design and Construction in Residential Sector*** was endorsed by GEF CEO on July 8, 2010. The Project Document was signed by the government and UNDP on September 22, 2010.

The whole project preparation phase including development and approval of the project document lasted 2 years (2008-2010).

The five-year full-size project with GEF funding of 4.6 mln USD has started its implementation period on September 22, 2010 and is scheduled to be completed by December 1, 2015.

Table 1: Project Timeframe

|  |  |  |
| --- | --- | --- |
|  | Expected date | Actual date |
| CEO endorsement/approval |  | July 8, 2010 |
| Agency approval date |  | September 22, 2010 |
| Implementation start |  | September 22, 2010 |
| Inception workshop |  | February 15-16, 2011 |
| Inception report |  | May 2011 |
| Midterm evaluation completion | VII/2013-VI/2014 | April - June 2013 |
| Project completion | December 1, 2015 |  |
| Terminal evaluation completion | IV-VI/2015 |  |
| Project closing | December 2015 |  |

The planned total budget of the project is 32,463,840 mln USD.

The project budget as of Project Document consists of:

* GEF grant of 4,568,500 USD
* UNDP grant of 25,000 USD
* Government of the Republic of Kazakhstan parallel co-financing of 24,850,340 USD, and
* Other in-kind contributions 3,020,000 USD.

Table 2: Project Budget

|  |  |
| --- | --- |
| Cash grants |  |
| GEF | 4,568,500 USD |
| UNDP | 25,000 USD |
| ***Total cash grant budget*** | ***4,593,500 USD*** |
| Parallel co-financing |  |
| Government of RK | 24,850,340 USD |
| In-kind contribution |  |
| Other | 3,020,000 USD |
| ***Total*** | ***32,463,840 USD*** |

##  Brief description of project

The goal of the project is to increase energy efficiency in new and renovated residential buildings in Kazakhstan, thereby reducing greenhouse gas emissions by transforming practices and markets in the building sector of Kazakhstan towards more energy-efficient design and construction.

The proposed project is structured into four components, each targeting specific barriers and stakeholders:

1. Updating and implementation of state policies, including building codes, standards, and energy certification of buildings
2. Expansion of markets for energy-efficient construction materials and products
3. Education and outreach to professionals and the general public
4. Demonstration projects embodying energy-efficient integrated building design

The project has been designed with following objectives:

* Improving compliance with existing building energy codes
* Promoting energy performance beyond existing code requirements
* Providing enhanced information to manufacturers, building designers, and the general public
* Transforming practices and markets for building design and construction

##  Context and purpose of the evaluation

This Mid-Term Evaluation has been performed on a request of UNDP Kazakhstan as a part of a standard UNDP/GEF project monitoring and evaluation procedure.

The Mid-Term Evaluation including on-site mission in Kazakhstan has been performed during the period April - June 2013.

##  Main conclusions, recommendations and lessons learned

The project had quick and effective start, and has reached significant results already during the first implementation phase until the MTE. Legislative framework and building codes have been updated, certification of building construction inspectors introduced, energy efficiency reconstruction pilot project implemented, a new pilot nine-storeyed energy efficient building is under construction, university educational curricula for university students were developed and implemented in 15 universities, number of training seminars and information dissemination events were organized and 1.700 attendees addressed.

Rating of individual project evaluation benchmarks is summarized in Table 3.

Table 3: Summary rating of the project

|  |  |
| --- | --- |
| **Project Formulation** | **Rating** |
| Project relevance and implementation approach | HS |
| Logical Framework | MS |
| Country ownership/driveness  | HS |
| Stakeholder participation in the design phase | HS |
| Replication approach and sustainability strategy | HS |
| UNDP comparative advantage | HS |
| Linkages with other interventions | HS |
| Management arrangements | HS |
| **Project Implementation** |  |
| Implementation approach | HS |
| Partnerships arrangements | HS |
| Monitoring and Evaluation | HS |
| Feedback from M&E used for adaptive management | S |
| Financial planning and management | S |
| Management by the UNDP office | HS |
| **Project Results** |  |
| Attainment of objectives | S |
| Relevance | R |
| Effectiveness and efficiency | HS |
| Country ownership | HS |
| Project impact | HS |
| Prospects of sustainability | L |

Six point rating scale: HS – S – MS – MU – U – HU

Relevance: R – relevant, NR – Not relevant

Prospects of sustainability: L-likely, ML – moderately likely, MU – moderately unlikely, U - unlikely

The overall rating of the project as of MTE is ***Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Highly Satisfactory | **Satisfactory** | Moderately Satisfactory | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
|  | **S** |  |  |  |  |

The project still has to accomplish during the next phase of project implementation important tasks to fully reach projected objectives and results. If the project will continue to be managed in the same pro-active and professional way it has good prospects to fully achieve all targets.

Following paragraphs summarize recommendations for the project team and main lesson learned that are worth to replicate also when designing and implementing other UNDP/GEF projects.

The main immediate recommendation is to update project LogFrame (proposed revisions of the LogFrame are shown in Annex 3) and to develop energy and GHG savings monitoring methodology (data collection procedure), and method for assessment of compliance rates in 2013 or early 2014 at latest, so that the methodology could be applied well in advance before planned project termination.

### Recommendations

* Update the LogFrame

The project LogFrame targets need revision. The proposed rewording of targets is specified in Annex 3. The project should also update the GHG emission reduction target based on realistic assumptions. The revised LogFrame should then be approved by the Steering Committee.

* Develop a methodology of data collection for monitoring of energy performance and energy and GHG emission savings, and for measuring compliance rate on newly constructed and newly reconstructed residential buildings with energy efficiency legislation and building codes

Improved energy performance, energy and GHG savings and increased compliance rate with energy efficiency legislation and building codes is an essential component of the project. The project has already developed and implemented a number of activities that lead to improved energy performance and increased compliance rate. However, there still is no methodology in place how to properly measure these achievements. The project thus should develop such methodology and data collection system for newly constructed buildings as well as for newly reconstructed buildings based on available data (energy passport of newly re/designed buildings, energy audits and district heat consumption data, where available) and on ad hoc survey if necessary, and evaluate actual improvements on an annual basis. The methodology should be developed early enough (in 2013 or early 2014) so that it could be applied already during the project implementation period and adjusted, if needed. Ideally, the monitoring should be implemented by a local project partner, so that it would not be only a one-off project activity, but that it would serve local institutions for monitoring of achievements of energy efficiency improvements in the country.

* Consider energy efficiency measures that decrease need for air-conditioning in a design of a prototype building

The design of a prototype (pre-fabricated) building focuses on measures that reduce space heating demand. Taking into account hot summers in most regions of Kazakhstan, residential buildings often consume also energy for air-conditioning during hot sunny summer periods. The newly developed design of a typical building to be replicated on a large scale across the country should also incorporate low-cost passive or active shading design/measures to protect the sun from shining into and warming inhabited building areas in the summer while at the same time maximizing solar gains within the building in the winter to reduce space heating demand.

* Consider independent testing of compliance of energy efficiency products in Output 2 with declared energy efficiency performance

Windows have been identified as the most important product to be subject of a new energy efficiency labeling scheme, because energy performance of windows (glazing and frames) can differ significantly, although the difference is not easily visible. The project may analyze how credible the energy efficiency performance information provided by window producers/importers is and eventually to test actual performance of selected products.

Some producers/sellers tend to overestimate energy savings potential of their products and implement strong marketing to support sales of their product especially in emerging economies. A textbook example is an “energy efficient” façade paint that is sometimes promoted in a way that can replace standard building insulation of mineral wool, etc. Some of these “magical” paints do include heat reflecting structures and can generate some savings when applied on inner walls in rooms behind radiators. If applied on the exterior side of a façade, however, energy savings are negligible and cannot substitute proper building wall insulation.

The project might consider testing of such paints, as well as development and dissemination of credible information on their benefits and proper (and improper) application.

* Disseminate information on best construction practices of installation of energy efficiency materials and construction details

The project has collected hands-on practical experience from pilot projects on proper installation of energy efficiency materials and products and plans to disseminate this information to relevant target groups in the next phase of project implementation. Besides strengthened building codes and energy efficiency legislation and availability of energy efficient materials and construction products, it is the proper construction technology and good quality installation of such materials and products, especially quality of construction details that is critical for achieving designed energy efficiency performance.

There already exist a number of publically available videos on best practices in installation of energy efficiency materials and products (façade insulation, window frames and lining etc.) developed by producers, similar UNDP/GEF projects in the world/RBEC region, and/or by independent organizations. Videos are available in different languages, some also in Russian. Most of these videos include best practices; however some do include improper construction/installation practices.

The project might consider development of their own how-to video guides, in addition to written manuals, select good available videos and translate them, and publish them and/or provide links to them on the project internet site.

* Consider potential decoupling of energy performance requirements for newly designed and reconstructed buildings

Building codes in Kazakhstan include the same mandatory energy performance and energy efficiency descriptive requirements for both newly designed as well as for reconstructed buildings. Usually, it is more cost-effective to reach prescribed energy efficiency requirements in newly designed buildings and less cost-effective in reconstructed buildings. This is often reflected in building codes that prescribe less strict requirements for building reconstructions and more strict requirements for newly designed and constructed buildings. The project might evaluate if such approach would be appropriate also for the conditions and construction practice in Kazakhstan, and if so, propose such decoupling in the next revision of the building code. Different requirements for new and reconstructed buildings would also lead to improved compliance rate of the reconstructed buildings with the revised building code.

The next revision of the building code should also take into account availability, price and energy performance of individual construction materials and products, and strengthen required energy performance values individually for specific construction structures. An example could be for instance more strengthened energy efficiency requirements for windows relatively to roofs and walls.

* Consider translation of Bulgarian UNDP/GEF supported books on green architecture and energy efficient buildings

UNDP has implemented GEF financed energy efficiency in buildings projects in several countries in Central and Eastern Europe, and in Central Asia. UNDP/GEF energy efficiency in buildings projects in Kyrgyzstan, Uzbekistan, Kazakhstan, Armenia and Turkmenistan have joined their efforts in information sharing and dissemination and created a joint projects website [www.beeca.net](http://www.beeca.net).

The project might also consider utilization of other available informative materials on energy efficiency in buildings developed by UNDP/GEF projects in other countries as well. For example, the Bulgarian UNDP/GEF project “Building the Local Capacity for Promoting Energy Efficiency in Private and Public Buildings” has produced two books for architects, practicing professionals and students: “Ten Books on Green Architecture”, and “99 Best Practices in Sustainable and Low-Energy Buildings” (EnEffect, Sofia, 2010 – available in Bulgarian, about 800 pages in total). These books, if translated into Russian, might be of interest to students of KazGASA and other universities of architecture and building construction.

### Lessons learned

* Quick effective start of project implementation without delays

UNDP CO office has started competitive selection of the Project Manager immediately after approval of the project by GEF CEO and well in advance already before actual signature of the ProDoc between UNDP and the government. Project Manager was appointed and started immediately to work on project implementation – within two months after ProDoc signature. Also, other UNDP/GEF projects can effectively start their implementation immediately after ProDoc signature (ideally within one month) if the project staff hiring process is launched already after GEF CEO project approval.

* Effective institutional framework in place

The project heavily benefitted from effective cooperation with strong state institutions dedicated to construction and modernization of the housing sector and to energy efficiency improvements of the housing stock. State agencies and companies, namely the Agency for Construction and Housing and Municipal Infrastructure and the Kazakhstan Center on Modernization and Development of Housing and Municipal Infrastructure, play a crucial role in successful project implementation and scaling up long-term project impact. Both the Agency and especially the Center are staffed with dedicated professionals with good expertise and interest in energy efficiency, and have sufficient funding from the state budget for implementation of their work. Without these institutions engaged into project implementation, the UNDP/GEF project would be in a much more difficult position.

* Level of economic development significantly influences replication of project achievements

Relatively good economic situation of Kazakhstan and strong and stable economic growth compared to other countries in the region, including high rate of new construction of residential housing in Astana and other cities have substantial influence on replication potential and long-term impact of the project thanks to the capacity of public budgets to co-finance re/constructions of residential housing (5.8 bln USD 2011-2020 State Program on Modernization of the Housing and Municipal Infrastructure). The same project implemented with the same experienced project team in other less developed countries would have limited replication potential and overall project impact.

* Proper timing of the project maximizes its benefits

Kazakhstan is in the phase of high rate of re/construction in the housing sector, energy efficiency has been already recognized by top policy makers as a country priority also thanks to other UNDP/GEF projects, the country is preparing to host an EXPO exhibition in 2017. The project and its replication potential and sustainability benefit from proper timing of project implementation. Should the same project be implemented much earlier, its impact would be limited; should the project be implemented later, there would remain untapped energy efficiency potential in buildings already re/constructed.

# Introduction

##  Project background

The Republic of Kazakhstan (RK) has the seventh-most carbon-intensive economy in the world, emitting about 1 200 tones of CO2 equivalent per million dollars of economic output (more than 150 MtCO2e/yr in all)[[1]](#footnote-1). Its energy sector generates about 80 percent of total GHG emissions, out of which about 90 percent comes from power and heat generation.[[2]](#footnote-2) Buildings account for 24 percent of heat demand and 13.5 percent of power demand; the residential sector is the third-leading energy consumer in the country, after the energy and manufacturing sectors.

As of 2009, Kazakhstan's existing residential building stock comprises approximately 160 million square meters, the large majority of which is aging, inefficient buildings constructed in the Soviet era. On average, buildings in Kazakhstan consume two to three times more energy per unit of floor area than buildings in northern countries of Western Europe. Most existing residential stock consists of multifamily buildings connected to district heating. Coal is used for more than 80 percent of district heating in Kazakhstan; gas (13 percent) is the next most important primary fuel, used especially in the central and southern regions of the country. More than half of the GHG emissions from residential energy use in Kazakhstan arise from space heating. Domestic hot water and electricity each account for approximately one-fifth of residential-sector emissions, with cooking and other uses making up the remaining share. Coal also accounts for about 85 percent of the country's electricity generation.

Over much of the past decade, a booming economy and aggressive government housing-development policy led to rapid acceleration of new housing construction rates in Kazakhstan. On average, introduction of new housing grew by 15-20 percent per year between 2000 and 2007. Despite the brisk pace of construction, however, population growth, increasing affluence, and the rapid expansion of Kazakhstan's capital Astana caused housing demand to outpace supply by far.

Starting in 2007, the rate of new residential construction began to slow, as the global financial crisis spread to Kazakhstan. In 2008, investment in residential construction fell about nine percent from levels of 2007. New residential construction in 2008 stood at about 6.8 million square meters, or about 15 percent less than stated in government plans. The slowdown has continued in 2009.

Meanwhile, government social-welfare targets for housing (18 square meters per person) are still far from being met; therefore expansion of housing remains an urgent priority of the country. As of October 2009, official targets call for residential construction to grow again, with a total of 34 million square meters of new housing, or 280,000 apartment units, to be introduced in the next five years. About 90 percent of new housing will be financed out of the state budget and implemented by regional administrations.

The expected growth of housing construction will mean increased residential energy demand and associated emissions. According to official projections,[[3]](#footnote-3) the share of buildings in total final energy consumption in Kazakhstan will double by 2016. [[4]](#footnote-4)

##  Purpose of the evaluation

This mid-term evaluation has been performed on a request of the UNDP Kazakhstan as a standard mandatory requirement of all UNDP projects. The mid-term evaluation mission took place in Kazakhstan in April 2013.

The objective of this evaluation is to assess the achievement of project’s objective, the affecting factors, the broader project impact and the contribution to the general goal/strategy, and the project partnership strategy. It also provides the basis for learning and accountability for managers and stakeholders and for providing important lessons learned which can be incorporated during the next project implementation period and applied to the design of future UNDP projects which aim to remove barriers to energy-efficiency.

According to the GEF and UNDP/GEF Monitoring & Evaluation Policies, the 2009 Handbook on Planning, Monitoring and Evaluating for Development Results, the mid-term evaluation has four objectives:

1. Monitor and evaluate results and impacts;

Analyze and evaluate effectiveness of the results and impacts that the project has been able to achieve against the objectives, targets and indicators stated in the project document;

1. Provide a basis for decision making on necessary amendments and improvements;

Assess effectiveness of the work and processes undertaken by the project as well as the performance of all the partners involved in the project implementation;

1. Promote accountability for resource use;

Provide feedback and recommendations for subsequent decision making and necessary steps that need to be taken by the national stakeholders in order to ensure sustainability of the project’s outcomes/results; and

1. Document, provide feedback on, and disseminate lessons learned.

Reflect on effectiveness of the available resource use; and document and provide feedback on lessons learned and best practices generated by the project during its implementation.

##  Key issues addressed

The following key issues have been addressed in the mid-term evaluation:

*Relevance* of the project with national development priorities, and its appropriateness,

*Effectiveness* of the development project and partnership strategies,

*Contribution* and worth of the project to national development priorities

*Key drivers and success factors* enabling successful, sustained and scaled-up development initiatives, alternative options and comparative advantages of UNDP

*Efficiency* – cost-effectiveness of funds spent to reach project objectives and results

*Risk factors* and risk management strategies

*Sustainability* - level of national ownership and measures to enhance national capacity for sustainability of results

*Impact* of the project implemented on human development

A specific attention has been paid, in addition to the project implementation itself to the role of UNDP, and the use of Logical Framework matrix, definition of project indicators and targets.

##  Scope and methodology of the evaluation

The methodology used for the project mid-term evaluation is based on the UNDP/GEF Monitoring & Evaluation Policies and includes following key parts:

1. Project documents review prior to the evaluation mission
2. Evaluation mission and on-site visits, interviews with project management, UNDP CO, project partners and stakeholders, as well as with independent experts.
3. Drafting the evaluation report and ad-hoc clarification of collected information/collection of additional information
4. Circulation of the draft evaluation report for comments
5. Finalizing the report, incorporation of comments

##  Structure of the evaluation

This mid-term evaluation report follows the structure and content as specified in the Terms of Reference (Annex 5) and the template of the 2009 UNDP Handbook on Planning, Monitoring and Evaluating for Development Results, including its 2011 update.

# The Project Description and Development Context

##  Problems that the project seeks to address

Energy efficiency is one of the governmental priorities as stated in the 2020 Strategic Development Plan for Kazakhstan adopted in 2010. Its target is to reduce energy intensity of GDP by 10 percent in 2015 and by 25 percent in 2020 relative to the 2009 baseline.

Residential sector is the third largest sector in terms of energy consumption and GHG emissions. Most of GHG emissions in residential sector arise from space heating. Residential building stock of 284 mln m2 (in 2009) consists in urban areas mainly of multi-apartment buildings connected to district heating (66% of residential space in urban areas heated with DH). Most of the existing residential building stock was designed and built during the Soviet era and suffers typically from poor energy performance, insufficient maintenance and repairs, lack of heat regulations and excessive consumption of inexpensive district heat priced below its full cost recovery level.

Kazakhstan, as a relatively rich oil-producing country, ranked among 10 fastest growing countries worldwide according to IMF with annual GDP growths of 7% in 2010 and 2011, and 5% in 2012[[5]](#footnote-5). Thanks to its relatively stable economic development and financial performance the country was able to adopt an ambitious housing development plan with projected annual construction of some 7 mln m2 annually, i.e. ca 3% of the total building stock[[6]](#footnote-6). The share of buildings on final energy consumptions is expected to double by 2016. Newly constructed buildings are designed to be less energy intensive, however there still is a significant untapped energy efficiency potential that can be utilized in a least-cost way during building design and construction.

This project also benefits from synergy working with another UNDP/GEF project “Removing barriers to energy efficiency in municipal heat and hot water supply” that was implemented between 2007-2013. The DH energy efficiency project focused primarily on energy efficiency on the supply side, while this energy efficiency in buildings project is focused on energy efficiency on demand-side.

##  Immediate and development objectives of the project

The project has been designed within the UNDAF Outcome “Environmental Sustainability” and Outcome 2: “The Government, industries and civil society take steps to adapt to climate change and mitigate its impact through energy efficiency measures and climate change adaptation policies”, and Outcome 2.3: “The Government and energy consumers are better equipped with knowledge, policies and pilot cases on renewable energy market regulations, and energy efficiency measures in sectors with high CO2 emission level”.

The project development goal is to increase energy efficiency in new and renovated residential buildings in Kazakhstan, thereby reducing greenhouse gas emissions, and the objectives are to increase energy efficiency in new and renovated residential buildings and to reduce GHG emissions associated with residential energy use.

##  Project start and its duration

The Project Document was endorsed by GEF CEO on July 8, 2010, and signed by the Government and UNDP on September 22, 2010. The five-year project is planned to terminate by December 1, 2015.

Effective project implementation started in November, 2010 after hiring a Project Manager. This short period between ProDoc signature and actual start of project implementation of less than two months was possible to reach because the UNDP CO started the project team hiring process immediately after GEF CEO endorsement, and before the ProDoc signature already.

Inception workshop was held within six months after ProDoc signature on February 15-16, 2011.

The Mid-Term Evaluation mission took place as planned in April 2013, 2.5 years after ProDoc signature, exactly in the middle of the five-year project implementation period.

##  Main stakeholders

The project executing agency is the governmental Agency for Construction and Housing and Municipal Infrastructure.

The implementing agency is UNDP Kazakhstan.

Main project stakeholders identified in the Project Document to be actively involved in project implementation include:

* Kazakhstan Center on Modernization and Development of Housing and Municipal Infrastructure
* Committee for State Energy Oversight
* State Architectural-Construction Oversight (GASK)
* Ministry of Environmental Protection
* Ministry of Industry and Trade, Ministry of Industry and New Technologies
* Regional/municipal administrations
* Kazakhstan State Architecture and Construction Academy (KazGASA)
* Private buildings construction companies, such as Saint-Gobain and other

##  Results expected

The Project Document specified expected project results – project outputs for each of the project component/outcome that relates to each of the project immediate objective.

During the inception phase the Inception Report has slightly modified wording of some of the project Outputs, without changing their originally planned substance. Originally planned separate Output 3.4 has been combined with the Output 3.3, and deleted as a stand-alone Output.

Overview of expected project Outcomes and Outputs:

*Outcome 1: Improved enforcement and implementation of mandatory building energy codes and rating system*

Output 1.1: Streamlined and strengthened building energy code enforcement leads to universal compliance with existing codes

Output 1.2: New voluntary national and/or regional standards for energy efficiency and "green buildings" lead to implementation of EE beyond existing code requirements

Output 1.3: Adopted revisions to national building energy codes and associated official documents include stricter requirements for energy consumption

Output 1.4: Rating and labeling system for EE in buildings provides clear information to market stakeholders, as well as a technical basis for financial incentives, leading to increased market demand for efficient buildings

Output 1.5: Energy and GHG monitoring and accounting system supports effective program evaluation and helps shape future national priorities for energy efficiency in buildings

*Outcome 2: Expansion of markets for energy-efficient products*

Output 2.1: Technical standards and certification processes for producers of energy-efficient building materials and products lead to lower costs, higher quality and performance, and wider availability

Output 2.2: Labeling with regard to energy performance leads to greater consumer understanding and demand for efficient materials and/or products

*Outcome 3: Education and outreach to promote energy-efficient building design and technology*

Output 3.1: Enhanced training enables building designers to apply international best practices in energy-efficient building design (including integrated building design) and technology

Output 3.2: Competitions motivate practicing and aspiring building designers to pursue energy-efficient design, and raise collective expertise

Output 3.3: Workshops prompt building owners, developers, contractors, and construction workers to understand and pursue energy efficiency and effectively market energy performance to buyers and renters

~~Output 3.4: Training enables contractors and construction workers to correctly install energy-efficient building materials and components~~ (deleted in the inception period)

*Outcome 4: Development and demonstration of energy-efficient building design*

Output 4.1: Best practices in energy-efficient building design (including integrated building design) and technology cost-effectively demonstrated in two residential buildings

Output 4.2: Prototype and demonstration building designs serve as models for replication, leading to further energy savings and transformation of design/construction practice

Output 4.3: Cost analysis establishes basis for correcting state-stipulated cost ceilings for qualifying EE government-funded buildings

# Findings

##  Project design and formulation

### Project relevance and implementation approach

In promoting energy efficiency in newly built and reconstructed buildings, the project is directly consistent with the GEF 4 Strategic Program for Climate Change “Promoting energy efficiency in residential and commercial buildings” and its long-term objective to promote energy-efficient technologies and practices in the appliance and building sectors, with the 2020 Strategic Development Plan for Kazakhstan, with the 2011-2020 State Program on Modernization of the Housing and Municipal Infrastructure, as well as with the Strategic Plan for 2011-2015 of the Agency on Construction and Housing and Municipal Infrastructure that covers national priorities and plans in architecture, urban planning, construction, and utility services, with a strong focus on energy efficiency in the residential sector. This plan includes three main strategic directions.

* Development of residential construction
* Modernization and development of residential and utility services
* Overall enhancement of architecture, urban planning, and construction

 The 2011-2015 State Program on Modernization of the Housing and Municipal Infrastructure sets forth several specific goals with regard to energy efficiency of buildings:

* *Energy audits* for 270 residential buildings and 145 social-service facilities in 2011;
* The issuance of *energy performance certificates* for 200 buildings (150 residential, 50 social-service facilities) in 2011;
* The installation of *automated controls* in 48 residential buildings and 96 social service facilities in 2011;
* Completion in 2011 of an *inventory* of the residential housing stock and associated utility infrastructure;
* Based on measures identified in the energy audits, elaboration in 2011 and 2012 of *recommendations on typical measures* to be contained in regional programs for thermal modernization of existing housing stock;
* Elaboration of *financing mechanisms* for energy-efficiency upgrades in existing buildings, particularly for private owners outside of the government budget;
* Establishment of *automated utility accounting*, to support mechanisms for financing energy efficiency upgrades;
* Support for establishment of *energy service companies* (ESCOs) for thermal modernization of existing buildings;
* *Outreach to apartment owners* and associations on energy conservation, and specifically on improvements to existing building stock;
* *Enhanced technical higher education* on residential and utility services;
* *Updating* and possible integration of at least 80 *technical regulatory documents* regarding residential and utility services by 2015.

Project activities were designed to target several overarching objectives:

* Improving compliance with existing building energy codes
* Promoting energy performance beyond existing code requirements
* Providing enhanced information to manufacturers, building designers, and the general public - education
* Transforming practices and markets for building design and construction – pilot projects

Project objectives and activities and project implementation approach were properly defined to address key issues and challenges in improving energy efficiency in the building sector.

The rating of the project relevance and implementation approach is rated ***Highly Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Highly Satisfactory** | Satisfactory | Moderately Satisfactory | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
| **HS** |  |  |  |  |  |

### Analysis of logical framework (project logic/strategy, indicators)

The project LogFrame is structured into four project components – project Outcomes. For each project Outcome several project Outputs are defined and for each Output indicators and their baseline and target are specified. In addition to project Outcome/Output indicators and targets, overall project Objective indicators and targets are defined as well.

LogFrame targets should be SMART – Specific, Measurable, Attainable, Relevant, and Time-bound. Some indicators and targets defined in the project LogFrame need to be reviewed and slightly reworded to improve their clarity. In some cases targets are just general and hardly measurable and thus need to be reworded to be specific and measurable. Some of the targets practically duplicate others and can be avoided.

GHG emission reduction target should be updated to reflect realistic volumes of expected new construction and reconstruction during the project period, realistic compliance rates (and thus GHG savings) of newly constructed buildings and of reconstructed buildings in each year of project implementation, and combined energy efficiency/total energy losses of the whole district heating system from heat content of fuel burned in boilers to end-use energy consumed. The 3 mln tCO2 savings target for a 2010-2015 project period seems to be overestimated taking into account updated annual construction volumes, compliance rates, and dates when strengthen energy efficiency legislation and codes entered into force.

Proposed rewording of the LogFrame indicators and targets is shown in Annex 3.

As it is shown in Table 8, the descriptive requirements of the Kazakhstan building code (R-values) are the same or similar as in other countries in the region and are also comparable (for building structures – roofs and walls) with the EU harmonized 2007 Czech building code (some 10% less demanding for walls and roofs and 36% less demanding for windows). Taking into account much lower heat prices in Kazakhstan than in Europe and similar (or even higher) prices of energy efficiency construction materials, the descriptive energy efficiency requirements of the 2011 building code are sufficiently strict for this period of economic development.

Rating of the Logical Framework is ***Moderately Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Highly Satisfactory | Satisfactory | **Moderately Satisfactory** | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
|  | S | **MS** |  |  |  |

### Assumptions and risks

Project document has identified potential project risks, assessed the risk, and specified mitigation strategy. The Inception Report has updated the risk assessment and mitigation strategy and added one more risk. All risks are assessed to be low or low/medium with unchanged or downgraded assessment.

Identified project risks include:

* Political will for energy codes and other energy efficiency programs is insufficient
* Institutional capacity to implement expanded code enforcement and rating system is insufficient
* Global economic crisis complicates or shuts off financing for construction projects (new residential buildings)
* Low energy prices suppress implementation of energy efficiency in buildings
* Formation of new government after residential elections disrupts partnerships and compromises compatibility of priorities between government and project (added by the Inception Report)

All key relevant project risks have been properly identified and their mitigation strategy specified. The last risk – formation of new government after elections may compromise priorities between government and the project – did not materialize after the latest presidential elections in 2011 and parliamentary elections in 2012. The government priorities remain unchanged with energy efficiency and increase of low energy tariffs gaining even more prominent important place in the public policy.

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

The project implementation strategy was developed taking into account international experience and was based on experience from similar UNDP/GEF energy efficiency in buildings projects implemented and under implementation in Central and Eastern Europe, Russia and Central Asia.

The project builds upon previous work conducted by the Institute for Market Transformation (IMT), a US NGO, that focused on strengthening energy efficiency in the building sector. IMT prepared and delivered a model building code that was used as the basis for the 2004 thermal code in Kazakhstan.

Project design and implementation benefited heavily also from other UNDP/GEF projects implemented in Kazakhstan, namely from the full-size project “Removing Barriers to Energy Efficiency in Municipal Heat and Hot Water Supply” implemented between 2007 and mid 2013. While the DH project was focused to improve energy efficiency on the DH side (installation of building level heat metering, heat substations with heat controls and heat exchangers and pumps), this energy efficiency in buildings project works on a demand-side – energy efficiency improvements of residential buildings. This project also benefitted from incorporation of an energy efficiency component into the State Program on Modernization of Housing and Municipal Infrastructure. Both projects also combined their efforts in a pilot project in Karaganda, Mustafina 26, where both supply side measures (building level substation with heat metering, heat exchangers, heat controls and new building level preparation of domestic hot water) and demand-side measures (installation of new windows) have been demonstrated jointly by both UNDP/GEF projects.

Both projects also joined their efforts in working with their project partners, providing technical assistance, training and capacity building to governmental agencies, municipalities, AAOs, and private companies.

### Country ownership

The designed project reflects country priorities specified in the 2020 Strategic Development Plan for Kazakhstan, the 2011-2020 State Program on Modernization of the Housing and Municipal Infrastructure, as well as in the Strategic Plan for 2011-2015 of the Agency on Construction and Housing and Municipal Infrastructure.

Key relevant country representatives have been designed to actively participate in project implementation, to serve in a project Steering Committee and Project Board.

The government agreed to provide significant cash co-financing of 24,850,340 USD for the project implementation through their agencies.

Agency of the Republic of Kazakhstan on Construction and Housing and Municipal Infrastructure and Kazakhstan Center for Modernization and Development of Housing and Municipal Infrastructure have been designed to serve as key project partners, with the Agency serving as a national Executing Agency as well.

The country ownership is rated ***Highly Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Highly Satisfactory** | Satisfactory | Moderately Satisfactory | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
| **HS** |  |  |  |  |  |

### Stakeholder participation in the design phase

During the project design phase the Project Document was prepared with an assistance from an international consultant Mr. Mark Chao, Senior Advisor at Institute for Market Transformation, a US based NGO, who has international expertise in energy efficiency in building. He has developed model building code for Kazakhstan, and has experience with similar UNDP/GEF EE in buildings projects in other countries in Caucasus and Central Asia.

CENEf, the Russian Center for Energy Efficiency, has an experience with developing energy efficiency building codes in Russia and other CIS countries, including Central Asia, and has assisted in developing the building code project component in the Project Document.

Following local institutions have been involved in development of the Project Document:

* Agency for Construction and Housing and Municipal Infrastructure (former State Committee for Construction and Architecture of the Ministry of Industry and Trade)
* Ministry of Industry and New Technologies (former Ministry of Industry and Trade)
* Ministry of Environmental Protection
* Ministry of Energy and Mineral Resources
* Karaganda Oblast Administration
* Center for Innovative Technologies and New Materials
* Kazakh State Architecture & Construction Academy
* Saint-Gobain Company

Stakeholder participation in the design phase is rated ***Highly Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Highly Satisfactory** | Satisfactory | Moderately Satisfactory | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
| **HS** |  |  |  |  |  |

### Replication approach and sustainability strategy

The project strategy is based on support of legislation development that will strengthen energy efficiency performance of buildings, enforcement of energy efficiency building codes, introduction of energy performance rating, monitoring and labeling; demonstration of energy efficiency measures in pilot projects, and implementation of energy efficiency trainings and university study courses.

This project strategy together with a large investment into new residential buildings construction and modernization of existing building stock in Kazakhstan substantially co-financed from public budgets (5.8 bln USD 2011-2020 State Program on Modernization of Housing and Municipal Infrastructure) implicitly comprise sustainable strategy with a large replication potential.

Key designed project results and large planned GHG savings are based on strengthening of legal framework and local practices, and on training of technical professionals and students that will be in place even after project termination.

Replication approach and sustainability is rated ***Highly Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Highly Satisfactory** | Satisfactory | Moderately Satisfactory | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
| **HS** |  |  |  |  |  |

### UNDP comparative advantage

UNDP Kazakhstan has the administrative capacity and expertise to implement energy efficiency in buildings project, it is a neutral implementing agency and can benefit from synergy of portfolio of similar energy efficiency projects under implementation in an environmental governance focus area both locally in Kazakhstan, and internationally.

UNDP has demonstrated expertise in energy efficiency in buildings from projects implemented in the Czech Republic, Bulgaria, Russia, and from projects under implementation in Kyrgyzstan, Uzbekistan and Armenia and most recent project in Turkmenistan.

UNDP has also a proven record of effective cooperation with international building energy efficiency experts both in the project development as well as project implementation phase.

By implementing the 2006-2013 UNDP/GEF full-size project Removing Barriers to Energy Efficiency in Municipal Heat and Hot Water Supply, UNDP has gained in Kazakhstan a reputation of highly qualified local expert group of professionals, and managed to develop very good relations based on practically daily contacts with key policy and decision makers, including key project partners - the Agency on Construction and Housing and Municipal Infrastructure, and Kazakhstan Center for Modernization and Development of Housing and Municipal Infrastructure.

UNDP comparative advantage is rated ***Highly Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Highly Satisfactory** | Satisfactory | Moderately Satisfactory | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
| **HS** |  |  |  |  |  |

###

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

The project has worked closely with parallel UNDP/GEF projects in Kazakhstan “Removing Barriers to Energy Efficiency in Municipal District Heating and Hot Water Supply” and “Energy Efficiency in Lighting”, and with UNDP/GEF energy efficiency in buildings projects in Uzbekistan and Kyrgyzstan, with the Agency on Construction and Housing and Municipal Infrastructure, the Kazakhstan Center for Modernization and Development of Housing and Municipal Infrastructure, the Ministry of Industry and New Technologies, JSC Kazakhenergoexpertiza, with Norwegian ENSI company and German IWO initiative in energy auditing, and with the 2011-2020 State Program on Modernization of Housing and Municipal Infrastructure that represent key energy efficiency activities in the building sector.

Linkages between the project and other interventions within the sector are rated ***Highly Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Highly Satisfactory** | Satisfactory | Moderately Satisfactory | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
| **HS** |  |  |  |  |  |

### Management arrangements

Proposed project management arrangements in the ProDoc followed established UNDP national execution procedures (NEX).

The Executing Agency was designed to be the state Agency on Construction and Housing and Municipal Infrastructure that appoints National Project Director who serves also as a head of the project Steering Committee.

Project Implementation Unit/Project Management Unit was designed to consist of four full-time members: a Project Manager, project assistant, and two project specialists.

For specific project tasks short-term national and international experts were expected to be hired.

Project Document also envisaged creation of an advisory group/Project Board that would consist of leading local experts, key project stakeholders and state agencies and ministries, and that would provide expert guidance and advice.

Chart 1 illustrates project management structure.

Chart 1: Project Management Structure

**Component 1**:

**Building code, standards, and rating system**

**Component 2**:

**Energy-efficient construction products**

**Component 3**:

**Education and outreach**

**PIU: Project Manager and Assistant**

(full-time)

Reporting lines

Cooperation with stakeholders

**UNDP Kazakhstan**

**Project Board**

**Component 4**:

**Demonstration projects**

* **Agency for Construction and Residential-Communal Affairs**
* **Ministry of Industry and New Technologies**
* **Regional and municipal offices of State Agency for Architectural and Construction Oversight**
* **Ministry of Environmental Protection**
* **Agency for Construction and Residential-Communal Affairs**
* **Kazakhstan State Architecture and Construction Academy (KazGASA)**
* **LLP Saint-Gobain**
* **Building design companies**
* **Regional/city akimats**
* **Agency for Construction and Residential-Communal Affairs**
* **Ministry of Industry and New Technologies**
* **Agency for Construction and Residential-Communal Affairs**
* **Ministry of Industry and New Technologies**
* **Various private companies**

**Agency for Construction and Housing and Municipal Infrastructure**

**Project Policy Specialist**

 (full-time)

**Architect/Specialist**

 (full-time)

Designed management arrangements are rated ***Highly Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Highly Satisfactory** | Satisfactory | Moderately Satisfactory | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
| **HS** |  |  |  |  |  |

##  Project Implementation

### Implementation approach and adaptive management

Project implementation started effectively without undue delays immediately after ProDoc signature (within two months) with the Project Manager hired in November 2010. The project team managed to achieve key project results in early phase of project implementation already. By the MTE educational curricula have been developed and implemented, pilot projects have been implemented (energy efficiency building reconstruction) or are under construction (new 170 apartment energy efficient building), new and updated energy efficiency legislation, technical regulations and guides have been adopted.

Project implementation follows planned activities designed in the ProDoc and reviewed in the Inception Report and there was no need for major changes till MTE. As such, the project had no major reasons to implement strong adaptive management.

However, the project is being implemented pro-actively in a flexible way, it follows the opportunities to team up and join or support other relevant activities and opportunities in energy efficiency development in Kazakhstan.

The overall rating of implementation approach is ***Highly Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Highly Satisfactory** | Satisfactory | Moderately Satisfactory | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
| **HS** |  |  |  |  |  |

### Partnership arrangements

The project works closely with Kazakhstan policy makers and decision makers, responsible state agencies, universities, Chamber of AAOs, and private companies.

Key project partners include:

* Agency (Committee) of the Republic of Kazakhstan on Construction and Housing and Municipal Infrastructure – Executing Agency
* Kazakhstan Center for Modernization and Development of Housing and Municipal Infrastructure
* Republican State Expertise
* Ministry of Environmental Protection of the RK
* Ministry of Industry and New Technologies of the RK
* Ministry of Education and Science of the RK
* Committee for technical oversight and metrology of the RK
* Kazakhstan State Architecture and Construction Academy (KazGASA) and other universities
* Karaganda oblast Akimat (local Government)
* Karaganda city local government (Akimat)
* Karaganda city department for construction of Akimat
* LLP UksProject  – design company of Karaganda city (contracted by Karaganda city department for construction of Akimat )
* Karaganda State expertize
* LLP Yutex – construction company
* Housing Institute NIPTIS named after Atayev, Minsk, Belorussia
* Karaganda GASK Department (State architecture and construction control)
* Technical control experts
* Energy efficiency products and materials producers (Saint-Gobain, VEKO, Danfoss and other companies)
* International experts and organizations participating in training events
* Building service and maintenance organizations
* Association of Apartment Owners

During project implementation the project team cooperated with a number of other local and international partners on specific project activities, including:

* Norwegian energy consulting company ENSI - Energy Saving International AS
* German non-profit Housing Initiative for Eastern Europe, IWO e.V.
* Research and design institute for housing NIPTIS, Minsk, Belorussia
* Research Institute for Construction Physics, Moscow, Russia
* Netherland Embassy in Kazakhstan

The overall rating of partnership arrangements is ***Highly Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Highly Satisfactory** | Satisfactory | Moderately Satisfactory | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
| **HS** |  |  |  |  |  |

### Monitoring and evaluation

The project was subject to standard UNDP/GEF regular project monitoring and evaluation including Quarterly Progress Reports, Project Annual Reviews and annual Project Implementation Reports.

Summary of annual implemented project activities were regularly reported to and approved by the Steering Committee.

Meetings of the Steering Committee were held twice in 2011 (April 8, December 5), and three times in 2012 (June 12, August 9, December 5).

The project is also subject to regular monthly review of the UNDP country office, and is supervised practically on a daily basis by Ms. Irina Goryunova, UNDP CO Portfolio Manager, Energy and Environment Unit.

The project was subject to two financial audits in 2011 and 2012. Both financial audits had “no comments or observations” and provided the overall satisfactory rating across the following audit areas: (i) review of project progress; (ii) human resources; (iii) finance; (iv) procurement; (v) asset management; (vi) cash management; (vii) general administration; (viii) information systems; (ix) follow-up on previous audits. Both audits confirmed that the project has been implemented in accordance with UNDP accounting requirements.[[7]](#footnote-7)

Project monitoring and evaluation is rated ***Highly Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Highly Satisfactory** | Satisfactory | Moderately Satisfactory | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
| **HS** |  |  |  |  |  |

### Feedback from M&E activities used for adaptive management

The project has been implemented accordingly to the project plan and LogFrame described in the project document and did not require any significant changes and implementation of a strong adaptive management so far.

However, the project implementation is pro-active, it actively seeks untapped needs and opportunities how to reach and strengthen project goals effectively. Individual project activities are updated annually to address actual needs and opportunities in line with long-term project goal. For example the number of revised technical building codes and norms, development of methodological guides, organizing training and information dissemination seminars, involvement of and partnering with international experts and other UNDP as well as other international projects and local activities has not been prescribed in such a detail in ProDoc, but is a result of a successful ad hoc project adaptive management.

Feedback from M&E activities is rated ***Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Highly Satisfactory | **Satisfactory** | Moderately Satisfactory | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
|  | **S** |  |  |  |  |

### Financial planning and management

Total project budget is 4 593 500 USD. The planned budget as of the project document is shown in Table 4.

Table 4: Project Budget as of Project Document [USD]

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **2011** | **2012** | **2013** | **2014** | **2015** | **Total** |  |
| Outcome 1 | 265 680 | 281 530 | 253 430 | 234 230 | 240 230 | **1 275 100** | *28%* |
| Outcome 2 | 48 300 | 70 300 | 80 300 | 43 100 | 28 100 | **270 100** | *6%* |
| Outcome 3 | 51 500 | 78 050 | 41 250 | 36 750 | 35 250 | **242 800** | *5%* |
| Outcome 4 | 294 290 | 1 563 430 | 315 990 | 150 420 | 79 170 | **2 403 300** | *52%* |
| PMU  | 84 640 | 68 640 | 90 140 | 68 640 | 90 140 | **402 200** | *9%* |
| **Total** | **744 410** | **2 061 950** | **781 110** | **533 140** | **472 890** | **4 593 500** | ***100%*** |
|  | *16%* | *45%* | *17%* | *12%* | *10%* | ***100%*** |  |

Each year a new updated annual budget has been prepared for the next year and submitted for approval to the Steering Committee in the form of an Annual Work Plan. These annual budgets as shown in AWPs are summarized in Table 5.

Table 5: Annual Project Budgets as of AWP

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2010 | 2011 | 2012 | 2013 |
| Outcome 1 | 26 300 | 264 774 | 381 384 | 266 125 |
| Outcome 2 | 0 | 32 000 | 16 550 | 86 050 |
| Outcome 3 | 0 | 51 157 | 152 525 | 82 100 |
| Outcome 4 | 0 | 187 335 | 1 427 985 | 2 039 665 |
| PMU | 23 700 | 62 714 | 85 655 | 128 300 |
| **Total** | **50 000** | **598 000** | **2 064 099** | **2 602 240** |

The Table 6 shows annual project expenditures by project outcome for each year of project implementation period.

Total project expenditures over the whole project implementation period from November 2010 till May 2013 are 1 646 616 USD, i.e. 36% of total project budget. The remaining unspent resources are 2 946 884 as of May 2013.

Table 6: Annual expenditures by project outcomes and years

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 2010 | 2011 | 2012 | 5/2013 | **Total** |  |
| Outcome 1 | 20 022 | 169 231 | 447 939 | 78 352 | **715 544** | 43% |
| Outcome 2 | 0 | 22 855 | 20 187 | 3 816 | **46 858** | 3% |
| Outcome 3 | 0 | 41 222 | 151 754 | 15 758 | **208 734** | 13% |
| Outcome 4 | 802 | 135 679 | 334 186 | 23 295 | **493 963** | 30% |
| PMU | 18 548 | 64 529 | 68 978 | 29 462 | **181 517** | 11% |
| **Total** | **39 372** | **433 516** | **1 023 044** | **150 684** | **1 646 616** | 100% |
|  | 2% | 26% | 62% | 9% | 100% |  |

Financial planning is rated ***Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Highly Satisfactory | **Satisfactory** | Moderately Satisfactory | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
|  | **S** |  |  |  |  |

* + 1.
		2.
		3.
		4.
		5.
		6.

### Management by the UNDP country office

The project is implemented by UNDP Kazakhstan. The UNDP Country Office provides more than standard support to the project team. Ms. Irina Goryunova, UNDP Portfolio Manager, oversees project implementation and participates in meetings with key local stakeholders. Mr. Stanislav Kim, Head of Energy and Environment Unit, organizes regular monthly meetings of the UNDP CO with the Project Manager to formally review project achievements and project implementation strategy. Ms. Zhanetta Babasheva, Resource Monitoring Associate, supports the project team to meat UNDP procedures and accounting requirements.

The UNDP CO team of Energy and Environment Unit, the project team and teams of a parallel UNDP/GEF projects have, through their work, positioned UNDP in Kazakhstan as a highly recognized local expert organization. All key project stakeholders, including governmental agencies, appreciate UNDP not only as a source of funding, but as a source of professional expertise in energy efficiency.

Management by the UNDP country office is rated ***Highly Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Highly Satisfactory** | Satisfactory | Moderately Satisfactory | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
| **HS** |  |  |  |  |  |

### Co-financing and in-kind contributions

The project document planned the government will provide a total co-financing of 24 850 340 USD, and other donors another 3 020 000 USD.

Planned governmental co-financing included contribution by the Agency for Construction and Housing and Municipal Infrastructure in the amount of 12 925 170 USD, 8 693 878 USD from Karaganda Oblast Administration, 1 700 680 USD from West Kazakhstan Oblast Administration, and 1 530 612 USD from the Center for Innovative Technologies and New Materials

Other planned co-financing included 3 000 000 USD from the Kazakhstan State Architecture and Construction Academy (KazGASA) and 20 000 USD from US Department of Energy.

Total actual disbursement of co-financing as of May 2013 is 244.08 million USD and consists of: Grants – 232.78 million USD; Equity investments – 10.14 million USD; In-kind support – 0.46 million USD; Other – 0.7 million USD.

The disbursed co-financing is eight times more of what has been initially planned and confirmed at the project’s approval stage. The project should be particularly commended for its persistent work with the government that resulted in the increase of the initially committed co-financing by 4.5 times, from 24.85 million USD to 113.6 million USD. Also, the project has managed to attract the private sector funding. Of 6 million USD committed by the private contractor for the Karaganda pilot building, 4.2 million USD has already been disbursed.

Table 7: Financial Planning Co-financing

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Co financing(Type/Source)** | **IA own Financing(mln USD)** | **Government****(mln USD)** | **Other\*****(mln USD)** | **Total(mln USD)** | **Total****Disbursement(mln USD)** |
| **Planned** | **Actual** | **Planned** | **Actual** | **Planned** | **Actual** | **Planned** | **Actual** | **Planned** | **Actual** |
| * Grants
 | 0.025 | 0.006 | 24.85 | 106.96 | 3.02 | 125.81 | 27.895 | 232.78 | 27.895 | 27.895 |
| * Loans/Concessional (compared to market rate)
 |  |  |  |  |  |  |  |  |  |  |
| * Credits
 |  |  |  |  |  |  |  |  |  |  |
| * Equity investments
 |  |  |  | 5.94 |  | 4.2 |  | 10.14 |  | 10.14 |
| * In-kind support
 |  |  |  |  |  | 0.46 |  | 0.46 |  | 0.46 |
| * Other (\*)
 |  |  |  | 0.7 |  |  |  | 0.7 |  | 0.7 |
| **Totals** | 0.025 | 0.006 | 24.85 | 113.64 | 3.02 | 129.67 | 27.895 | 244.08 | 27.895 | 244.08 |

\* Other is referred to contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector and beneficiaries.

##  Results

The project has started effective implementation immediately after signature of ProDoc and hiring of project manager in November 2010, and by MTE in April 2013 it has reached significant achievements according to the work plan and LogFrame; some of the project results have been achieved even earlier than planned.

*Outcome 1: Improved enforcement and implementation of mandatory building energy codes and rating system*

The project has analyzed a number of regulatory norms and standards, recommended updates for the regulations under development and drafted additional bylaws, technical norms and standards, and developed set of methodology guides to technical norms, reviewed international best practices in green buildings standards, and drafted a strategy for its implementation in Kazakhstan, developed training courses and a new testing procedure for state building inspectors.

The project has analyzed 6 technical standards and proposed their unification, provided comments to 9 legal and technical norms under development, developed 3 new bylaws to Energy Efficiency Law, and 8 methodical guides.

Reviewed laws and technical norms include: Energy Efficiency Law, Construction code of RK “Building Heat Insulation”, Construction code of RK “Heating, ventilation and air conditioning”, Construction code of RK “Reconstruction, full and minor repairs of residential and public buildings”.

The project has developed Methodical Guide to SN RK 2. 2.04-04-2011 “Thermal protection of Buildings”, Methodical Guide to SN RK 4.02-02-2011 “Heating, ventilation and air conditioning”; and a “Catalogue of technical solutions for energy efficiency buildings design” (in 2 parts) - Part 1: Building envelope; Part 2: Engineering systems; and a Methodology for energy audit of residential buildings. Developed methodical guides include also guides “On caring out of measures on energy efficiency in residential buildings”, “About acceptance of energy saving and energy efficiency examination procedure”, “About acceptance of energy audit examination procedure”, “About acceptance of operating procedures in training centers on retraining and advanced training individuals and legal persons, who realizes energy audit and (or) expertise on energy saving and energy efficiency as well as invention of implementation and energy management of system organization”, and “About acceptance of Accreditation regulations in the field of energy savings and energy efficiency”.

Drafted norms include: “Rules of forming and maintaining the state energy registry”, “Standard form of the voluntary agreement between state (central, local) executive authority and enterprise (association) on industrial goods energy supply and energy efficiency increase”, “The rules on information presentation in the area of energy supply and energy efficiency increase by the state central authorities”, “The procedure of educational centers access permit to prepare and increase qualification of the experts dealing with energy audit and (or) energy expertise and energy efficiency”.

Developed bylaws include: “Requirements on energy saving and energy efficiency increasing surrendering to pre-design and (or) project (design and estimate) buildings documentations, constructions, erections”, “Requirements on building, constructions, erections energy efficiency and its elements which are the part of building envelopes”, and “Rules for the determination and reconciliation classes of building, constructions, erections energy efficiency”.

The newly developed and approved building code SN RK 2.04-04-2011 “Thermal Protection of Buildings” has stricter energy performance requirements than the original SN RK 2.04-21-2004\* nominally by 2.9% - 4.4%. The 2011 building code requires both energy performance requirements (q-value) and descriptive values of thermal resistance (R-values) to be met simultaneously, and prescribe the same energy efficiency requirements for both newly constructed and reconstructed buildings. The 2011 building code made development of energy passports with energy efficiency ratings of designed buildings obligatory.

The main feature of the new 2011 building code is that it provides more comprehensive methodology on calculation and analyses of building heat losses. The heat losses methodology was improved according to European standards. In particular, this new methodology requires taking into consideration all heat losses in buildings, including windows, reinforcement rods, ceilings and other elements. The original 2004 building code calculation formula did not pay attention to thermal bridges and therefore the overall R-values were overestimated. Enforcement of 2011 Building Code allows to reduce energy consumption of newly constructed and renovated buildings up to 40 - 50% based on calculations of pilot construction project in Karaganda.

The quality of building design and construction control has been strengthened by introduction of a personal responsibility of newly certified individual inspectors (instead of licensed organizations), who are subject to trainings and testing, and responsibility for construction quality control has been transferred from local level to the National Agency for Construction in 2012. Out of 8 077 applicants, 34% were not admitted, 27% did not pass the test, and only 39% successfully passed the test and were newly certified for building design and construction control. Over a half-year period in 2012 in total 6 021 building controls and inspections were conducted, 4 810 orders and administrative cases initiated and 6 177 penalties for noncompliance were imposed to construction companies.

*Outcome 2: Expansion of markets for energy-efficient products*

The project has analyzed technical regulations of building materials, goods and elements and local and international ISO norms on method of calculation of thermal resistance and heat exchange and developed recommendations on two standards: CR RK CRB ISO 6946 “Building components and construction elements. Thermal resistance and transmission coefficient. Method of calculation”, and CR RK CRB ISO 13370 “Thermal performance of buildings. Heat exchange through the earth. Method of calculation”.

Based on roundtable discussions with local stakeholders it was decided to consider development of a new standard on energy labeling of translucent constructions (windows) in 2013/2014.

*Outcome 3: Education and outreach to promote energy-efficient building design and technology*

Within Output 3.1 the project has teamed up with KazGASA, Kazakhstan Leading Architectural and Construction Academy, to develop university curriculum on Design and Construction of Energy Efficient Buildings – a first complex curricula in Kazakhstan focused on energy efficiency in buildings.

With UNDP/GEF financing, KazGASA faculty members developed three undergraduate- and graduate-level syllabuses along with how-to-teach guides that include design and construction of energy efficient buildings, construction materials and frames, and modern energy efficient technologies and architectural design for three study programs “Architecture”, “Construction”, and “Production of construction materials, products and constructions”. The three syllabuses/courses were endorsed by the Republican Education - Methodology Council of the Ministry of Education of RK in May 2012 for a nation-wide use. 45 architecture and construction related universities have approved the developed curricula, and 15 universities have already implemented the curricula in their teaching program in 2012. University curricula and how-to-teach guides were developed based on a review of international experience of 35 foreign universities. Three seminars have been held in Taraz and Almaty for university teachers on energy efficient building design and teaching experience. The developed curricula include also hands-on experience from UNDP/GEF pilot projects.

International study tour to Finland and Sweden on advanced experience in energy efficient building design and construction has been organized in October 22 – November 1, 2012. Seven leading experts from key agencies responsible for housing took part in the study tour. 10 participants took place in a study tour to Belarus that has been organized in May 28 – June 1, 2012 on practice in building construction and production of prefabricated construction materials.

Three university Energy Efficiency Centers in Astana, Pavlodar and Kostanay, and the Association of energy efficient companies “Kazakhstan Association of the high-tech, energy-efficient and innovation companies - KAHTEIC” have been established.

Output 3.2

In 2013, UNDP/GEF Project provided technical and financial support to the 6th Multi-Comfort House Contest organized in Kazakhstan by Saint-Gobain company in cooperation with KazGASA, KazNTU and Pavlodar Technical University. Out of 70 registered participants, 31 arrived as finalists. The first three awardees will take part in an international Multi-Comfort House contest. UNDP held 16 lectures prior to the submission of final contest projects. Lectures covered topics of thermal insulation, acoustic solutions, engineering systems, and green & passive houses.

Output 3.3

The project has organized jointly with local and/or international project partners a number of workshops and seminars and it has addressed in total more than 1 700 seminar participants in 2011 and 2012.

In 2011 about 800 participants have been trained, from which 80 representatives from design companies, approximately 90 representatives from construction companies and companies in the area of construction materials manufacturing, 360 are representatives from governmental bodies in the field of construction, housing and utilities, and around 200 were from AAOs.

In 2012 more than 900 attendees were trained and participated in project events, including around 296 representatives of design organizations, 149 tutors of engineering universities, about 250 university students, 109 representatives of governmental authorities in the field of construction and public and housing utilities, 60 representatives of AAOs, and 40 NGOs.

In 2011, the project organized a two-day national seminar in Astana, three regional conferences in Aktobe, Ust-Kamenogorsk, Kostanay, international conference in Astana, international seminar on green buildings, international seminar on energy efficiency planning, two seminars for designers and constructors in Karaganda and Astana, joint seminars with producers of energy efficiency construction materials and products, and three information trainings for journalists.

Energy efficiency in residential housing events organized by the project in 2012 included two international training seminars for 50 experts of design institutes, construction organizations and tutors of construction specialties at engineering universities in Karaganda and Almaty in March 2012, two international training seminars for designers, constructors and governmental decision makers in Astana in April and May 2012 on energy efficiency in housing, roundtable discussion at the Education Board of the Ministry of Education and Science in May 2012, seminar on energy auditing in April 2012, seminar on energy efficiency in residential housing held in Almaty in July 2012, seminar on green development for local NGOs in Almaty, August 2012, two-day seminar in Astana in September 2012 on energy efficiency for decision makers from utilities, AAOs, service companies and public facilities, and other technical workshops and university lectures.

The project has worked successfully to have extensive media coverage, both in printed media and electronic ones, including new media like facebook etc. Some 50-100 media articles on the UNDP/GEF project and energy efficiency in buildings have been published annually and registered by the project.

*Outcome 4: Development and demonstration of energy-efficient building design*

Within Output 4.1 two pilot projects have been implemented/are under construction.

In Karaganda, Mustafina 26, energy efficiency reconstruction of existing three-storey building with 25 apartments (1 773 m2 of heated area) has been implemented jointly with the parallel UNDP/GEF project “Removing Barriers to Energy Efficiency in Municipal District Heating and Hot Water Supply”. This pilot EE reconstruction project includes installation of energy efficient windows. The DH pilot project included installation of building level heat metering and heat substation with heat exchangers and regulation, and building level electricity boilers with storage tanks for domestic hot water preparation.

A new 10 storey energy efficient pilot building with 170 apartments (13 676 m2) is under construction in Karaganda, Ermekova 5. During the evaluation mission in April 2013 all 10 floors have been erected already, and the roof was under construction. A similar building of the same size and shape has been constructed next door earlier already and will serve for comparison of actual energy consumption. The already existing design of the pilot building has been revised by the project international expert Mr. Leonid Danilevski from NIPTIS Housing Institute in Belarus. Brick walls have thickness of 50-70 cm with 10 cm insulation of mineral wool. The energy efficiency redesign included removal of thermal bridges in walls, at window fixings and wall corners, installation of additional roof and ground insulation, installation of highly energy efficient windows (R=1.085 m2K/W), installation of forced air ventilation with heat recuperation and regulation, installation of radiator thermostatic valves, apartment level heat metering with horizontal indoor heat piping, and building level heat substation with automatic heat flow regulation. Energy efficiency incremental investment costs of 1.25 mln USD financed from the UNDP/GEF project budget, or 9% of total investment costs, will generate according to the design 30% energy savings. The pilot building has designed energy efficiency class B, with calculated heat losses of 55.7 kJ/m2 K day, and combined consumption for space heating and ventilation of 64.8 kJ/m2 K day.

Investment costs of 13.7 mln USD are financed by the public budget (6.35 mln USD or 46%), private investor/developer (6.11 mln USD or 45%), and UNDP/GEF (1.25 mln USD or 9%). The UNDP/GEF contribution covers the incremental energy efficiency costs. Public budget contribution follows the official cost ceiling of ca 500 USD/m2 (70 000 KZT/m2) for new construction which covers less than 50% of total investment costs.

Within Output 4.2 a prototype design of a prefabricated multiapartment building has been commissioned. The NIPTIS institute has submitted a draft prototype design that is subject of approval before more detailed design will be developed. The draft prototype design is based on buildings designed in Belarus, and according to ToR it should comply with the energy performance requirement of energy efficient class B for space heating in Kazakhstan.

While the average heating degree days are comparable in Belarus (4300) and Kazakhstan (4575 - although it varies a lot by region), the cooling degree days in the summer period are very different – negligible in Belarus (88) and significant in Kazakhstan (on average 481)[[8]](#footnote-8). Energy consumption for cooling in Kazakhstan (usually electricity driven air-conditioning) would add up with heating needs and should be taken into consideration when designing energy efficient prototype pilot buildings.

The prototype design of prefabricated building should also integrate inexpensive shading technologies and/or passive shading principles to reduce energy needs for air-conditioning in a cost-effective way.

In case of the newly built pilot energy efficient building in Karaganda, Ermekova 5, the original building design incorporated already passive shading of most windows, because of integrated balconies.

Within Output 4.3 the investment cost ceiling for buildings financed from public budgets has been already increased to 80 000 KZT/m2 based on intervention of the project, and the project works with the government to further increase is to fully reflect all eligible costs.

Table 8 illustrates comparison of minimal descriptive requirements of thermal resistance (R-value) of building codes in countries in the region and in the Czech Republic. The normative values are adjusted to the same climate conditions of 3000 heating degree days.

Kazakhstan, Turkmenistan and Kyrgyzstan have the same nominal requirements; the building code of Uzbekistan is slightly less demanding for roofs and walls structures and more demanding for windows. The 2011 building code of Kazakhstan has slightly (some 10%) less demanding energy efficiency requirements of thermal resistance of buildings structures (roofs, walls), and 36% less demanding in case of windows compared to the 2007 EU harmonized Czech building code adjusted for the same climate.

Taking into account the fact that heat energy price in Kazakhstan are several times lower than in Europe and local price of energy efficient construction materials is comparable (or even higher) to price in Europe, energy efficiency requirements of the existing building code in Kazakhstan (namely for building walls and roofs) are assessed to be appropriately strict.

Table 8: Comparison of Kazakh, Turkmen, Kyrgyz, Uzbek and Czech minimum R-values adjusted for the same climate (3000 heating degree days)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Kazakhstan**Building codeSN RK 2.04-4-2011R [m2. K/ W] | **Turkmenistan**building codeSNT 2.01.03-98as of 2000R [m2. K/ W] | **Kyrgyzstan**building codeSNiP KR 23-01: 2009R [m2. K/ W] | **Uzbekistan**building codeKMK 2.01.04-97\* of 2011R [m2. K/ W] | **Czech** (EU harmonized) building code ČSN 73 0540-2: 2007R [m2. K/ W] |
| **Roof** | **3.7** | **3.7** | **3.7** | **1.6/3.2/**4.2 | **4.17** (14.3) |
| **Wall** | **2.45** | **2.45** | **2.45** | **0.94/2.2/**3.0 | **2.63** (9) |
| **Window** | **0.375** | **0.375** | **0.375** | **0.39/0.42/**0.53 | **0.59** (2) |

*Source: Kazakhstan code SN RK 2.04-4-2011, Czech code ČSN 73 0540-2:2007 (higher values in parenthesis are voluntary for passive house standard), Uzbekistan code KMK 2.01.04-97\* revised and adopted in 2011, Turkmenistan code SNT 2.01.03-98 adopted in 1998 with values applicable as of 2000, Kyrgyzstan code SNiP KR 23-01:2009, parameters of residential buildings, health and educational facilities for 3000 heating degree-days.*

*Note: The higher R-value of the thermal resistance, the more energy efficient and better insulated the building structure is. Typical average annual heating degree days in Kazakhstan are 4 575, 3 569 in the Czech Republic, 3 161 in Kyrgyzstan, 2 251 in Uzbekistan, and 2 218 in Turkmenistan (source* [*http://chartsbin.com*](http://chartsbin.com)*). The higher heating degree days, the colder and/or longer the winter season is. Kazakh, Turkmen and Kyrgyz values are calculated for 3000 heating degree days as an arithmetical average of required values for 2000 and 4000 degreedays. Values in the Czech code illustrate the interval between the minimum required values for standard buildings and recommended values for passive houses for regions with 3000 heating degree days, values in Uzbek code illustrate three levels of required values for degreedays >3000, the highest values are voluntary.*

###

### Interim results and attainment of objectives

|  |  |
| --- | --- |
| **Project strategy** | **Objectively Verifiable Indicators** |
| **Goal** | Increase energy efficiency in new and renovated residential buildings in Kazakhstan, thereby reducing greenhouse gas emissions |
|  | **Indicators** | **Baseline** | **Target** | **Mid-Term Achievements** | **Rating** |
| **Project Objectives**Increase energy efficiency in new and renovated residential buildingsReduce GHG emissions associated with residential energy use | Average thermal energy consumption for space heating in new and renovated buildings | Average thermal energy consumption for space heating: 140 kJ/m2.°C.day for existing building stock, and 100 kJ/m2.°C.day for new and renovated buildings complying with the current code | Average thermal energy consumption for space heating reduced to 85 kJ/m2.°C.day for new and renovated buildings | Building code requirement of 85 KJ/m2.K for space heating and ventilation in place.NANANA | S |
| CO2 emissions from energy use in new and renovated buildings | 25.5 million tonnes of CO2 emitted during 2010-2105 by buildings newly built or renovated during this period186 million tonnes of CO2 emitted from energy use in these buildings over a 25-year lifetimeContinuation of this consumption trend past project period | 22.5 million tonnes of CO2 emitted during 2010-2015 by buildings newly built or renovated during this period (3 million tonnes less than baseline)164 million tonnes of CO2 emitted from energy use in these buildings over a 25-year lifetime (22 million tonnes less than baseline)Continuation of this trend of reduced consumption past project period, with magnified cumulative effects |
| **OUTCOME 1:** Improved enforcement and implementation of mandatory building energy codes and rating system |
| **Output 1.1**Streamlined and strengthened building energy code enforcement leads to universal compliance with existing codes | Rates of compliance with applicable energy codes | Baseline compliance rate has not been formally documented; various national experts state that noncompliance is widespread at the construction stage | Increasing observance of existing codes, up to universal complianceDocumentation and statistical verification of universal compliance by new buildings, starting in 2012, with whole-building energy consumption targets of 2004 thermal-performance code, supported by field inspection and measurements as well as design data. Documentation and verification of90 percent compliance with newcode requirements within twoyears after adoption. | System of construction control has been changed and responsibilities strengthened in 2012.Strengthened field inspections in place, statistical verification in progress.In progress. | S |
| **Output 1.2**New voluntary national and/or regional standards for energy efficiency and "green buildings" lead to implementation of EE beyond existing code requirements | Adoption and implementation of standards, with verification procedureEnergy performance of buildings complying with these standardsNumber of buildings complying with these standards | No voluntary standards for energy performance beyond existing code requirements exist in Kazakhstan. | Officially-recognized "green-building" standard embodying super-efficient energy performance across various end usesImplementation of this standard on a voluntary basis by private developers and/or regional governments by the end of the fourth project year | The concept of green building standard formulated.NA | NA |
| **Output 1.3**Adopted revisions to national building energy codes and associated official documents include stricter requirements for energy consumption | Adoption and implementation of new mandatory requirementsNew required levels of energy performance | Existing national thermal-performance code, adopted in 2004, sets maximum allowed energy consumption for heating between 135 and 72 kJ/m2.°C.day for new and renovated buildings, depending on building height (estimated average of 100 kJ/m2.°C.day).  | Implementation of new mandatory thermal-performance requirements in national code, reducing allowed energy consumption for heating by 15 percent, to an estimated average of 85 kJ/m2.°C.day.  | New building codes adopted. Nominal energy efficiency requirements strengthened by 4%, additional energy savings achieved by implemented Energy Savings Laws (heat regulation). | S |
| **Output 1.4**Rating and labeling system for EE in buildings provides clear information to market stakeholders, as well as a technical basis for financial incentives, leading to increased market demand for efficient buildings | Adoption of rating and labeling systemCreation of incentivesNumber and fraction of buildings rated and labeledNumber and size of incentive awardsRecognition of system by real-estate stakeholders | Energy Passport rating system for buildings is established only on a recommendatory basis by the 2004 code. In practice, this rating system and associated building labels are not being applied. | Energy Passport rating and labeling system established and applied to new and existing buildings, first in selected regions and ultimately expanding to a mandatory nationwide basis. | Country-wide mandatory system of energy efficiency rating of newly designed buildings adopted by the Law on Energy Savings in 1/2012. | HS |
| **Output 1.5**Energy and GHG monitoring and accounting system supports effective program evaluation and helps shape future national priorities for energy efficiency in buildings | Creation and official adoption of monitoring and accounting procedures for energyconsumption inbuildings, and on thatbasis, for estimatedGHG emissionsNumber of regions and buildings participating in this new system | Aggregated energy consumption in buildings can be extrapolated from centralized energy supply statistics, but there exists no methodologically uniform system for compiling data on energy use by individual buildings, nor on the effects of energy efficiency measures | Official procedures for GHG monitoring and accounting in buildings is developed and applied, based on the Energy Passport system. Implementation will takeplace first on a limited basis, for certain building sizes, types, or regions. | Methodology of energy and GHG monitoring (data collection system) is pending.Methodology of monitoring system for existing buildings based on energy audits developed, official adoption is pending. | N/A |
| **OUTCOME 2:**Expansion of markets for energy-efficient products**Output 2.1**Technical standards and certification processes for producers of energy-efficient building materials and products leads to lower costs, higher quality and performance, and wider availability | Establishment of product standards and associated certification processes that reflect energy performanceCost, quality, performance, and availability of products for which standards are established | Product standards for energy-efficient building components are deficient or absent. | Standards promulgated for selected building product(s) | In progress. | NA |
| **Output 2.2** Labeling with regard to energy performance leads to greater consumer understanding and demand for efficient materials and/or products | Establishment of labeling, iffurther studydetermines thatlabeling is needed inthe marketplace Public recognition of label and response to given information | Certification and labeling of products for energy performance is deficient or absent. | Labeling established based on new standards and/or other enhanced procedures, if market study and report, as well as stakeholder input, indicate that such labeling is neededEnergy-efficiency labels widely applied to selected products | In progress. | NA |
| **outcome 3:**Education and outreach to promote energy-efficient building design and technology**Output 3.1** Enhanced training enables building designers to apply international best practices in energy-efficient building design (including integrated building design) and technology | Ability of architects and engineers to design energy-efficient buildings, applying best practices and technologyNumber of buildings built embodying practices and technology introduced via enhanced instruction  | Architects and engineers have high technical capabilities and receive some training on energy efficiency, but lack key information on international best practices, as well as social, economic, and environmental benefits | Enhanced course material on energy efficiency included as a standard part of building-design curricula, delivered to at least 350 building design professionals by the end of the projectInternational study tour completed for 5 to 7 participants | Energy efficiency in building design and construction educational curricula developed and implemented in practice at 15 universities since September 2012.Study tour completed for 17 participants in total | HS |
| **Output 3.2** Competitions motivate practicing and aspiring building designers to pursue energy-efficient design, and raise collective expertise | Ability of architects and engineers to design energy-efficient buildings, applying best practices and technologyNumber of participants and building designs | Motivation to pursue energy-efficient building design is largely driven by market demand. There are no contests or other mechanisms within the design community to stimulate such motivation. | At least two competitions during the project period on energy-efficient building design, attracting 50 participants. | First competition held in 2013, 70 participants. | HS |
| **Output 3.3** Workshops prompt building owners, developers, contractors and construction workers to understand and pursue energy efficiency and effectively market energy performance to buyers and renters | Recognition by owners and developers of the value of energy efficiency in buildingsAbility of contractorsand constructionworkers to correctlyinstall energy efficientbuildingmaterials andcomponentsNumber of workshopsand participants | Owners and developers have little interest in pursuing energy efficiency, instead placing greatest emphasis on appearance, amenity, and cost reductionTraining for builders onenergy-efficient materialsand components is absent,except for sporadicofferings by privatecompanies on their ownproducts | Workshops delivered annually starting in or before the second project year (2012), covering at least three regions by the end of the project period | Dozens of workshops and seminars organized country-wide in 2011-2012 with 1700 participants.Three energy efficiency centers at university premises in Astana, Pavlodar and Kostanay established. | HS |
| **OUTCOME 4:** Development and demonstration of energy-efficient building design**Output 4.1** Best practices in energy-efficient building design (including integrated building design) and technology cost-effectively demonstrated in two residential buildings | Construction of buildings embodying best practices in energy-efficient building design | New residential buildings in Kazakhstan do not embody international best practices or technology | New energy-efficient residential buildings in two regions, built in the third and fourth years of the project (2013 and 2014). Energy performance and cost-effectiveness documented in both buildings by end of project. | One new 10 storey pilot residential building in Karaganda has been designed and is under construction in April 2013 (170 flats, 13 676 m2). Designed energy performance - 35% improvement. One existing building in Karaganda has been reconstructed and energy performance improved (window replacement). | HS |
| **Output 4.2** Prototype and demonstration building designs serve as models for replication, leading to further energy savings and transformation of design/construction practice | Planning, design, and construction of buildings based on energy-efficient model building designs | Standard building designs are efficient only to the minimum extent required by code, and do not embody international best practices. | Prototype information disseminated to design institutes, regional administrations, and federal Agency for Construction and Residential-Communal AffairsPlans, including budgets and initial building designs, established for 20 buildings based on prototypes and demonstration projects. | In progress. Draft design pending for approval.NA | In progress - S |
| **Output 4.3** Cost analysis establishes basis for correcting state-stipulated cost ceilings for qualifying EE government-funded buildings  | Reassessment and revision of state-stipulated cost ceilings for construction for qualifying EE government-funded buildings | Existing cost ceiling is about $400 per m2 of new government-funded housing. There are no exceptions to this ceiling. It is difficult or impossible to design EE buildings under this cost ceiling. | Formal recommendations on raising cost ceiling issued to Agency for Construction and Residential-Communal Affairs and regional administrations Cost ceiling raised, effectively creating a major mechanism for government financing of energy-efficient residential construction | Formal recommendations submittedCost ceiling raised from 70 000 KZT/m2 to 80 000 KZT/m2, further ceiling increase is expected  | S |

The overall rating of the interim results and attainment of objectives is ***Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Highly Satisfactory | **Satisfactory** | Moderately Satisfactory | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
|  | **S** |  |  |  |  |

### Relevance

The project and its goal to increase energy efficiency in new and renovated residential buildings in Kazakhstan and thereby reducing GHG emissions is highly relevant with GEF and UNDP priorities as well as with country priorities.

The project was financed within the GEF 4 Strategic Program for Climate Change “Promoting energy efficiency in residential and commercial buildings” whose long-term objective is to promote energy-efficient technologies and practices in the appliance and building sectors.

The 2010 – 2015 UNDP Country Program Document and Country Program Action Plan reflects the long-term development strategy of Kazakhstan till 2030 and focuses on three priority areas, including Environmental sustainability, focused on the sustainable management of natural resources; mitigation and adaptation to climate change; and preparedness for natural and man-made disasters. Within this umbrella UNDP CO works to promote “*energy efficiency and protection of environment*”.

Energy efficiency and specifically improving energy efficiency in residential buildings became an important country policy priority. The government has set up specialized state agencies focused on modernization of housing and municipal infrastructure (Strategic Plan for 2011-2015 of the Agency on Construction and Housing and Municipal Infrastructure), and launched and financed the 5.8 bln USD 2011-2020 State Program on Modernization of the Housing and Municipal Infrastructure with a strong energy efficiency component. Also, President Nazarbayev pays increased attention to energy efficiency in his public speeches.

Project relevance is rated ***Relevant***.

|  |  |
| --- | --- |
| Relevant | Not Relevant |
| **R** |  |

### Effectiveness and efficiency

***Effectiveness of project implementation***

The project implementation started without delays and has reached significant achievements especially in project components/outcomes 1, 3 and 4 (building codes, education, and demonstration).

The project is implemented according to the designed work plan and LogFrame, but it is implemented in a flexible way that incorporates actual needs of the government and opportunities that arise during project implementation and that support overall project goal.

Rating of effectiveness of project implementation is ***Highly Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Highly Satisfactory** | Satisfactory | Moderately Satisfactory | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
| **HS** |  |  |  |  |  |

***Efficiency/cost-effectiveness of project implementation***

The project has spent by May 2013, middle of project implementation period, 1.6 mln USD, or 36% of total project budget. In total 1.2 mln USD, or 27% of project budget, is committed for financing of incremental costs of the pilot project – new energy efficient building. The incremental costs represent 9% of total investment costs of the residential building.

Most of project GHG emission reductions are planned to be achieved from increased compliance of newly re/constructed buildings with the mandatory energy efficiency requirements of the newly adopted building code.

In the next phase of project implementation it is expected that in annual budgets budget components will be reallocated accordingly with activities that still require to be accomplished

Rating of the project cost-effectiveness/efficiency is ***Highly*** ***Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Highly Satisfactory** | Satisfactory | Moderately Satisfactory | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
| **HS** | S |  |  |  |  |

### Country ownership

The project idea and the project itself were developed locally by local experts supported with international consultants familiar with UNDP/GEF procedures and similar UNDP/GEF projects in the region, and it reflected specific needs and development priorities of Kazakhstan.

The government fully supports project implementation through active involvement of governmental ministries and state institutions that act as project partners as well as members of the Steering Committee. Strong ownership on part of the government is reflected by significantly increased co-financing, from US$ 24.85 million to US$ 113.6 million, as already stated above.

The project cooperates closely namely with the Agency (Committee) of the Republic of Kazakhstan on Construction and Housing and Municipal Infrastructure, the Kazakhstan Center for Modernization and Development of Housing and Municipal Infrastructure and with the Ministry of Industry and New Technologies.

Country ownership is rated ***Highly Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Highly Satisfactory** | Satisfactory | Moderately Satisfactory | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
| **HS** |  |  |  |  |  |

### Project Impact

Pilot projects have been designed to demonstrate benefits of newly constructed and reconstructed energy efficient residential buildings. However, the project long-term impact is based on other project components: adoption of new building codes, strengthened enforcement of building codes, education and training of professionals in energy efficient building design and construction and information dissemination on energy efficient construction materials. Already at MTE, the project has achieved significant results with long-term impact.

Rating of the project impact is ***Highly Satisfactory***.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Highly Satisfactory** | Satisfactory | Moderately Satisfactory | Moderately Unsatisfactory | Unsatisfactory | Highly Unsatisfactory |
| **HS** |  |  |  |  |  |

### Prospects of Sustainability

The project has a good prospect of sustainability. Project results are not dependent only on one time investment but are based on improved enforcement of strengthened building codes, monitoring of energy performance of newly re/constructed buildings, and education, and information and experience dissemination. Most of these activities have been accomplished already by the time of mid-term evaluation.

Likelihood of sustainability of project outcomes is rated Likely:

***Financial risks*** – thanks to committed public financing from the State Program on Modernization of Housing and Municipal Infrastructure, and designated financing of new residential housing from the state program “Affordable Housing”, the financial risks are rated low.

***Socio-political risks*** – due to recognized importance of energy efficiency on a governmental and local levels and increased political support to energy efficiency, the socio-political risk is rated negligible.

***Institutional framework and governance risks*** – is rated low thanks to a good and effective cooperation of the project with relevant state agencies and thanks to the fact that the government has recently created dedicated state agencies responsible for residential housing – the Agency (Committee) of the Republic of Kazakhstan on Construction and Housing and Municipal Infrastructure and the Kazakhstan Center for Modernization and Development of Housing and Municipal Infrastructure.

***Environmental risks*** – is rated low.

Prospects of sustainability are rated ***Likely***.

|  |  |  |  |
| --- | --- | --- | --- |
| **Likely** | Moderately Likely | Moderately Unlikely | Unlikely |
| **L** |  |  |  |

# Conclusions, Recommendations, Lessons Learned

##  Conclusions

The project had a quick and effective start, and already reached significant results during the first term of project implementation, before the MTE. Legislative framework and building codes have been updated, certification of building construction inspectors introduced, energy efficiency reconstruction pilot project implemented, new large pilot energy efficiency building is under construction, university educational curricula for university students were developed and implemented in 15 universities, number of training seminars and information dissemination events were organized and 1.700 attendees addressed.

The overall evaluation of the project as of MTE is ***Satisfactory***.

The project still has to accomplish during the next phase of project implementation important tasks to fully reach envisaged objectives and results. If the project will continue to be managed in the same pro-active and professional way it has good prospects to fully achieve all targets.

Following paragraphs summarize recommendations for the project team and main lesson learned that are worth to replicate also when designing and implementing other UNDP/GEF projects.

The main immediate recommendation is to update project LogFrame (proposed revisions of the LogFrame are shown in Annex 3) and to develop energy and GHG savings monitoring methodology, including analysis of available data and development of data collection procedure, and development of a method for assessment of compliance rates in 2013 or early 2014 at latest, so that the methodology could be applied well in advance before planned project termination.

##  Recommendations

* Update the LogFrame

The project LogFrame targets need revision. The proposed rewording of targets is specified in Annex 3. The project should also update the GHG emission reduction target based on realistic assumptions. The revised LogFrame should then be approved by the Steering Committee.

* Develop a methodology of data collection for monitoring of energy performance and energy and GHG emission savings, and for measuring compliance rate on newly constructed and newly reconstructed residential buildings with energy efficiency legislation and building codes

Improved energy performance, energy and GHG savings and increased compliance rate with energy efficiency legislation and building codes is an essential component of the project. The project has already developed and implemented a number of activities that lead to improved energy performance and increased compliance rate. However, there still is no methodology in place how to properly measure these achievements. The project thus should develop such methodology and data collection system for newly constructed buildings as well as for newly reconstructed buildings based on available data (energy passport of newly re/designed buildings, energy audits and district heat consumption data, where available) and on ad hoc survey if necessary, and evaluate actual improvements on an annual basis. The methodology should be developed early enough (in 2013 or early 2014) so that it could be applied already during the project implementation period and adjusted, if needed. Ideally, the monitoring should be implemented by a local project partner, so that it would not be only a one-off project activity, but that it would serve local institutions for monitoring of achievements of energy efficiency improvements in the country.

* Consider energy efficiency measures that decrease need for air-conditioning in a design of a prototype building

The design of a prototype (pre-fabricated) building focuses on measures that reduce space heating demand. Taking into account hot summers in most regions of Kazakhstan, residential buildings often consume also energy for air-conditioning during hot sunny summer periods. The newly developed design of a typical building to be replicated on a large scale across the country should also incorporate low-cost passive or active shading design/measures to protect the sun from shining into and warming inhabited building areas in the summer while at the same time maximizing solar gains within the building in the winter to reduce space heating demand.

* Consider independent testing of compliance of energy efficiency products in Output 2 with declared energy efficiency performance

Windows have been identified as the most important product to be subject of a new energy efficiency labeling scheme, because energy performance of windows (glazing and frames) can differ significantly, although the difference is not easily visible. The project may analyze how credible the energy efficiency performance information provided by window producers/importers is and eventually to test actual performance of selected products.

Some producers/sellers tend to overestimate energy savings potential of their products and implement strong marketing to support sales of their product especially in emerging economies. A textbook example is an “energy efficient” façade paint that is sometimes promoted in a way that can replace standard building insulation of mineral wool, etc. Some of these “magical” paints do include heat reflecting structures and can generate some savings when applied on inner walls in rooms behind radiators. If applied on the exterior side of a façade, however, energy savings are negligible and cannot substitute proper building wall insulation.

The project might consider testing of such paints, as well as development and dissemination of credible information on their benefits and proper (and improper) application.

* Disseminate information on best construction practices of installation of energy efficiency materials and construction details

The project has collected hands-on practical experience from pilot projects on proper installation of energy efficiency materials and products and plans to disseminate this information to relevant target groups in the next phase of project implementation. Besides strengthened building codes and energy efficiency legislation and availability of energy efficient materials and construction products, it is the proper construction technology and good quality installation of such materials and products, especially quality of construction details that is critical for achieving designed energy efficiency performance.

There already exist a number of publically available videos on best practices in installation of energy efficiency materials and products (façade insulation, window frames and lining etc.) developed by producers, similar UNDP/GEF projects in the world/RBEC region, and/or by independent organizations. Videos are available in different languages, some also in Russian. Most of these videos include best practices; however some do include improper construction/installation practices.

The project might consider development of their own how-to video guides, in addition to written manuals, select good available videos and translate them, and publish them and/or provide links to them on the project internet site.

* Consider potential decoupling of energy performance requirements for newly designed and reconstructed buildings

Building codes in Kazakhstan include the same mandatory energy performance and energy efficiency descriptive requirements for both newly designed as well as for reconstructed buildings. Usually, it is more cost-effective to reach prescribed energy efficiency requirements in newly designed buildings and less cost-effective in reconstructed buildings. This is often reflected in building codes that prescribe less strict requirements for building reconstructions and more strict requirements for newly designed and constructed buildings. The project might evaluate if such approach would be appropriate also for the conditions and construction practice in Kazakhstan, and if so, propose such decoupling in the next revision of the building code. Different requirements for new and reconstructed buildings would also lead to improved compliance rate of the reconstructed buildings with the revised building code.

The next revision of the building code should also take into account availability, price and energy performance of individual construction materials and products, and strengthen required energy performance values individually for specific construction structures. An example could be for instance more strengthened energy efficiency requirements for windows relatively to roofs and walls.

* Consider translation of Bulgarian UNDP/GEF supported books on green architecture and energy efficient buildings

UNDP has implemented GEF financed energy efficiency in buildings projects in several countries in Central and Eastern Europe, and in Central Asia. UNDP/GEF energy efficiency in buildings projects in Kyrgyzstan, Uzbekistan, Kazakhstan, Armenia and Turkmenistan have joined their efforts in information sharing and dissemination and created a joint projects website [www.beeca.net](http://www.beeca.net).

The project might also consider utilization of other available informative materials on energy efficiency in buildings developed by UNDP/GEF projects in other countries as well. For example, the Bulgarian UNDP/GEF project “Building the Local Capacity for Promoting Energy Efficiency in Private and Public Buildings” has produced two books for architects, practicing professionals and students: “Ten Books on Green Architecture”, and “99 Best Practices in Sustainable and Low-Energy Buildings” (EnEffect, Sofia, 2010 – available in Bulgarian, about 800 pages in total). These books, if translated into Russian, might be of interest to students of KazGASA and other universities of architecture and building construction.

##  Lessons learned

* Quick effective start of project implementation without delays

UNDP CO office has started competitive selection of the Project Manager immediately after approval of the project by GEF CEO and well in advance already before actual signature of the ProDoc between UNDP and the government. Project Manager was appointed and started immediately to work on project implementation – within two months after ProDoc signature. Also, other UNDP/GEF projects can effectively start their implementation immediately after ProDoc signature (ideally within one month) if the project staff hiring process is launched already after GEF CEO project approval.

* Effective institutional framework in place

The project heavily benefitted from effective cooperation with strong state institutions dedicated to construction and modernization of the housing sector and to energy efficiency improvements of the housing stock. State agencies and companies, namely the Agency for Construction and Housing and Municipal Infrastructure and the Kazakhstan Center on Modernization and Development of Housing and Municipal Infrastructure, play a crucial role in successful project implementation and scaling up long-term project impact. Both the Agency and especially the Center are staffed with dedicated professionals with good expertise and interest in energy efficiency, and have sufficient funding from the state budget for implementation of their work. Without these institutions engaged into project implementation, the UNDP/GEF project would be in a much more difficult position.

* Level of economic development significantly influences replication of project achievements

Relatively good economic situation of Kazakhstan and strong and stable economic growth compared to other countries in the region, including high rate of new construction of residential housing in Astana and other cities have substantial influence on replication potential and long-term impact of the project thanks to the capacity of public budgets to co-finance re/constructions of residential housing (5.8 bln USD 2011-2020 State Program on Modernization of the Housing and Municipal Infrastructure). The same project implemented with the same experienced project team in other less developed countries would have limited replication potential and overall project impact.

* Proper timing of the project maximizes its benefits

Kazakhstan is in the phase of high rate of re/construction in the housing sector, energy efficiency has been already recognized by top policy makers as a country priority also thanks to other UNDP/GEF projects, the country is preparing to host an EXPO exhibition in 2017. The project and its replication potential and sustainability benefit from proper timing of project implementation. Should the same project be implemented much earlier, its impact would be limited; should the project be implemented later, there would remain untapped energy efficiency potential in buildings already re/constructed.

# Annexes

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# Annex 1: Evaluation mission itinerary

Program for Mid-Term Evaluation Team, comprising Jiří Zeman (International Expert) and Natalya Panchenko (National Expert), 9-20 April 2013

|  |  |  |
| --- | --- | --- |
| ***Time*** | ***Action*** | ***Notes*** |
| ***09 April, Almaty***  |
| 03.00 | Arrival to Almaty | Accommodation in Kazzhol Hotel |
| ***10 April, Almaty*** |
| 16.00– 18.00 | Meeting at Kazhol Hotel | Presentation of project results by PM, Q&A session, review ofthe evaluation program |
| ***11 April, Almaty*** |
| 14.30-17.00 | Meeting at KazGASA (Kazakh State Academy of Construction & Architecture) | A meeting with KazGASA faculty staff and working group members on development of undergraduate course content on energy efficient design of buildings. Overview of the project’s information & outreach component.  |
| 19.50 | Departure to Astana | Air Astana flight КС 855 |
| 21.25 | Arrival to Astana | Accommodation in Grand Park Essil Hotel |
| ***12 April, Astana*** |
| 09.30-10.30 | Meeting at JSC “Kazakhstan Housing & Utilities Sector Reform Center” | Overview of partnership with UNDP/GEF Project “Energy Efficient Design and Construction of Residential Buildings”. Results, lessons learned, needs. |
| 10.30-11.15 | Meeting with “Housing & Utilities Sector” Association (a public association of housing-related and utilities companies) | Overview of partnership with UNDP/GEF Project “Energy Efficient Design and Construction of Residential Buildings”. Results, lessons learned, needs. |
| 11.30-12.30 | Meeting with the Committee for Construction, Housing and Utilities of the Ministry of Regional Development | Overview of partnership with UNDP/GEF Project “Energy Efficient Design and Construction of Residential Buildings” related to development & enforcement of new code requirements and building energy performance ratings; construction of a demo building in Karaganda; design of prototype buildings. |
| 13.00-14.00 | *Lunch* |
| 14.00-15.00 | Meeting at the Energy & Environment Unit, UNDP Kazakhstan | Implementation progress of the UNDP/GEF Project; interactions with project partners and donors |
| 15.30-16.00 | Meeting at the New Technologies & Energy Efficiency Department of the Ministry of Industries & New Technologies of RK | Role of the UNDP/GEF Project in development and adoption of EE law; development of bylaws; outreach & training |
| ***13 April, Astana*** |
| 11.00– 18.00  | Meeting with project staff, working at the office, review of projectlogframe and documents, Q&A session. |
| ***15 April, Astana*** |
| 15.00-15.45 | Meeting at the Department of Green Technologies & Investment Attraction, Ministry of Environmental Protection | Implementation progress and achieved results of the UNDP/GEF project; contribution to advancement of a green economy in the country |
| ***16 April, Karaganda*** |
| 9.00-10.00 | Meeting atErgonomica Ltd (first ESCO in Karaganda). | A visit tothe Ergonomica office, discussion of EE issues specific to Kazakhstan and Karaganda. |
| 10.30-12.30 | A visit to a pilot building on EE reconstruction & upgrade (26 Mustafina Str.)  | Inspection of a pilot residential building, meeting with a managing company, discussion of achieved results.  |
| 13.00-14.00 | *Lunch* |
| 14.30-15.30 | A visit to a pilot building on EE design & construction (9 Ermekov Str.)  | Inspection of a construction site, meeting with the contractor (Construction department of Karaganda Akimat), project design company and construction company. |
| 16.30 | Departure to Astana |
| ***18 April, Astana*** |
| 10.00 – 12.00  | Meeting with Mr. Leonid Danilevsky, Project Chief Technical Adviser, and project staff |
| ***19 April, Astana*** |
| 9.00-20.00 | Participation in the International Conference on Improving EE in Residential Heat & Hot Water Supply as a contribution to “green economy” Meetings with local and international project partners participating in the conferenceMeeting with project staff to discuss/clarify remaining issues |
| ***20 April, Astana*** |
| 03.00 | Departure from Astana |

# Annex 2: List of persons interviewed and summary of interviews

Meeting at Kazhol Hotel(10 April):

*Persons interviewed:*

Ms. Irina Goryunova, UNDP Portfolio Manager

Ms. Bayan Abylkairova, Project Manager

The project manager reported on key results achieved by the project.

Under Component 1, the project successfully lobbied for adoption of a new EE law, development of 3 bylaws and 4 new buildings codes (heating, ventilation, heat resistance). In particular, the project ensured the inclusion of the following important EE concepts that were missing in the earlier version of the law: (i) EE rating of buildings, (ii) energy audit, (iii) energy expertise of EE documentation, (iv) technical requirements for EE buildings. Also, the project worked with the Agency for Construction, Housing & Utilities (now the Committee) to introduce mandatory attestation of inspectors for design & field construction control thus making inspectors personally responsible for any failures and non-compliance of design and construction companies with building codes & regulations. This change is expected to significantly improve enforcement of the new EE law, its bylaws and new EE building codes. A study tour to several countries in Europe proved to be effective as it helped to popularize a “green building” idea among key decision makers as well as presented an excellent opportunity to familiarize participants with best practices in building design, construction and policies. Successful adoption of a more advanced EE law, selection of energy efficiency as a motto of upcoming EXPO-2017 to be hosted by Kazakhstan and a tender for construction of green buildings for EXPO-2017 announced by the SamrukKazyna Development Fund of Kazakhstan are among a few important positive outcomes of the study tour.

Under Component 2, the project selected windows for EE performance rating & labeling. Once approved, this standard will be universally applied and enforced across the Customs Union of Russia, Belorussia & Kazakhstan.

Under Component 3, the project—jointly with KazGASA—developed and introduced a new syllabus for EE design & construction of buildings; conducted trainings on EE construction for various target groups; organized with Saint-Gobain and KazGASAa competition on EE building design among students.

Under Component 4, the project organized a tender documentation and selected a 10-storeyed residential building in Karaganda as the first pilot in Kazakhstan to demonstrate most advanced EE measures and compliance with new EE law and building codes. A pilot building has an increase in costs by 9.5% but decrease in energy consumption by 35% compared to a reference building. The project joined a retrofitting pilot within the State Program on Upgrading of Residential Buildings and installed EE windows in a residential 4-storeyed building in Karaganda. Finally, the project hired a Belorussian design institute to develop new design of EE prototype buildings for mass construction.

Meeting at KazGASA (11 April):

*Persons interviewed*:

Ms. Gulnar G. Shaprova, Provost of Academic Affairs, KazGASA

Mr. Galym A. Issabayev, Associated Professor, Faculty of Architecture, KazGASA

Ms. Valeria V. Gumelyuk, Associated Professor, Faculty of General construction, KazGASA

Ms. Almagul G. Yeslbaeva, Associated Professor, Construction technologies, infrastructure & management faculty, KazGASA

Ms. Natalya Shilikbayeva, Saint-Gobain Company

Mr. Alexey Somik, Danfoss Company

With GEF financing, KazGASA faculty members developed 3 under- and graduate-level syllabuses along with how-to-teach guides: (1) design & construction of EE building; (2) construction materials & frames; (3) modern energy efficient technologies & architectural design. The three courses were endorsed by the Ministry of Education of RK for a nation-wide use. Seven construction-related universities have already approved and teach these programs.

In 2013, UNDP/GEF Project provided technical and financial support to a regular Multi-Comfort House Contest held by Saint-Gobain company with such participating institutions as KazGASA, KazNTU and Pavlodar Technical University. Out of 70 registered participants, 31 arrived as finalists. The first three awardees will take part in an international MCH contest. UNDP held 16 lectures total prior to the submission of a final project. These included thermal insulation, acoustic solutions, engineering systems, green& passive houses.

Meeting at JSC “Kazakhstan Center on Modernization and Development of Housing and Municipal Infrastructure” (12 April):

*Persons interviewed:*

Mr. Toleutai S. Rakhimbekov, Chairman of Executive Board

Mr. Yerzhan K. Abylkairov, Deputy Chairman of Executive Board

Ms. Marina U. Mirsakina, Head of Housing Sector Department

Mr. Yeldos N. Abakanov, Housing Sector Department

Mr. Yesenbai I. Islamov, Head of Knowledge Center

Mr. Arman T. Utepov, Head of EE Technologies Center

Staff of the KazReformCenter reported on joint activities with the UNDP/GEF project. In particular, an idea of a pilot retrofit residential building in Astana was realized after a study tour to Europe. Now, this pilot building serves as a demonstration and exchange-of-experience project for decision-makers and specialists from oblast akimats. The KazReformCenter developed and held 250 lecture/hrs courses covering topics from project design to maintenance of residential and public buildings for various target groups. Jointly with the UNDP/GEF project, the KazReformCenter promotes development, production and widespread use of EE prototype buildings. Following the UNDP/GEF experience on design and construction of EE residential building in Karaganda, the KazReformCenter plans to construct 5 EE residential buildings, of which one is expected to be passive. Finally, the KazReformCenter teamed up with the UNDP/GEF project on creation and promotion of EE measures and mechanisms. Such partnership with the UNDP/GEF project proved to be effective given UNDP’s wide knowledge and extensive practices on energy efficiency in countries from around the world.

Meeting with “Housing and Municipal Infrastructure” Association (12 April):

*Persons interviewed:*

Ms. Marina U. Mirsakina, Head of Housing Sector Department

Mr. Yeldos N. Abakanov, Housing Sector Department

Mr. Yesenbai I. Islamov, Head of Knowledge Center

It is a public association of housing-related and utilities companies established in 2012 that promotes development of the housing and utilities sector in Kazakhstan by focusing on pilot projects, education/training and outreach. Jointly with UNDP/GEF projects, the Association completed the following activities: (i) the bicycle race to promote EE ideas in Astana; (ii) a call-center on importance of EE retrofitting of residential buildings; (iii) implementation of a small-town model for an integrated approach to energy efficiency; (iv) an international conference with participants from Senate and Majilis; (v) a workshop on energy management and trainings on energy audit.

Meeting with the Committee for Construction, Housing and Municipal Infratsructure of the Ministry of Regional Development (12 April):

*Persons interviewed:*

Mr. Nikolai P. Tikhonyuk, Deputy Chair

The UNDP/GEF project assisted in development/revision of construction standards and norms. This assistance was very timely given the ongoing work of Kazakhstan of switching to Eurocodes that has to be completed by 2015. A pilot residential building in Karaganda revealed an important problem: the Kazakhstani technical expertise of design & project documentation lacks knowledge in and experience with energy efficient design & construction. Also, the Committee will revise a salary scale for site inspectors—following results of the pilot construction—to ensure adequate oversight of construction of energy efficient buildings.

On prototype buildings, the UNDP/GEF project commissioned development of the project design documentation to the Belorussian State Enterprise “NIPTIS Institute named after S. S. Ataev”--given the Institute’s knowledge of advance technologies and experiencein EE design and production of prototype buildings.

The Committee favors a more simplified approach to the energy audit: it shouldn’t be mandatory as it bears additional costs to private & public owners which are not always justified. The need for an energy audit should be assessed considering original thermal characteristics of a particular building and a database of completed energy audits of similar buildings.

Implementation of the State Program on Upgrade & Retrofitting in the Housing Sector can be significantly advanced if a specialized fund and not akimats had overall responsibility, since the latter already have lots in their hands. Also, it would significantly reduce reconstruction costs under the Program if a compilation of “typical” technical/engineering solutions based on an extensive database of energy audit results. The UNDP/GEF project is currently working on moving proposal forward.

Meeting at UNDP Kazakhstan (12 April):

*Persons interviewed:*

Mr. Stanislav Kim, Head of UNDP Energy & Environment Unit

In 2009, UNDP signed an agreement with the Government of Kazakhstan on UNDP’s strategic technical assistance framework that includes a system of tied grants. As of today, 30% of project financing comes from the state budget while 70% - from other sources such as UNDP core funding, GEF, EC, etc. The target is to increase the share of state funding by 70-80%. To accomplish this task, UNDP CO considers GEF-funded projects including this UNDP/GEF project on energy efficient construction as a way to generate lessons learned and on-the-ground experiences in order to demonstrate to the government and other national counterparts workable approaches to, for example, increasing energy efficiency in residential buildings.

Energy efficiency is high on the government’s agenda making its way into its policies and programs. It is among key indicators of assessing the country’s overall performance and is central to the green economy strategy that is being developed with UNDP’s support. While crucial gaps do exist in institutional and regulatory frameworks (e.g. no coordination between various government institutions/authorities at national and local levels), energy efficiency will remain the government’s priority as there is a clear link to the country’s economy and its development.

Meeting at the Ministry of Industries & New Technologies of RK (12 April):

*Persons interviewed:*

Mr. Alibek Kabylbay, Deputy Head of New Technologies & Energy Efficiency Department

The UNDP/GEF Project assisted with lobbying for the adoption of a new EE law in the Parliament as well as subsequent development of bylaws, requirements for the project design documentation and rules for building ratings. The Department highly appreciated the UNDP/GEF work on public outreach. In particular, the UNDP/GEF project designed and produced a video popularizing energy efficiency while the Ministry ensured its wide dissemination. The project provided technical assistance and financing of educational trainings and workshops.

Meeting with project staff (13 April):

*Persons interviewed:*

Ms. Bayan Abylkairova, Project Manager

Mr. Damir Temralinov, Expert in energy audit and energy efficiency in buildings

Mr. Serikbolat Yessengabulov, Expert in development and advancement of regulatory documents

Reviewed the project progress by looking at the status of indicators in the project logframe. The logframe approved after the inception phase was used as a baseline logframe for the purpose of the mid-term review. Key discussion points and results are reflected in the revised logframe as Annex 3 in the current MTE report.

Meeting at the Ministry of Environmental Protection (15 April):

*Persons present:*

Ms. Ainur Sospanova, Head of Green Technologies & Investment Attraction Department

The UNDP/GEF project contributed significantly to the development and then adoption of the new EE law. The education/training component of the project is of outmost importance, particularly for stakeholders in the government (now, being a government employee, she realizes how poorly the government structures are informed of energy efficiency issues). Enhanced understanding of EE will be important for implementation of the green economy strategy that MEP currently develops.

The UNDP/GEF project serves as a platform for testing new approaches to energy efficiency in design and construction that can be integrated in government policies/programs as feasible solutions and applicable for Kazakhstan.

Overall, the UNDP approach to addressing energy efficiency is comprehensive and systemic: it includes target technical assistance, trainings and financing.

Meeting at Ergonomica Ltd., Karaganda private ESCO (16 April):

*Persons present:*

Mr. Sergey Poleschuk, General Director

The first demonstration project on improving energy efficiency in district heat & hot water supply financed by the UNDP/GEF project on DH created an excellent opportunity for the news coverage on energy efficiency--quickly picked up by the mass media in the country. Moreover, this pilot project along with other demonstration projects generated a ‘database’ of local experiences and lessons learned, which are Kazakhstani specific. All this made UNDP financing of the first pilot particularly crucial. An important lesson learned from the demo project: the change of the people’s mindset takes several years, 3 years in case of the first pilot in Karaganda. This particular aspect—information provision and public awareness/education—is underestimated by the government but should be integral to the government’s work on energy efficiency.

A visit to a pilot building on EE reconstruction & upgrade in Karaganda (16 April):

*Persons present:*

Mr. Oscar Bagisov, Director of Managing Company “Sheber”

Ms. Aizhan Musaliyeva, Managing Company “Sheber”

This pilot tested new approaches to (i) mobilizing apartment owners via creation of a condominium and to (ii) building management via creation of a managing company (not an Association of Apartment Owners, which is more widely used in the country). It was also among the first pilots financed by the State Program on Upgrade and Reconstruction of the Housing Sector where some apartment owners were reimbursed up to 50% of costs, as specified by the social allowance provision of the Program. The key lesson learned: information sharing and education of apartment owners should be routine to a managing company or AAO to ensure the buy-in of direct beneficiaries for proposed EE measures, which in the end will result in greater ownership of the project results.

A visit to a pilot building on EE design& construction (16 April):

*Persons interviewed*:

Mr. Zhaksylyk Shalabekov, Head of Construction Department of Karaganda City Akimat

Mr. Aslanbek Kutaev, Director of Yutex design and construction company

Mr. Vladimir A. Arsenin, Chief Engineer, Yutex design and construction company

Mr. Nilolay Nikolayev, Construction site manager

Mr. Lev Shkundin, Director of LLP LEKA, subcontractor for waste-heat recovery installation

Ms. Bayan Abylkairova, Project Manager

Mr. Leonid Danilevsky, Project Chief Technical Adviser

Ten floors of the pilot apartment building already erected with wall insulation as per the requirements of new building codes. Installation of highly energy efficient windows was complete by 60 % at the time of site inspection. The project will conduct an inspection of all windows once installation is fully complete. As a rule, an acceptance report will be produced that will highlight installation defects, if any. This building will be the first residential building erected in Kazakhstan that uses a system of waste heat recovery. The construction company subcontracted a company that specializes in installation of such systems but in industrial/public buildings.

Meeting with project staff (18 April):

*Persons interviewed:*

Mr. Leonid Danilevsky, Project Chief Technical Adviser, Deputy Director, Institute of Housing NIPTIS, Belarus

Ms. Bayan Abylkairova, Project Manager

Mr. Damir Temralinov, Expert in energy audit and energy efficiency in buildings

Mr. Serikbolat Yessengabulov, Expert in development and advancement of regulatory documents

Participation in the International Conference on Improving EE in Residential Heat & Hot Water Supply as a contribution to “green economy” and meeting with project staff (19 April):

*Persons interviewed:*

Mr. Leonid Danilevsky, Project Chief Technical Adviser

Ms. Bayan Abylkairova, Project Manager

Mr. Damir Temralinov, Expert in energy audit and energy efficiency in buildings

Ms. Ekaterina Paniklova, Deputy Resident Representative, UNDP

Mr. Ralf Hillenberg, International Expert, IPB.B, Germany

Ms. Larissa Schreckenbach, Project Manager, IWO e.V., Germany

Ms. Bibigul Makhmetova, Viessmann

After the conference, the International expert discussed with the project staff some remaining issues related to the logframe. In particular, the project staff was asked to realistically assess the feasibility of achieving the target of 22.5 million tonnes of CO2 emitted during 2010-2015 by buildings newly built or renovated during this period (3 million tonnes less than baseline). The advice was to check a methodology that was used for calculating CO2 emissions at the time of the project document submission to GEF.

# Annex 3: Proposed updated wording of the LogFrame

|  |  |
| --- | --- |
| **Project strategy** | **Objectively Verifiable Indicators** |
| **Goal** | Increase energy efficiency in new and renovated residential buildings in Kazakhstan, thereby reducing greenhouse gas emissions |
|  | **Indicators** | **Baseline** | **Target** | **Note** |  |
| **Project Objectives**Increase energy efficiency in new and renovated residential buildingsReduce GHG emissions associated with residential energy use | Average thermal energy consumption for space heating in new and renovated buildings | Average thermal energy consumption for space heating: 140 kJ/m2.°C.day for existing building stock, and 110 kJ/m2.°C.day for new and renovated buildings complying with the current code | Average thermal energy consumption for space heating reduced to 80 kJ/m2.°C.day for new and renovated buildings | Updated baseline and targetTargets for direct project and post-project and indirect GHG emission savings have been revised based on updated assumptions  |  |
| CO2 emissions from energy use in new and renovated buildings | 25.5 million tonnes of CO2 emitted during 2010-2015 by buildings newly built or renovated during this period186 million tonnes of CO2 emitted from energy use in these buildings over a 25-year lifetime~~Continuation of this consumption trend past project period~~ | 23.5 million tonnes of CO2 emitted during 2010-2015 by buildings newly built or renovated during this period (2 million tonnes less than baseline)171 million tonnes of CO2 emitted from energy use in these buildings over a 25-year lifetime (15 million tonnes less than baseline)~~Continuation of this trend of reduced consumption past project period, with magnified cumulative effects~~ |
| **OUTCOME 1:** Improved enforcement and implementation of mandatory building energy codes and rating system |
| **Output 1.1**Streamlined and strengthened building energy code enforcement leads to universal compliance with existing codes | Rates of compliance with applicable energy codes | Baseline compliance rate has not been formally documented; various national experts state that noncompliance is widespread at the construction stage | ~~Increasing observance of existing codes, up to universal compliance~~Documented and statistically verified ~~universal~~ compliance by new buildings, starting in 2012, with whole-building energy consumption targets of 2011 thermal-performance code, supported by field inspection and measurements as well as design data. 90 percent compliance with newcode requirements (documented and verified) by the end of the project. | DeletedMinor wording changes |  |
| **Output 1.2**New voluntary national and/or regional standards for energy efficiency and "green buildings" lead to implementation of EE beyond existing code requirements | Adoption and implementation of “green” standards, with verification procedure~~Energy performance of buildings complying with these standards~~Number of buildings complying with green standardsNumber of buildings complying with A energy efficiency class | No voluntary standards for energy performance beyond existing code requirements exist in Kazakhstan. | Officially-recognized "green-building" standard embodying super-efficient energy performance across various end uses~~Implementation of this standard on a voluntary basis by private developers and/or regional governments by the end of the fourth project year~~At least five green buildings designed or certified according to the “green” standard by the end of the project.At least five A-class buildings designed or constructed according to the “green” standard by the end of the project. | DeletedAdded targetAdded target |  |
| **Output 1.3**Adopted revisions to national building energy codes and associated official documents include stricter requirements for energy consumption | New required levels of energy performance adopted and implemented by new building codes | Average energy performance requirements for space heating and ventilation according to SN RK 2.04-21-2004\* - 141 kWh/m2.year for a 5-floor residential building | Average energy performance requirements for space heating and ventilation according to the newly adopted building code SN RK 2.04-04-2011 are nominally 4% more demanding - 136 kWh/m2.year for a 5-floor residential building | Changed indicator and target to reflect improvements of the new building code |  |
| **Output 1.4**Rating and labeling system for EE in buildings provides clear information to market stakeholders, as well as a technical basis for financial incentives, leading to increased market demand for efficient buildings | Adoption of rating and labeling system~~Creation of incentives~~~~Number and fraction of buildings rated and labeled~~~~Number and size of incentive awards~~~~Recognition of system by real-estate stakeholders~~ | Energy Passport rating system for buildings is established only on a recommendatory basis by the 2004 code. In practice, this rating system and associated building labels are not being applied. | Energy Passport rating and labeling system established and applied to new and existing buildings, first in selected regions and ultimately expanding to a mandatory nationwide basis. | Single name of indicator |  |
| **Output 1.5**Energy and GHG monitoring and accounting system supports effective program evaluation and helps shape future national priorities for energy efficiency in buildings | Creation and official adoption of monitoring and accounting procedures for energyconsumption inbuildings, and on thatbasis, for estimatedGHG emissionsNumber of ~~regions and~~ buildings participating in this new system | Aggregated energy consumption in buildings can be extrapolated from centralized energy supply statistics, but there exists no methodologically uniform system for compiling data on energy use by individual buildings, nor on the effects of energy efficiency measures | Official procedures for GHG monitoring and data collection ~~accounting~~ in buildings is developed and applied (based for example on the Energy Passport system of newly re/constructed buildings and on energy audits and metered district heat supply in buildings where available). ~~Implementation will take~~~~place first on a limited basis, for~~~~certain building sizes, types, or~~~~regions.~~90% of newly constructed buildings and 90% of newly reconstructed buildings subject to Energy Passport system | Specific target defined |  |
| **OUTCOME 2:**Expansion of markets for energy-efficient products**~~Output 2.1~~**~~Technical standards and certification processes for producers of energy-efficient building materials and products leads to lower costs, higher quality and performance, and wider availability~~ | ~~Establishment of product standards and associated certification processes that reflect energy performance~~~~Cost, quality, performance, and availability of products for which standards are established~~ | ~~Product standards for energy-efficient building components are deficient or absent.~~ | ~~Standards promulgated for selected building product(s)~~ | Output 2.1 and 2.2 merged into single Output 2 |  |
| **Output 2~~.2~~** Labeling with regard to energy performance leads to greater consumer understanding and demand for efficient materials and/or products | Establishment of labeling of selected energy efficiency construction materials/products, ~~if~~~~further study~~~~determines that~~~~labeling is needed in~~~~the marketplace~~ Public recognition of label and response to given information | Certification and labeling of products for energy performance is deficient or absent. | Labeling established and applied for selected energy efficiency construction materials/products based on new standards and/or other enhanced procedures~~, if market study and report, as well as stakeholder input, indicate that such labeling is needed.~~ 50% of customers are aware of and understand EE labels20% of customers take EE label information into account in their purchasing decisions ~~Energy-efficiency labels widely applied to selected products~~ | Specific targets defined |  |
| **outcome 3:**Education and outreach to promote energy-efficient building design and technology**Output 3.1** Enhanced training enables building designers to apply international best practices in energy-efficient building design ~~(including integrated building design)~~ and technology | Ability of architects and engineers to design energy-efficient buildings, applying best practices and technologyNumber of buildings built embodying practices and technology introduced via enhanced instruction  | Architects and engineers have high technical capabilities and receive some training on energy efficiency, but lack key information on international best practices, as well as social, economic, and environmental benefits | Enhanced course material on energy efficiency included as a standard part of building-design curricula, delivered to at least 350 building design professionals by the end of the projectInternational study tour completed for 5 to 7 participants15% of buildings designed/built with higher than C-energy efficiency class | Specific target defined |  |
| **Output 3.2** Competitions motivate practicing and aspiring building designers to pursue energy-efficient design, and raise collective expertise | Ability of architects and engineers to design energy-efficient buildings, applying best practices and technologyNumber of participants and building designs | Motivation to pursue energy-efficient building design is largely driven by market demand. There are no contests or other mechanisms within the design community to stimulate such motivation. | At least two competitions during the project period on energy-efficient building design, attracting 50 participants. |  |  |
| **Output 3.3** Workshops prompt building owners, developers, contractors and construction workers to understand and pursue energy efficiency and effectively market energy performance to buyers and renters | Recognition by owners and developers of the value of energy efficiency in buildingsAbility of contractorsand constructionworkers to correctlyinstall energy efficientbuildingmaterials andcomponentsNumber of workshopsand participants | Owners and developers have little interest in pursuing energy efficiency, instead placing greatest emphasis on appearance, amenity, and cost reductionTraining for builders onenergy-efficient materialsand components is absent,except for sporadicofferings by privatecompanies on their ownproducts | At least 60% of trained building owners, developers, contractors and construction workers interested to implement energy efficiency in building re/constructionPractical manuals - guides/videos on appropriate energy efficiency installation practices published on internet, at least 500 practitioners trainedAt least 30 workshops delivered ~~annually starting in or before the second project year (2012), covering at least three regions by the end of the project period~~ | Specific targets defined |  |
| **OUTCOME 4:** Development and demonstration of energy-efficient building design**Output 4.1** Best practices in energy-efficient building design ~~(including integrated building design)~~ and technology cost-effectively demonstrated in two residential buildings | Re/construction of buildings embodying best practices in energy-efficient building design | New residential buildings in Kazakhstan do not embody international best practices or technology | Energy-efficient residential buildings ~~in two regions~~ newly re/constructed in the third and fourth years of the project (2013 and 2014). Energy performance and cost-effectiveness documented in both buildings by end of project. | Minor rewording |  |
| **Output 4.2** Prototype and demonstration building designs serve as models for replication, leading to further energy savings and transformation of design/construction practice | Planning, design, and construction of buildings based on energy-efficient model building designs | Standard building designs are efficient only to the minimum extent required by code, and do not embody international best practices. | Prototype building design information disseminated to design institutes, regional administrations, and Agency (Committee) for Construction and Residential-Communal AffairsPlans, including budgets and initial building designs, established for 20 buildings based on prototypes and demonstration projects. |  |  |
| **Output 4.3** Cost analysis establishes basis for correcting state-stipulated cost ceilings for qualifying EE government-funded buildings  | Reassessment and revision of state-stipulated cost ceilings for construction for qualifying EE government-funded buildings | Existing cost ceiling is about $400 per m2 of new government-funded housing. There are no exceptions to this ceiling. It is difficult or impossible to design EE buildings under this cost ceiling. | Formal recommendations on raising cost ceiling issued to Agency for Construction and Residential-Communal Affairs and regional administrations Cost ceiling raised, effectively creating a major mechanism for government financing of energy-efficient residential construction |  |  |

Yellow color indicates proposed changes

# Annex 4: List of documents reviewed

**General documentation**

* UNDP Programme and Operations Policies and Procedures
* UNDP Handbook for Monitoring and Evaluating for Results
* GEF Monitoring and Evaluation Policy
* GEF focal area strategic program objectives

**Project documentation**

* GEF approved project document and Request for CEO Endorsement
* Project Inception Report
* Annual Work Plans
* Annual Project Reports
* Project Implementation Review
* CDR
* Quarterly Reports
* Project Outcome Board Meeting minutes
* Project Steering Committee Meeting minutes
* Updated risk log
* Mid-Term Evaluation Report,
* Financial Audit Reports for 2011 and 2012
* Project internal financial records (financial spreadsheet)

**Project web sites:**

[www.beeca.net](http://www.beeca.net)

[www.eep.kz](http://www.eep.kz)

**Project deliverables**

# Annex 5: Mid-term evaluation TOR

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|  | **UNITED NATIONS DEVELOPMENT PROGRAMME****TERMS OF REFERENCE / INDIVIDUAL CONTRACT** |

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| **I. Position Information** |
| Position Title: Type:Project Title/Department: Duration of the service:Duty station:Reports to: | International Consultant/EvaluatorIndividual Contract (International)UNDP/GEF Project “Energy Efficient Design and construction of residential Buildings”/Energy and Environment Unit25 working day after signing a contractHome-based with one mission to Astana, Kazakhstan, including site visits to Karaganda cityHead of Environment and Energy Unit, UNDP Kazakhstan |

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| **II. Background**  |
| The Republic of Kazakhstan (RK) has the seventh-most carbon-intensive economy in the world, emitting about 1200 tonnes of CO2 equivalent per million dollars of economic output, as compared with a world average of about 500 tCO2e/mln$. Its energy sector generates about 80 percent of total emissions, out of which about 90 percent comes from power and heat generation. Buildings, primarily residential, account for 13.5 percent of power and 24 percent of heat demand; the residential sector is the third-leading energy consumer in the country, after the energy and manufacturing sectors. Official projections and policy priorities call for rapid growth in the residential sector, which accounts for 97% of new buildings.In this regard, the Government of Republic of Kazakhstan, UNDP and GEF is implementing the Project “Energy Efficient Design and construction of residential Buildings”. The implementation of the full-scale Project started in November 2010 and planned for five years until December 2015. The long-term objective of the UNDP\GEF Project “Energy Efficient Design and construction of residential Buildings” is to decrease GHG emissions from new residential buildings by transforming practices and markets in the building sector of Kazakhstan towards more energy-efficient design and construction. The project includes the following four components, each targeting specific barriers and stakeholders: 1. Development and enforcement of energy-efficient codes, standards, and labels for buildings;2. Expanded production and certification of energy-efficient building materials and products;3. Education and outreach to promote energy-efficient building design and technology; 4. Demonstration projects on energy-efficient building design and construction. |

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| **III. Functions / Key Outputs Expected** |
| 1. **Objective of the Mid-Term Evaluation**

This Mid Term Evaluation (MTE) is initiated by the UNDP Kazakhstan Implementing Agency for this project and it aims to provide managers (at the Project Implementation Unit, UNDP Kazakhstan Country Office and UNDP-GEF levels) with strategy and policy options for more effectively and efficiently achieving the project’s expected results and for replicating the results. It also provides the basis for learning and accountability for managers and stakeholders.This evaluation is to be undertaken taking into consideration the GEF Monitoring and Evaluation policy (<http://thegef.org/MonitoringandEvaluation/MEPoliciesProcedures/mepoliciesprocedures.html>) and the UNDP-GEF Monitoring and Evaluation Policy (<http://www.undp.org/gef/05/monitoring/policies.html>).The MTE is intended to identify potential project design problems, assess progress towards the achievement of objective, identify and document lessons learned (including lessons that might improve design and implementation of other UNDP-GEF projects), and to make recommendations regarding specific actions that might be taken to improve the project. It is expected to serve as a mean of validating or filling the gaps in the initial assessment of relevance, effectiveness and efficiency obtained from monitoring. The MTE provides the opportunity to assess early signs of project success or failure and prompt necessary adjustments.The evaluation will play a critical role in the future implementation of the project by providing advice on: (i) how to strengthen the adaptive management and monitoring function of the project; (ii) how to ensure accountability for the achievement of the GEF objective; (iii) how to enhance organizational and development learning; and (iv) how to enable informed decision – making. The evaluation will have to provide to the GEF Secretariat with complete and convincing evidence to support its findings/ratings. The evaluator should prepare specific ratings on specific aspects of the project, as described in the section IV of this Terms of Reference. Particular emphasis should be put on the current project results and the possibility of achieving the objective and outcomes in the established timeframe, taking into consideration the speed, at which the project is proceeding. 1. **Project Overview**

Project OverviewThe UNDP/GEF Project “Energy Efficient Design and construction of residential Buildings” has been implemented since November 2010 and is expected to be completed in December 2015. The project is nationally executed by the National Agency for Construction and Housing Utilities of the Republic of Kazakhstan. The total project budget is $ 32 463 840 (GEF contribution amounts to $ 4 568 500; UNDP - $ 25 000 and the rest from the Government of the Republic of Kazakhstan). The long-term objective of the UNDP\GEF Project “Energy Efficient Design and construction of residential Buildings” is to decrease GHG emissions from new residential buildings by transforming practices and markets in the building sector of Kazakhstan towards more energy-efficient design and construction. The project includes the following four components, each targeting specific barriers and stakeholders: 1. Development and enforcement of energy-efficient codes, standards, and labels for buildings;2. Expanded production and certification of energy-efficient building materials and products;3. Education and outreach to promote energy-efficient building design and technology; 4. Demonstration projects on energy-efficient building design and construction.From the Project start the following activities implemented and results achieved in 2011 - 2012. Outcome 1. Development and enforcement of energy-efficient codes, standards, and labels for buildings.The following main EE Law and EE Building Codes improved and developed by the Project and adopted by National Agency for Construction. 1. Energy Efficiency Law developed with Project contribution (energy labeling, energy audit concepts, EE requirements to new construction and renovation etc.)
2. 7 Secondary EE Laws developed to improve enforcement of EE Building Codes
3. Comprehensive Energy Efficiency Plan for 2012 - 2015
4. Rules on experts attestation and certification procedure
5. Questionnaire on main EE Building Codes for the use during certification process
6. Construction code of RK “Building Heat Insulation”;
7. Construction code of RK “Heating, ventilation and air conditioning”
8. Construction code of RK “Reconstruction, full and minor repairs of residential and public buildings”
9. Methodical recommendation on caring out of measures on energy efficiency in residential buildings
10. Methodology Guidelines for Building Code “Building Heat Insulation” (СН РК 2.04-04-2011)
11. Methodology Guidelines for Building Code “Heating, ventilation and air conditioning” СН РК 4.02-02-2011
12. Catalogue for technical solutions for EE design of residential buildings (2 catalogues)
13. Methodology for Energy Audit of residential buildings
14. Analysis and recommendation to 6 existing normative technical documents (2 CNR (construction norms and rules), 1IBC (International Building Code), 1 GOST and 2 CN (Construction Norms)
15. Several analyses and review of best international practices conducted by the Project on main relevant topics including green construction, enforcement, EE labeling, GHG monitoring etc.)

Outcome 2 Expanded production and certification of energy-efficient building materials and productsThere has been executed the analysis of the international practices of energy efficiency labeling, standardization and certification in the area construction, building materials, products and constructions. Based on the analysis of international and national systems of technical regulation (standardization, certification and metrological supply) of building materials, goods and elements project selected and initiated EE windows for labeling standards development. Outcome 3. Education and outreach to promote energy-efficient building design and technology1. Education course on energy-efficient design of buildings developed by the Kazakh Leading Academy of Construction and Architecture contracted by Project. It was approved by the education board and is to be included to the curriculum of the architectural, construction and engineering universities as optional subject.
2. Support to Energy Efficiency Centres on the basis of Universities in Astana, Kostanay and Pavlodar.
3. Following the initiative of the MINT of the Republic of Kazakhstan and support of the UNDP/GEF Projects on energy efficiency “The Kazakhstan Association of the high-tech, energy-efficient and innovation companies” has been established (OLE “KAHTEIC”), its activities will be directed to the development of energy efficient technologies and industries, implementation of energy efficient technologies, equipment and materials for generation, distribution and consumption of energy and also promotion of the state policy of the accelerated innovation-industrial development of the country.
4. Seminars, conferences, trainings organized by the Project for different targeted groups (designers, constructors, householders, state experts, students, teachers etc.) on regular bases in collaboration with many different partners.
5. Informational outreach through websites (regional and national)

Outcome 4. Demonstration projects on energy-efficient building design and construction.1. The UNDP /GEF Project is implementing pilot construction project in Karaganda city, on Ermekova 9, where Project actively collaborate with the Local Government, designer and construction company and proposed energy efficient measures such as EE windows, heat recovery system for ventilation, that amount to 35% energy consumption decrease. Project covers additional cost of proposed EE measures to the design and construction of this 10 floor residential building which is constructing under the State Construction Program “Employment - 2020”.
2. Pilot renovation project in Karaganda city, Mustafina 26 where project conducted verification of energy audits, proposed EE measures and changed windows. Currently, there are monitoring is organizing.
3. The concept of energy efficiency centres has been elaborated and presented in the Agency based on the international practices with the aim of its further use in the development of financial feasibility study for 3 energy efficiency centres and their conceptual content. The proposed concept reflects the following issues: mission (aims and goals) of energy efficiency centre; principles of operation of the centre, funding sources.
4. **EVALUATION OBJECTIVES**

The MTE is initiated by UNDP Country Office in Kazakhstan in line with the UNDP-GEF M&E guidelines in order to assess the overall project progress, make sure the project is on track to deliver the agreed outcomes, and produce recommendations on any adjustments needed. The purposes of the MTE are:1. To assess overall performance against the project objective and outcomes as set out in the Project Document, project’s Logical Framework, and other related documents;
2. To assess the effectiveness and efficiency of the project;
3. To analyze critically the implementation and management arrangements of the project;
4. To assess the progress to date towards achievement of the outcomes;
5. To review planned strategies and plans for achieving the overall objective of the project within the timeframe;
6. To assess the sustainability of the project’s interventions;
7. To list and document initial lessons concerning project design, implementation and management;
8. To assess project relevance to national priorities;
9. To provide guidance for the future project activities and, if necessary, for the implementation and management arrangements;
10. To provide lessons learned for the future.

In particular, this evaluation will assess progress in establishing the information baseline, and identifying any difficulties in project implementation and their causes, and recommend corrective course of action. Effective action to rectify any identified issues hindering implementation will be a requirement prior to determining whether implementation should proceed.Project performance will be measured based on Project’s Logical Framework Matrix (see Annex 3), which provides clear performance and impact indicators for project implementation along with their corresponding means of verification. Success and failure will be determined in part by monitoring changes in baseline conditions. During the inception period the Logical Framework Matrix has been updated, along with a number of indicators which were revised to render more clarity and rigidity to the system. 1. The evaluation team is expected to work with key project stakeholders, including National implementing Agency for Construction, Ministry of Industry and New Technologies, Technical Universities, JSC Kazcenter ZhKH, Local Government, design and construction companies, State expertise, NGOs, members of the Steering Committee and other key partners.
2. **SCOPE OF THE EVALUATION**

The evaluation will focus on the range of aspects described below. In addition to a descriptive assessment, all criteria marked with (R) should be rated using the following divisions: *Highly Satisfactory, Satisfactory, Marginally Satisfactory, Unsatisfactory*. All ratings given should be properly substantiated: **1. Project concept/design, relevance and strategy** *1.1 Project relevance, country ownership/drivenness (R):* the extent to which the project is suited to local and national development priorities and organizational policies, including changes over time as well as the extent the activities contribute towards attainment of global environmental benefits:1. Are project outcomes contributing to national development priorities and plans?
2. How and why project outcomes and strategies contribute to the achievement of the expected results?
3. Examine their relevance and whether they provide the most effective way towards results.
4. Do the outcomes developed during the inception phase still represent the best project strategy for achieving the project objectives (in light of updated underlying factors)? *Consider alternatives.*

*1.2 Preparation and readiness:* 1. Are the project’s objective and components clear, practicable and feasible within its timeframe?
2. Were the capacities of executing institution – Agency for Construction and Housing Utilities and other counterparts properly considered when the project was designed?
3. Were lessons from other relevant projects properly incorporated in the project design?
4. Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to project approval?
5. Were counterpart resources (funding, staff, and facilities), enabling legislation, and adequate project management arrangements in place at project entry?

*1.3 Stakeholder involvement (R):*1. Did the project involve the relevant stakeholders through information-sharing, consultation and by seeking their participation in the project’s design?
2. Did the project consult and make use of the skills, experience and knowledge of the appropriate government entities, NGOs, community groups, private sector, local governments and academic institutions in the design of project activities?

*1.4 Underlying factors/assumptions:*1. Assess the underlying factors beyond the project’s immediate control that influence outcomes and results. Consider the appropriateness and effectiveness of the project’s management strategies for these factors.
2. Re-test the assumptions made by the project management and identify new assumptions that should be made.
3. Assess the effect of any incorrect assumptions made by the project.

*1.5 Management arrangements (R):*1. Were the project roles properly assigned during the project design?
2. Are the project roles in line with UNDP and GEF programming guidelines?
3. Can the management arrangement model suggested by the project be considered as an optimum model? If no, please come up with suggestions and recommendations.

*1.6 Project budget and duration (R):* 1. Assess if the project budget and duration were planned in a cost-effective way?

*1.7 Design of project M&E system (R):*1. Examine whether or not the project has a sound M&E plan to monitor results and track progress towards achieving project objectives.
2. Examine whether or not the M&E plan includes a baseline (including data, methodology, etc.), SMART indicators and data analysis systems, and evaluation studies at specific times to assess results and adequate funding for M&E activities.
3. Examine whether or not the time frame for various M&E activities and standards for outputs are specified.

*1.8 Sustainability:* 1. Assess if project sustainability strategy was developed during the project design?
2. Assess the relevance of project sustainability strategy

**2. Project implementation** *2.1 Project’s adaptive management (R):*1. Monitoring systems
	* Assess the monitoring tools currently being used:
* Do they provide the necessary information?
* Do they involve key partners?
* Are they efficient?
* Are additional tools required?
	+ Assess the use of the logical framework as a management tool during implementation and any changes made to it.
	+ What impact did the retro-fitting of impact indicators have on project management, if such?
	+ Assess whether or not M&E system facilitates timely tracking of progress towards project’s objectives by collecting information on chosen indicators continually; annual project reports are complete, accurate and with well justified ratings; the information provided by the M&E system is used to improve project performance and to adapt to changing needs.
1. Risk Management
	* Validate whether the risks identified in the project document and PIRs are the most important and whether the risk ratings applied are appropriate. If not, explain why.
	* Describe any additional risks identified and suggest risk ratings and possible risk management strategies to be adopted.
	* Assess the project’s risk identification and management systems:
* Is the UNDP-GEF Risk Management System[[9]](#footnote-9) appropriately applied?
* How can the UNDP-GEF Risk Management System be used to strengthen the project management?
1. Work Planning
	* Assess the use of routinely updated work plans.
	* Assess the use of electronic information technologies to support implementation, participation and monitoring, as well as other project activities.
	* Are work planning processes result-based[[10]](#footnote-10)? If not, suggest ways to re-orientate work planning.
2. Financial management
	* Consider the financial management of the project, with specific reference to the cost-effectiveness of interventions. (Cost-effectiveness: the extent to which results have been delivered with the least costly resources possible.). Any irregularities must be noted.
	* Is there due diligence in the management of funds and financial audits?
	* Did promised co-financing materialize (please fill out the co-financing form provided in Annex 1)?
3. Reporting
	* Assess how adaptive management changes have been reported by the project management.
	* Assess how lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners.
4. Delays
	* Assess if there were delays in project implementation and what were the reasons.
	* Did the delay affect the achievement of project’s outcomes and/or sustainability, and if it did then in what ways and through what causal linkages?

2.2 *Contribution of Implementing and Executing Agencies*:* Assess the role of UNDP and the Agency for Construction and Housing Utilities of the Republic of Kazakhstan against the requirements set out in the UNDP Programme and Operations Policies and Procedures[[11]](#footnote-11). Consider:
* Field visits
* Participation in Project Board meetings
* Project reviews, PIR preparation and follow-up
* GEF guidance
* Operational support
* Consider the new UNDP requirements outlined in the UNDP Programme and Operations Policies and Procedures, especially the Project Assurance role, and ensure they are incorporated into the project’s adaptive management framework.
* Assess the contribution to the project from UNDP and the Agency for Construction and Housing Utilities of the Republic of Kazakhstan in terms of “soft” assistance (i.e. policy advice & dialogue, advocacy, and coordination).
* Suggest measures to strengthen UNDP’s soft assistance to the project management.

2.3 *Stakeholder participation, partnership strategy (R)*: * Assess whether or not and how local stakeholders participate in project management and decision-making. Include an analysis of the strengths and weaknesses of the approach adopted by the project and suggestions for improvement if necessary.
* Does the project consult and make use of the skills, experience and knowledge of the appropriate government entities, NGOs, community groups, private sector, local governments and academic institutions in the implementation and evaluation of project activities?
* Consider the dissemination of project information to partners and stakeholders and if necessary suggest more appropriate mechanisms.
* Identify opportunities for stronger partnerships.

2.4 *Sustainability*:* Assess the extent to which the benefits of the project will continue, within or outside the project scope, after it has come to an end; commitment of the government to support the initiative beyond the project.
* The evaluators may look at factors such as mainstreaming project objectives into the broader development policies and sectoral plans and economies.
* The sustainability assessment will give special attention to analysis of the risks that are likely to affect the persistence of project outcomes. The sustainability assessment should also explain how other important contextual factors that are not outcomes of the project will affect sustainability. The following four dimensions or aspects of sustainability will be addressed:
	+ *Financial resources:* Are there any financial risks that may jeopardize sustenance of project outcomes? What is the likelihood of financial and economic resources not being available once the GEF assistance ends (resources can be from multiple sources, such as the public and private sectors, income generating activities, and trends that may indicate that it is likely that in future there will be adequate financial resources for sustaining project’s outcomes)?
	+ *Socio-political:* Are there any social or political risks that may jeopardize sustenance of project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained? Do the various key stakeholders see that it is in their interest that the project benefits continue to flow? Is there sufficient public / stakeholder awareness in support of the long term objectives of the project?
	+ *Institutional framework and governance:* Do the legal frameworks, policies and governance structures and processes pose risks that may jeopardize sustenance of project benefits? While assessing this parameter, also consider if the required systems for accountability and transparency, and the required technical know-how are in place.
	+ *Environmental:* Are there any environmental risks that may jeopardize sustenance of project outcomes? The terminal evaluation should assess whether certain activities will pose a threat to the sustainability of the project outcomes.
* On each of the dimensions of sustainability of the project outcomes will be rated as follows:
	+ *Likely* (L): There are no or negligible risks that affect this dimension of sustainability.
	+ *Moderately Likely* (ML): There are moderate risks that affect this dimension of sustainability.
	+ *Moderately Unlikely* (MU): There are significant risks that affect this dimension of sustainability
	+ *Unlikely* (U): There are severe risks that affect this dimension of sustainability.

**3. Project results (outputs, outcomes and objectives)** 3.1 *Progress towards achievement of intended outputs, outcomes/measurement of change*: Progress towards results should be based on a comparison of indicators before and after (so far) the project intervention, e.g. by comparing current conditions for energy efficiency in buildings (legal and regulatory frameworks, results of energy efficiency and energy conservation activities, etc.) to the baseline ones.The evaluation should specifically look into:* Adequacy of Energy Efficiency Law of the Republic of Kazakhstan and proposed by the Project EE measures for creation of an enabling environment for energy efficiency in residential buildings as well as secondary EE Laws developed to improve enforcement of EE Law and Building Codes(energy labeling, energy audit concepts, EE requirements to new construction and renovation etc.)
* Adequacy of the level and proposed approach of developed by the Project Energy Efficiency Building Codes developed within the framework of this project:

1) Construction code of RK “Building Heat Insulation”; 2) Construction code of RK “Heating, ventilation and air conditioning” 3) Construction code of RK “Reconstruction, full and minor repairs of residential and public buildings” 4) Methodical recommendation on caring out of measures on energy efficiency in residential buildings 5) Methodology Guidelines for Building Code “Building Heat Insulation” (СН РК 2.04-04-2011)6) Methodology Guidelines for Building Code “Heating, ventilation and air conditioning” СН РК 4.02-02-20117) Catalogue for technical solutions for EE design of residential buildings (2 catalogues)8) Methodology for Energy Audit of residential buildings * Adequacy and effectiveness of proposed questionnaire on main EE Building Codes for the use during certification process
* Verification of compliance of the following pilot project designs for:

 1) EE pilot construction project in Karaganda city, on Ermekova 9, where Project actively collaborates with the Local Government, designer and construction company and proposed energy efficient measures such as EE windows, heat recovery system for ventilation, that amount to 35% energy consumption decrease. Project covers additional cost of proposed EE measures to the design and construction of this 10 floor residential building which is constructing under the State Construction Program “Employment - 2020”.2) Pilot renovation project in Karaganda city, Mustafina 26 where project conducted verification of energy audits, proposed EE measures and changed windows. Currently, there are monitoring is organizing.* + Adequacy and effectiveness of the developed Educational Module on Energy Efficiency in Buildings for the following groups:
* Adequacy and effectiveness of the developed project awareness raising and outreach products on energy efficiency in public buildings:
* Web-site of regional EE projects [www.beeca.net](http://www.beeca.net); [www.eep.kz](http://www.eep.kz)
* Video clips on energy efficiency in buildings (including pilot project)
* Promo-materials: calendars, t-shirts, publications, folders, note-pads, bags, fliers, etc.

To determine the level of achievement of project outcomes and objectives following three criteria should be assessed:* *Relevance*: Are the project’s outcomes consistent with the GEF focal areas/operational program strategies and country priorities?
* *Effectiveness*: Are the actual project outcomes corresponds with the original or modified project objectives? In case the original or modified expected results are merely outputs/inputs then the evaluators should assess if there are any real outcomes of the project and if yes then whether these are commensurate with the realistic expectations from such a project.
* *Efficiency*: Is the project cost effective? Is the project the least cost option? Is the project implementation delayed and if it is, then does that affect cost-effectiveness? Wherever possible, the evaluator should also compare the cost-time vs. outcomes relationship of the project with that of other similar projects.
* *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.
* Outcomes should be rated as follows for relevance, effectiveness, efficiency:
* *Highly Satisfactory (HS):* The project has no shortcomings in the achievement of its objectives.
* *Satisfactory (S):* The project has minor shortcomings in the achievement of its objectives.
* *Moderately Satisfactory (MS):* The project has moderate shortcomings in the achievement of its objectives.
* *Moderately Unsatisfactory (MU)*: The project has significant shortcomings in the achievement of its objectives.
* *Unsatisfactory (U):* The project has major shortcomings in the achievement of its objectives.
* *Highly Unsatisfactory (HU):* The project has severe shortcomings in the achievement of its objectives.
1. **EVALUATION DELIVERABLES**

The core product of the Mid-Term Evaluation will be the Mid-Term Evaluation Report that includes:* Findings with the rating on performance;
* Conclusions drawn;
* Recommendations for improving delivery of project outputs;
* Lessons learned concerning best and worst practices in producing outputs;
* A rating on progress towards outputs.

The report is proposed to adhere to the following basic structure:1. Executive summary
* Brief description of project
* Context and purpose of the evaluation
* Main conclusions, recommendations and lessons learned
1. Introduction
* Project background
* Purpose of the evaluation
* Key issues to be addressed
* The outputs of the evaluation and how will they be used
* Methodology of the evaluation
* Structure of the evaluation
1. The project and its development context
* Project start and its duration
* Implementation status
* Problems that the project seeks to address
* Immediate and development objectives of the project
* Main stakeholders
* Results expected
* Analysis of the situation with regard to outcomes, outputs and partnership strategy
1. Findings and Conclusions

 4.1 Project formulation* + - Project relevance
		- Implementation approach
		- Country ownership/Driveness
		- Stakeholder participation
		- Replication approach
		- Cost-effectiveness
		- Sustainability
		- Linkages between project and other interventions within the sector
		- Management arrangements

 4.2 Project implementation* + - Financial management
		- Monitoring and evaluation
		- Management and coordination
		- Identification and management of risks (adaptive management)

 4.3 Results* + - Attainment of outputs, outcomes and objectives
		- Project Impact
		- Prospects of sustainability
1. Conclusions and recommendations
* Findings
* Corrective actions for the design, duration, implementation, monitoring and evaluation of the project
* Actions to strengthen or reinforce benefits from the project
* Proposals for future directions underlining main objectives
* Suggestions for strengthening ownership, management of potential risks
1. Lessons learned
* Good practices and lessons learned in addressing issues relating to effectiveness, efficiency and relevance
1. Annexes
* Evaluation TOR
* Itinerary
* List of persons interviewed
* Summary of field visits
* List of documents reviewed
* Questionnaire used (if any) and summary of results
* Comments by stakeholders (only in case of discrepancies with evaluation findings and conclusions)

The expected length of the report is around 50 pages in total. The first draft of the report is expected to be submitted to the UNDP Country Office in Kazakhstan within approximately **2 weeks** (will be agreed upon in the beginning of the consultancy assignment) of the in-country mission for subsequent circulation to the key project stakeholders for comments. Any discrepancies between the interpretations and findings of the evaluator and the key project stakeholders will be explained in an annex to the final report.1. **METHODOLOGY**

Evaluators should seek guidance for their work in the following materials, which could be found at (www.undp.org/gef):* UNDP Handbook on Monitoring and Evaluation for Results
* UNDP/GEF M&E Resource Kit

It is recommended that the evaluation methodology include the following:* Documentation review (desk study), to include Project Document, Inception Report, GEF Project Implementation Reviews, Minutes of the Project Board meetings, GEF quarterly project updates;
* Interviews with Project Management Unit and key project stakeholders, including UNDP Country Office in Kazakhstan, Agency for Construction and Housing Utilities of the Republic of Kazakhstan, Ministry of Industry and new Technologies, regional and local governments of Karaganda, Architecture, Construction and other technical Universities, Kazcenter ZhKH, construction companies, design institutes, NGOs, and other stakeholders, as necessary;
* In-country field visits, if necessary.

The evaluation must provide evidence-based information that is credible, reliable and useful. It must be easily understood by project partners and applicable to the remaining period of the project. 1. **EVALUATION TEAM**

The evaluation will be undertaken by a team composed of an *International Consultant (Team Leader)* and a *National Consultant*. They will receive the support of UNDP Country Office in Kazakhstan and Project Management Team, and will be assisted by a translator/interpreter (when needed). The evaluators selected should not have participated in the project preparation and/or implementation and should not have conflict of interest with project related activities. The *International Consultant - Team Leader* will be responsible to deliver the expected output of the mission. Specifically, he/she will perform the following tasks:* Lead and manage the evaluation mission;
* Design the detailed evaluation methodology and plan;
* Conduct desk-reviews, interviews and site-visits in order to obtain objective and verifiable data to substantive evaluation ratings and assessments, including:
	+ Assessment of adequacy of the level and proposed modes of enforcement of the regulatory and programmatic documents developed within the project for creation of an enabling environment for energy efficiency in the state sector;
* Draft the evaluation report and share with the key stakeholders for comments;
* Finalize the evaluation report based on the inputs from key stakeholders.
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| **IV. Deliverables and timeframe** |
| The principal responsibility for managing this evaluation lies with UNDP Country Office in Kazakhstan. It will be responsible for liaising with the project team to set up the stakeholder interviews, arrange the field visits, coordinate with the Government. These Terms of Reference follow the UNDP-GEF policies and procedures, and together with the final agenda will be agreed upon by the UNDP-GEF Regional Coordinating Unit, UNDP Country Office in Kazakhstan and the Agency for Construction and Housing Utilities of the Republic of Kazakhstan as well as the national Operational Focal Point to the GEF. These four parties will receive a draft of the final evaluation report and provide comments on it prior to its completion.The evaluation mission in Kazakhstan will take place in April 2012. The total duration of the assignment will be 25 working days during the calendar period of 1.5 months Presentation should be done in Power Point.• Reports to the Project Manager and relevant staff at UNDP country office in Kazakhstan. • Ensures timely and quality execution of the Terms of Reference • Ensures unconditional carrying out of requirements of the ContractPrior to approval of the final report, a draft version shall be circulated for comments to government counterparts and project management. UNDP and the stakeholders will submit comments and suggestions within 7 working days (within the calendar period agreed) after receiving the draft. All comments and suggestions (if any) shall be addressed and the report will be considered as the final deliverable as soon it is accepted by UNDP.The report should be submitted to UNDP Country Office in Kazakhstan (to the attention of Mr. Stanislav Kim, e-mail address: stanislav.kim@undp.org mailing address: 26, Bukey Khan Str., 010000, Astana Kazakhstan, tel. (+7-7172) 592550 |
| **V. Payment Conditions** |
| This is a lump sum contract that should include costs of consultancy and international travel costs (in-country travel cost will be covered by the project), accommodation and meal (DSA or per diems in Kazakhstan (Astana, Karaganda, Almaty)) and visas costs required to produce the above deliverables. Payment will be released in 2 following installments according to activities table below:

|  |  |  |
| --- | --- | --- |
| **Activity** | **Timeframes and responsibilities**  | **Amount****(per cent)** |
| Desk review | 5 days – international expert, 3 days – national expert | 50% |
| Briefing of evaluation consultants | 1 day by the project team and UNDP  |
| Field visits, interviews, questionnaire, debriefing | 6 day – international expert, (6 days – national expert) |
| Preparation of draft report, validation ofpreliminary findings with stakeholders throughcirculation of initial reports for comments,meetings and other types of feedbackmechanisms | 8 days – international expert 6 days - national expert  | 50% |
| Preparation of final evaluation report (including comments) | 5 days - international expert, (3 days - national expert) |

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| **VI. Recruitment Qualifications** |
| **Knowledge and skills:** * University degree in the field of economics, energy management, environmental policy or in related professions;
* Recent experience with result-based management evaluation methodologies;
* Experience applying participatory monitoring approaches;
* Experience applying SMART indicators and reconstructing or validating baseline scenarios;
* Recent knowledge of the GEF Monitoring and Evaluation Policy;
* Recent knowledge of UNDP’s results-based evaluation policies and procedures;
* Competence in Adaptive Management, as applied to climate change and energy resource management projects;
* Recognized expertise in the management of energy for sustainable use;
* Familiarity with energy sector and renewable energy policies and regulation in Kazakhstan;
* Work experience in relevant areas for at least 10 years;
* Project evaluation experiences within United Nations system will be considered an asset;
* Excellent English, communication skills, knowledge of Russian would be an asset
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| UNDP is an equal opportunity employer. Qualified female candidates, people with disabilities, and minorities are highly encouraged to apply. UNDP Gender Balance in Management Policy promotes achievement of gender balance among its staff at all levels. |

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| **VII. Signatures - Post Description Certification** |
| Incumbent *(if applicable)*Name Signature Date |
| Project Manager**Bayan Abylkairova**Name / Title Signature Date |
| Head of Programme Unit**Mr. Stanislav Kim, EE Unit**Name / Title Signature Date |

# Annex 1. GEF terminology and project review criteria

**Implementation Approach** includes an analysis of the project’s logical framework, adaptation to changing conditions (adaptive management), partnerships in implementation arrangements, changes in project design, and overall project management.

Some elements of an effective implementation approach may include:

* The logical framework used during implementation as a management and M&E tool
* Effective partnerships arrangements established for implementation of the project with relevant stakeholders involved in the country/region
* Lessons from other relevant projects (e.g., same focal area) incorporated into project implementation
* Feedback from M&E activities used for adaptive management.

**Country Ownership/Driveness** is the relevance of the project to national development and environmental agendas, recipient country commitment, and regional and international agreements where applicable. Project Concept has its origin within the national sectoral and development plans

Some elements of effective country ownership/driveness may include:

* Project Concept has its origin within the national sectoral and development plans
* Outcomes (or potential outcomes) from the project have been incorporated into the national sectoral and development plans
* Relevant country representatives (e.g., governmental official, civil society, etc.) are actively involved in project identification, planning and/or implementation
* The recipient government has maintained financial commitment to the project
* The government has approved policies and/or modified regulatory frameworksin line with the project’s objectives

For projects whose main focus and actors are in the private-sector rather than public-sector (e.g., IFC projects), elements of effective country ownership/driveness that demonstrate the interest and commitment of the local private sector to the project may include:

* The number of companies that participated in the project by: receiving technical assistance, applying for financing, attending dissemination events, adopting environmental standards promoted by the project, etc.
* Amount contributed by participating companies to achieve the environmental benefits promoted by the project, including: equity invested, guarantees provided, co-funding of project activities, in-kind contributions, etc.
* Project’s collaboration with industry associations

**Stakeholder Participation/Public Involvement** consists of three related, and often overlapping processes: information dissemination, consultation, and “stakeholder” participation. Stakeholders are the individuals, groups, institutions, or other bodies thathave an interest orstake in the outcome of the GEF-financed project. The term also applies to those potentially adversely affected by a project.

Examples of effective public involvement include:

Information dissemination

* Implementation of appropriate outreach/public awareness campaigns

Consultation and stakeholder participation

* Consulting and making use of the skills, experiences and knowledge of NGOs, community and local groups, the private and public sectors, and academic institutions in the design, implementation, and evaluation of project activities

Stakeholder participation

* Project institutional networks well placed within the overall national or community organizational structures, for example, by building on the local decision making structures, incorporating local knowledge, and devolving project management responsibilities to the local organizations or communities as the project approaches closure
* Building partnerships among different project stakeholders
* Fulfillment of commitments to local stakeholders and stakeholders considered to be adequately involved.

**Sustainability** measures the extent to which benefits continue, within or outside the project domain, from a particular project or program after GEF assistance/external assistance has come to an end. Relevant factors to improve the sustainability of project outcomes include:

* Development and implementation of a sustainability strategy;
* Establishment of the financial and economic instruments and mechanisms to ensure the ongoing flow of benefits once the GEF assistance ends (from the public and private sectors, income generating activities, and market transformations to promote the project’s objectives);
* Development of suitable organizational arrangements by public and/or private sector;
* Development of policy and regulatory frameworks that further the project objectives;
* Incorporation of environmental and ecological factors affecting future flow of benefits;
* Development of appropriate institutional capacity (systems, structures, staff, expertise, etc.);
* Identification and involvement of champions (i.e. individuals in government and civil society who can promote sustainability of project outcomes);
* Achieving social sustainability, for example, by mainstreaming project activities into the economy or community production activities;
* Achieving stakeholders’ consensus regarding courses of action on project activities.

**Replication approach**, in the context of GEF projects, is defined as lessons and experiences coming out of the project that are replicated or scaled up in the design and implementation of other projects. Replication can have two aspects, replication proper (lessons and experiences are replicated in different geographic area) or scaling up (lessons and experiences are replicated within the same geographic area but funded by other sources). Examples of replication approaches include:

* Knowledge transfer (i.e., dissemination of lessons through project result documents, training workshops, information exchange, a national and regional forum, etc);
* Expansion of demonstration projects;
* Capacity building and training of individuals, and institutions to expand the project’s achievements in the country or other regions;
* Use of project-trained individuals, institutions or companies to replicate the project’s outcomes in other regions.

**Financial Planning** includes actual project cost by activity, financial management (including disbursement issues), and co-financing. If a financial audit has been conducted the major findings should be presented in the TE.

Effective financial plans include:

* Identification of potential sources of co-financing as well as leveraged and associated financing*[[12]](#footnote-12)*;
* Strong financial controls, including reporting, and planning that allow the project management to make informed decisions regarding the budget at any time, allows for a proper and timely flow of funds, and for the payment of satisfactory project deliverables;
* Due diligence in the management of funds and financial audits.

*Co-financing includes:* grants, loans/concessional (compared to market rate), credits, equity investments, in-kind support, other contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector and beneficiaries. Please refer to Council documents on co-financing for definitions, such as GEF/C.20/6. The following page presents a table to be used for reporting co-financing.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Co-financing(type/source) | UNDP own financing (mill. US$) | Government(mill. US$) | Partner Agency(mill. US$) | Total(mill. US$) |
| Planned | Actual  | Planned | Actual | Planned | Actual | Actual | Actual |
| Grants  |  |  |  |  |  |  |  |  |
| Loans/Concessions  |  |  |  |  |  |  |  |  |
| * In-kind support
 |  |  |  |  |  |  |  |  |
| * Other
 |  |  |  |  |  |  |  |  |
| Totals |  |  |  |  |  |  |  |  |

*Leveraged resources* are additional resources—beyond those committed to the project itself at the time of approval—that are mobilized later as a direct result of the project. Leveraged resources can be financial or in-kind and they may be from other donors, NGO’s, foundations, governments, communities or the private sector. Please briefly describe the resources the project has leveraged since inception and indicate how these resources are contributing to the project’s ultimate objective.

**Cost-effectiveness** assesses the achievement of the environmental and developmental objectives as well as the project’s outputs in relation to the inputs, costs, and implementing time. It also examines the project’s compliance with the application of the incremental cost concept. Cost-effective factors include:

* Compliance with the incremental cost criteria (e.g. GEF funds are used to finance a component of a project that would not have taken place without GEF funding.) and securing co-funding and associated funding;
* The project completed the planned activities and met or exceeded the expected outcomes in terms of achievement of Global Environmental and Development Objectives according to schedule, and as cost-effective as initially planned;
* The project used either a benchmark approach or a comparison approach (did not exceed the costs levels of similar projects in similar contexts).

**Monitoring & Evaluation:** Monitoring is the periodic oversight of a process, or the implementation of an activity, which seeks to establish the extent to which inputs, work schedules, other required actions and outputs are proceeding according to plan, so that timely action can be taken to correct the deficiencies detected. Evaluation is a process by which program inputs, activities and results are analyzed and judged explicitly against benchmarks or baseline conditions using performance indicators. This will allow project managers and planners to make decisions based on the evidence of information on the project implementation stage, performance indicators, level of funding still available, etc, building on the project’s logical framework.

Monitoring and Evaluation includes activities to measure the project’s achievements such as identification of performance indicators, measurement procedures, and determination of baseline conditions. Projects are required to implement plans for monitoring and evaluation with adequate funding and appropriate staff and include activities such as description of data sources and methods for data collection, collection of baseline data, and stakeholder participation. Given the long-term nature of many GEF projects, projects are also encouraged to include long-term monitoring plans that are sustainable after project completion.

**annex 2. List of documents to be reviewed by the evaluators**

**General documentation**

* UNDP Programme and Operations Policies and Procedures
* UNDP Handbook for Monitoring and Evaluating for Results
* GEF Monitoring and Evaluation Policy
* GEF focal area strategic program objectives

**Project documentation**

* GEF approved project document and Request for CEO Endorsement
* Project Inception Report
* Annual work plans
* Annual Project Reports
* Project Implementation Review
* CDR
* Quarterly Reports
* Project Steering Committee Meeting minutes

**Main documentation produced by the project**

1. Energy Efficiency Law of the Republic of Kazakhstan
2. 3 secondary EE Laws developed to improve enforcement of EE Law and Building Codes
3. Building code of RK “Building Heat Insulation”;
4. Building code of RK “Heating, ventilation and air conditioning”
5. Building code of RK “Reconstruction, full and minor repairs of residential and public buildings”
6. Methodical recommendation on caring out of measures on energy efficiency in residential buildings
7. Methodology Guidelines for Building Code “Building Heat Insulation” (СН РК 2.04-04-2011)
8. Methodology Guidelines for Building Code “Heating, ventilation and air conditioning” СН РК 4.02-02-2011
9. Catalogue for technical solutions for EE design of residential buildings (2 catalogues)
10. Methodology for Energy Audit of residential buildings
11. Design of EE pilot construction project in Karaganda city, on Ermekova 9,
12. Materials on Pilot renovation project in Karaganda city, Mustafina 26
13. Educational Module on Energy Efficiency in Buildings for the following groups:
14. Web-site of regional EE projects www.beeca.net;
15. Video clips on energy efficiency in buildings (including pilot project)
16. Promo-materials: calendars, t-shirts, publications, folders, note-pads, bags, fliers, etc.
17. Main expert reports and materials and legislation

**Annex 3 Logical Framework**

**Strategic Results Framework**

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| --- | --- |
| **Project strategy** | **Objectively Verifiable Indicators** |
| **Goal** | **Increase energy efficiency in new and renovated residential buildings in Kazakhstan, thereby reducing greenhouse gas emissions** |
|  | **Indicators** | **Baseline** | **Target** | **Means of Verification** | **Important Assumptions** |
| Project ObjectivesIncrease energy efficiency in new and renovated residential buildingsReduce GHG emissions associated with residential energy use | Average thermal energy consumption for space heating in new and renovated buildings | Average thermal energy consumption for space heating: 140 kJ/m2.°C.day for existing building stock, and 100 kJ/m2.°C.day for new and renovated buildings complying with the current code | Average thermal energy consumption for space heating reduced to 85 kJ/m2.°C.day for new and renovated buildings | Mandatory code requirements for thermal performance; national statistics; quantitative evaluation conducted by project, including selective review and analysis of building designs, as well as selective verification of actual construction and operating performance.  | Construction volumes are taken from official national projections 2010 through 2014; volume in 2015 follows the same linear trend projected for 2010-2014.Savings shown here are only from thermal energy consumption for heating, the main focus of the project. (Other end uses fall into separate existing projects, and/or have a much smaller share of residential energy consumption than heating.) If the project does achieve any reductions in non-heating end uses, project results would be magnified, but probably not by a large proportion. |
| CO2 emissions from energy use in new and renovated buildings | 25.5 million tonnes of CO2 emitted during 2010-2105 by buildings newly built or renovated during this period186 million tonnes of CO2 emitted from energy use in these buildings over a 25-year lifetimeContinuation of this consumption trend past project period | 22.5 million tonnes of CO2 emitted during 2010-2015 by buildings newly built or renovated during this period (3 million tonnes less than baseline)164 million tonnes of CO2 emitted from energy use in these buildings over a 25-year lifetime (22 million tonnes less than baseline)Continuation of this trend of reduced consumption past project period, with magnified cumulative effects |
| OUTCOME 1: Improved enforcement and implementation of mandatory building energy codes and rating systemOutput 1.1Streamlined and strengthened building energy code enforcement leads to universal compliance with existing codes | Rates of compliance with applicable energy codes | Baseline compliance rate has not been formally documented; various national experts state that noncompliance is widespread at the construction stage | Increasing observance of existing codes, up to universal complianceDocumentation and statistical verification of universal compliance by new buildings, starting in 2012, with whole-building energy consumption targets of 2004 thermal-performance code, supported by field inspection and measurements as well as design data.  | Rates of code compliance, documented in official withholding and issuance of permits, and supported by selective review of building plans and field verification of construction and actual performance | Current code compliance procedures are deficient; enhanced procedures and training will close loopholes and improve complianceSelective field verification is representative of national trends |
| Output 1.2New voluntary national and/or regional standards for energy efficiency and "green buildings" lead to implementation of EE beyond existing code requirements | Adoption and implementation of standards, with verification procedureEnergy performance of buildings complying with these standardsNumber of buildings complying with these standards | No voluntary standards for energy performance beyond existing code requirements exist in Kazakhstan. | Officially-recognized "green-building" standard embodying super-efficient energy performance across various end usesImplementation of this standard on a voluntary basis by private developers and/or regional governments by the end of the fourth project year | Published standardsRecords from implementing agencies of buildings certified to comply with standards | A meaningful proportion of owners, designers, and contractors will want to employ these standards |
| Output 1.3Adopted revisions to national building energy codes and associated official documents lead to more effective implementation and incremental savings | Adoption and implementation of new mandatory requirementsNew required levels of energy performance | Existing national thermal-performance code, adopted in 2004, sets maximum allowed energy consumption for heating between 135 and 72 kJ/m2.°C.day for new and renovated buildings, depending on building height (estimated average of 100 kJ/m2.°C.day). This code is less stringent than progressive codes in Europe. Revisions are planned by the end of 2009, but it is not clear to what extent required consumption levels will be reduced, if at all. | Implementation of new mandatory thermal-performance requirements in national code, reducing allowed energy consumption for heating by 15 percent, to an estimated average of 85 kJ/m2.°C.day.  | Published code requirements | Government agencies will have collective political will to adopt and implement more stringent requirements, despite probable objections from some stakeholders, based on perceptions of increased initial compliance costs. This assumption carries considerable uncertainty. See discussion of project risks above. |
| Output 1.4Rating and labeling system for EE in buildings provides clear information to market stakeholders, as well as a technical basis for financial incentives, leading to increased market demand for efficient buildings | Adoption of rating and labeling systemCreation of incentivesNumber and fraction of buildings rated and labeledNumber and size of incentive awardsRecognition of system by real-estate stakeholders | Energy Passport rating system for buildings is established only on a recommendatory basis by the 2004 code. In practice, this rating system and associated building labels are not being applied. | Energy Passport rating and labeling system established and applied widely to new and existing buildings, first in selected regions and ultimately expanding to a mandatory nationwide basis. | Publication of rating and labeling system procedures, including associated incentivesRecords from implementing agencies of ratings and labels applied to buildingsRecords from implementing agencies of delivered incentives Interviews and survey on public recognition of labeling system | Implementing agencies can sufficiently staff and effectively apply rating and labeling systemGovernment agencies have sufficient political will to adopt incentives |
| Output 1.5GHG monitoring and accounting system supports effective program evaluation and helps shape future national priorities for energy efficiency in buildings | Creation and official adoption of GHG monitoring and accounting proceduresNumber of regions and buildings participating in this new system | Aggregated energy consumption in buildings can be extrapolated from centralized energy supply statistics, but there exists no methodologically uniform system for compiling data on energy use by individual buildings, nor on the effects of energy efficiency measures | Official procedures for universal GHG monitoring and accounting in buildings is developed and applied, first regionally and then nationally, based on the Energy Passport system. | Records from public agencies | Implementing agencies can sufficiently staff and effectively apply GHG monitoring system |
| OUTCOME 2:Expansion of markets for energy-efficient productsOutput 2.1Technical guidance to producers of energy-efficient building materials and products leads to lower costs, higher quality and performance, and wider availability | Establishment of product standardsCost, quality, performance, and availability of products for which standards are established | Product standards for energy-efficient building components are deficient or absent. | Standards promulgated for selected building product(s) | Published standardsRecords from companies and implementing agencies on products manufactured in accordance with these standards | Manufacturers will deem it cost-effective to change existing production as necessary to conform with standards |
| Output 2.2 Certification and labeling with regard to energy performance leads to greater consumer understanding and demand for efficient materials and/or products | Establishment of product certification and labeling Public recognition of label and response to given information | Certification and labeling of products for energy performance is deficient or absent. | Certification and labeling established based on new standards and/or other enhanced procedures Energy-efficiency labels widely applied to selected products | Published procedures on certification and labelingRecords from implementing agency on application of labels to productsInterviews and survey on public recognition of labeling system | Implementing agency has sufficient staffing and equipment to carry out certification and labeling |
| outcome 3:Education and outreach to promote energy-efficient building design and technologyOutput 3.1 Enhanced training enables building designers to apply international best practices in energy-efficient building design (including integrated building design) and technology | Ability of architects and engineers to design energy-efficient buildings, applying best practices and technologyNumber of buildings built embodying practices and technology introduced via enhanced instruction  | Architects and engineers have high technical capabilities and receive some training on energy efficiency, but lack key information on international best practices, as well as social, economic, and environmental benefits | Enhanced course material on energy efficiency included as a standard part of building-design curricula, delivered to at least 350 building design professionals by the end of the projectInternational study tour completed for 5 to 7 participants | Course listings, curricula, and participant rosters from coursesFollow-up interviews and written feedback | Institutes of higher learning are willing to devote staff time for implementing revised curriculaArchitects and engineers choose to participate in courses in expected numbers |
| Output 3.2 Competitions motivate building designers to pursue energy-efficient design, and raise collective expertise | Ability of architects and engineers to design energy-efficient buildings, applying best practices and technologyNumber of participants and building designs | Motivation to pursue energy-efficient building design is largely driven by market demand. There are no contests or other mechanisms within the design community to stimulate such motivation. | At least two competitions during the project period on energy-efficient building design, attracting 50 participants. | Participant rosters and submitted designs | Architects and engineers choose to participate in expected numbers |
| Output 3.3 Workshops prompt building owners and developers to pursue energy efficiency and effectively market energy performance to buyers and renters | Recognition by owners and developers of the value of energy efficiency in buildingsNumber of workshopsand participants | Owners and developers have little interest in pursuing energy efficiency, instead placing greatest emphasis on appearance, amenity, and cost reduction | Workshops delivered annually starting in the second project year, covering at least three regions by the end of the project period | Course listings and participant rostersFollow-up interviews | Owners and developers choose to participate in expected numbers |
| Output 3.4 Training enables contractors and construction workers to correctly install energy-efficient building materials and components | Ability of contractors and construction workers to correctly install energy-efficient building materials and components | Training for builders on energy-efficient materials and components is absent, except for sporadic offerings by private companies on their own products | Training delivered to builders annually starting in second year of project, covering at least three regions by the end of the project period | Course listings and participant rostersFollow-up interviews | Contractors and construction workers choose to participate in courses, and understand the content sufficiently to apply it in their work |
| OUTCOME 4: Development and demonstration of energy-efficient building designOutput 4.1 Best practices in energy-efficient building design (including integrated building design) and technology cost-effectively demonstrated in two residential buildings | Construction of buildings embodying best practices in energy-efficient building design | New residential buildings in Kazakhstan do not embody international best practices or technology | New energy-efficient residential buildings in two regions, built in the third and fourth years of the project. Energy performance and cost-effectiveness documented in both buildings by end of project. | Official records of code compliance, with associated energy-related documentation; field verification of presence and performance of built features; metering of actual energy consumption, normalized based on weather data; comparison with corresponding data, where available, from buildings without energy-efficient additions, but with otherwise analogous design (control group) | Public funding for planned residential buildings is made available according to budget plans. |
| Output 4.2 Prototype and demonstration building designs serve as models for replication, leading to further energy savings and transformation of design/construction practice | Planning, design, and construction of buildings based on energy-efficient model building designs | Standard building designs are efficient only to the minimum extent required by code, and do not embody international best practices. | Prototype information disseminated to design institutes, regional administrations, and federal Agency for Construction and Residential-Communal AffairsPlans, including budgets and initial building designs, established for 20 buildings based on prototypes and demonstration projects. | Documentation from implementing agencies and partners | Demonstration projects completed on scheduleRelevant designs are cost-effective, energy-efficient, and applicable to other buildings |
| Output 4.3 Cost analysis establishes basis for correcting state-stipulated cost ceilings for qualifying EE government-funded buildings  | Reassessment and revision of state-stipulated cost ceilings for construction for qualifying EE government-funded buildings | Existing cost ceiling is about $400 per m2 of new government-funded housing. There are no exceptions to this ceiling. It is difficult or impossible to design EE buildings under this cost ceiling. | Formal recommendations on raising cost ceiling issued to Agency for Construction and Residential-Communal Affairs and regional administrations Cost ceiling raised, effectively creating a major mechanism for government financing of energy-efficient residential construction | Documentation from implementing agencies and partnersOfficial published policies | Government agencies have sufficient political will and budget flexibility to adopt raised cost ceiling |

**ANNEX 4.**

List of Project Staff (including contact details)– to be provided to selected consultant

List of Project Board Members (including contact details) - to be provided to selected consultant

List of project stakeholders and partners (including contact details) - to be provided to selected consultant

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1. Source: Climate Analysis Indicators Tool (CAIT) Version 6.0. Washington, DC: World Resources Institute, 2009 (2005 data). [↑](#footnote-ref-1)
2. National GHG Inventory 2004. Ministry of Environmental Protection of Kazakhstan: 2006 [↑](#footnote-ref-2)
3. Ministry of Energy and Mineral Resources of Kazakhstan [↑](#footnote-ref-3)
4. This section is based on ProDoc situation analysis [↑](#footnote-ref-4)
5. Source: [www.worldbank.org](http://www.worldbank.org) and [www.cia.gov](http://www.cia.gov). [↑](#footnote-ref-5)
6. State Program for Improvement of Architectural, Planning, and Construction Activity and Development of Production of Construction Materials in the Republic of Kazakhstan 2010-2014. [↑](#footnote-ref-6)
7. Financial audit report and management letter. Audit report of the Project “Energy efficient design and construction in residential sector”(2013). Moore Stephens LLP

Financial audit report and management letter. Audit report of the Project “Energy efficient design and construction in residential sector”(2012). Moore Stephens LLP [↑](#footnote-ref-7)
8. Source: chartsbin.com [↑](#footnote-ref-8)
9. UNDP-GEF’s system is based on the Atlas Risk Module. See the UNDP-GEF Risk Management Strategy resource kit, available as Annex XII at http://www.undp.org/gef/05/monitoring/policies.html [↑](#footnote-ref-9)
10. RBM Support documents are available at http://www.undp.org/eo/methodologies.htm [↑](#footnote-ref-10)
11. Available at <http://content.undp.org/go/userguide/results/project/> [↑](#footnote-ref-11)
12. Please refer to Council documents on co-financing for definitions, such as GEF/C.20/6. [↑](#footnote-ref-12)