MID-TERM EVALUATION REPORT

of the

UNDP/GEF Medium Size Project

Improving Energy Efficiency in Buildings, Kyrgyz Republic

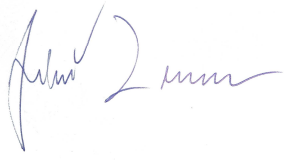
Project ID: 62794

PIMS: 3910

This Mid-Term Evaluation Report was prepared for UNDP CO Kyrgyz Republic by:

Jiří Zeman, International Consultant, Team Leader

Bakytbek Satybekov, Local Consultant



November 2011

Table of content

Evaluation team

This mid-term evaluation was performed by Mr. Jiří Zeman, international consultant and a team leader, and Mr. Bakytbek Satybekov, local consultant.

International consultant:

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 energy efficiency projects for UNDP/GEF.

Contact details: Mr. Jiří Zeman
Murmanská 5
100 00 Praha 10
Czech Republic
Email: jirkazeman@seznam.cz
Tel: +420-776818363

Local consultant:

Bakytbek Satybekov received his degree in engineering from the Kyrgyz Technical University and a MBA diploma from Yokohama National University, Japan. For more than 10 years he has worked at the Ministry of Finance and the State Property Fund. Since 2008 he served as a leading expert and an executive manager in different financial institutions (Vice President in an asset management company, CEO of a pension fund). Recently, he has served as a freelance financial expert in a number of international projects in Kyrgyzstan, including UNDP/GEF projects. Mr. Satybekov has served also as a national evaluator of UNDP/GEF project.

Contact details: Mr. Bakytbek Satybekov
22-12 M.Gvardiya Blvd.
Bishkek
Kyrgyz Republic, 720005
Email: b.satybekov@gmail.com
Tel: +996 (559) 745574

Acknowledgements

The authors of the mid-term evaluation, Mr. Jiří Zeman serving as an international evaluator, and Mr. Bakytbek Satybekov, a local consultant, would like to express their gratitude to all project stakeholders whom they have met and interviewed during the project mid-term evaluation mission in Kyrgyz Republic in October 2011 and who generously provided their views and opinions on project results and impacts.

The authors would like to express their thanks specifically to Ms. Elena Rodina, Project Manager and Ms. Elena Pasportnikova, Administrative Finance Assistant, as well as to all other interviewed parties, who provided all requested information and valuable inputs for the project evaluation during the evaluation mission. The cooperation with the project team, all project partners and UNDP CO in Kyrgyzstan was effective, and the evaluators received all information requested.

Abbreviations and acronyms

APR	Annual Project Review
AWP	Annual Work Plan
CEO	Chief Executive Officer
CO	Country Office
EE	Energy Efficiency
EPB	Energy Performance of Buildings
GEF	Global Environment Facility
Gosstroy	State Agency for Architecture and Construction under the government of the Kyrgyz Republic (SAAC)
IBD	Integrated Building Design
IFC	International Finance Corporation
MTE	Mid-Term Evaluation
NGO	Non-Government Organization
PDF	Project Development Facility
PIMS	Project Information Management System (UNDP GEF)
PIR	Project Implementation Review
PIU	Project Implementation Unit
SNiP	Building Technical Standards and Rules – (SNiP = Stroitelnye Normy i Pravila)
ToR	Terms of Reference
UNDP	United Nations Development Programme

1. Executive summary

Kyrgyzstan is a poor country, energy is heavily underpriced; energy utilities do not have financial resources for necessary infrastructure modernization. During the project implementation period, the country was exposed to violent protests and political instability, the economy suffers from widespread corruption.

The focus of the project "Improving Energy Efficiency in Buildings" on strengthening energy efficiency building code, developing local capacities, building certification system, and monitoring of energy and GHG savings correctly addresses one of few if not the only one feasible low-cost energy efficiency strategy that could be implemented in a sustainable way even in such difficult conditions.

1.1 Brief description of project

The four-year project (2009-2012) with a total UNDP/GEF budget of 950 000 USD has been designed with a project objective to reduce energy consumption and associated GHG emissions in Kyrgyzstan building sector and has defined five project outcomes:

1. Improved energy performance building codes
2. Improved enforcement levels of mandatory energy efficiency building codes
3. Pilot buildings with integrated building design approach constructed
4. Promoted best energy efficiency design and building practices in construction sector
5. Implemented monitoring of building energy consumption and GHG emissions

The investment costs for construction of two pilot schools have been designed to be provided as an in-kind contribution by municipalities in Osh and Bishkek; the budgeted in-kind contribution is 3.182 mil USD.

1.2 Context and purpose of the evaluation

This Mid-Term Evaluation has been performed on a request of UNDP CO in Kyrgyzstan; it is a key element of standard project monitoring and evaluation procedure.

The Mid-Term Evaluation has been performed in October 2011, ie. in the third quarter of the third year of project implementation.

1.3 Main conclusions, recommendations and lessons learned

The overall mid-term project evaluation is Satisfactory.

The project has in principle achieved main targets relevant for mid-term evaluation, some achievements have been delayed, but the project has a good prospect to finish all designed project activities and targets by the planned project termination in December 2012, except for application of the monitoring system to evaluate performance of newly constructed buildings over the whole heating period.

Due to economic decline and public budget cuts, none of the two municipalities was in a position to fulfill its co-financing commitment and did not provide funds for pilot buildings construction. The Project

Implementation Unit has adopted successful pro-active adaptive management and were lucky to secure alternative sources of financing. The project attracted interest of TIKA, the Turkish International Cooperation and Development Administration, which decided to provide full financing for the pilot school in Osh. Instead of the designed pilot school in Bishkek a gymnasium of another school in Ak-Kashat under construction has been redesigned according to the new building code. Construction of both the school in Osh, with a total investment of 6.9 mil USD and the redesigned gymnasium in Ak-Kashat, with investment of 0.157 mil USD provided by the state budget, started in September 2011.

Because of the delayed construction of pilot schools it will not be possible to monitor and evaluate actual energy consumption of constructed schools (the construction is scheduled to be finished by mid 2012) over the whole heating period until the scheduled project termination in December 2012. In order to be able to properly evaluate the actual energy performance of the pilot buildings, the evaluation team recommends extending the termination of the project implementation with original budget till the end of 2013.

Other key recommendations:

- Disseminate locally developed financial management tool/spreadsheet to other UNDP/GEF projects in other countries
- Revise LogFrame and improve quality of LogFrame designs also in other projects in other countries – typically avoid using targets that are not specific enough and targets that are not measurable (clearly distinguish between SMART LogFrame targets and estimated replication potential that covers post-project expected activities)
- Develop effective administration system for building certification (building energy passports and energy labels), including appropriate organizational set-up.
- Develop specific methodology for the monitoring system and implement the monitoring in pilot schools
- Strengthen information dissemination and international/regional cooperation – make the project website a comprehensive source of information on energy efficiency in buildings in Kyrgyzstan, organize additional local and regional workshops/roundtables for sharing already developed local hands-on experience with development of the new EE code and primary legislation, application of the code, and design and construction of EE buildings
- In future projects do not rely on uncertain commitments of third-parties to finance construction of energy efficiency buildings only. Use more legally binding commitments or develop alternative solutions and risk mitigation strategies in Project Document already.

Main lessons learned:

- Even in a difficult and unstable economic and political situation and in case of low energy prices, a low-cost energy efficiency strategy can be implemented with sustainable long-term impact. The focus on energy efficiency and Integrated Building Design in newly constructed buildings is probably the only effective and feasible strategy that can be implemented in a sustainable way with limited incremental costs in such challenging conditions.

- The secret of low-cost energy efficiency strategy in constructing new buildings is to develop smart design, and not just to mechanically implement advanced energy efficiency code, such as design of wall insulation as thick as required. Success of IBD approach is based on effective communication

and involvement of different advanced expertise of leading architects, building engineers and heating/HVAC engineers from the very early stages of building concept design.

- The project, although initiated and developed with substantial international support, has been able to properly address real local needs and to develop strong country ownership. A critical factor was direct involvement of Gosstroy, a key local authority responsible for building construction, which serves as a Project Implementing Partner.

- Excellent results of adaptive management have been achieved and alternative investors have been attracted to finance construction of two pilot buildings when two local municipalities failed to fulfill their co-financing commitment. The lesson learned is that even in difficult economic and political situation, there always is a chance to find a solution.

- Critical success factor is a strong leadership of project management that combines good managerial skills and good knowledge of local conditions, supported by international experts who provided up-to-date international expertise, both from Russia and CIS region, and from western countries.

- International experts need to have both an advanced up-to-date international expertise and to have a "feeling" for and to understand in detail local conditions and technical knowledge of local professionals in order to be able to properly address their actual needs.

- An important lesson learned worth to replicate across all UNDP/GEF projects in other countries is the use of a simple, locally developed financial management tool/spreadsheet for effective daily financial management and control.

2. Introduction

2.1 Project background

The Kyrgyz Republic is a poor, mountainous country with a dominant agricultural sector (27% of GDP, source: www.gfmag.com), but it is rich in water and several mineral resources, including gold. Electricity is produced locally from hydro power, up to some 10% of produced electricity is seasonally exported; natural gas, oil and majority of coal is imported. Electricity supply faces frequent outages and is planned to be rationed (ie. interrupted) in the winter period.

According to the World Bank, Kyrgyz Republic with its GDP per capita in 2010 of 860 USD ranks among the poorest countries in the Central Asia.

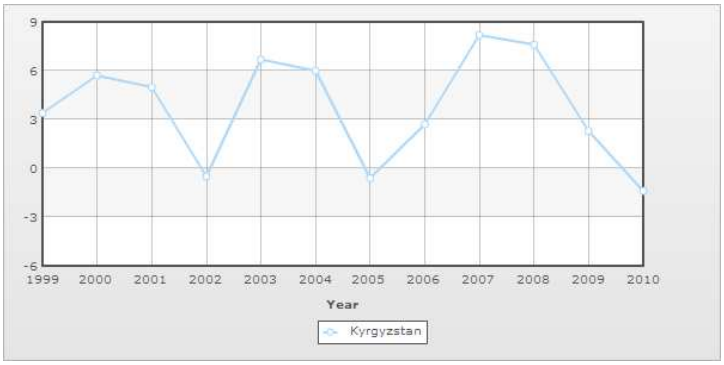
Table 1: GDP per capita in 2010

Country	GDP per capita [USD]
Russia	10 440
Kazakhstan	8 764
Turkmenistan	4 180
Uzbekistan	1 384
Kyrgyz Republic	860
Tajikistan	820

Source: The World Bank, http://data.worldbank.org

The country is one of the most open and tourist friendly countries in the region, with relatively well developed democratic and civil society institutions, but it heavily suffers from political instability, occasional violent political uprising and riots, and a widespread corruption. Periods of relatively high economic growth are disrupted by years with negative real economic growth caused by world economic crisis, local political instability and violent protests in 2005 and 2010.

Table 2: GDP – real growth rate [%]



Source: Index Mundi, www.indexmundi.com

In mid 2011, average monthly salary has reached 8 185 KGS (180 USD). End-use energy prices regulated by the government are low and do not reflect full costs, but basically only the variable operating costs. Energy infrastructure is obsolete and needs investment for modernization. But the utility revenues cannot generate required capital due to low regulated end-use energy prices. Electricity is priced extremely low at 0.7 KGS/kWh (1.5 US cent/kWh) for households and 1.5 KGS/kWh for others (3.3 US cent/kWh) thanks to the fact that operating costs of hydro power are negligible. Electricity is thus the most popular choice of energy for heating in new facilities. It is clear that this textbook example of capital misallocation is not sustainable,

and in long term it is a costly policy. However, the governmental decision to increase energy prices in 2010 is reported to be one of the igniter of violent protests in April 2010, which lead to presidential impeachment and withdrawal and subsequent governmental decision to decrease energy prices again to original low levels.

Energy security, supply-side as well as demand-side energy efficiency have been the country's policy priorities as stated in the "National Energy Program of the Kyrgyz Republic for 2008-2010 and Development Strategy of the Fuel and Energy Complex till 2025" approved by the parliament in April 2008, before the project implementation started. However, the energy efficiency was just declared as a policy priority, but has not been transformed yet to any viable instrument nor implemented in that time.

The UNDP/GEF project Improving Energy Efficiency in Buildings correctly addresses one of the country urgent actual needs and policy priority formulated at the beginning of the project. This UNDP/GEF project is one of few first activities covering end-use energy efficiency in the country, and probably the first one with a practical sustainable impact, combining development of new energy efficiency building code and demonstrating its impacts by construction of first pilot buildings. It addresses a critical and important problem and is fully in-line with the declared country's energy security and energy efficiency priority. However, it is just one and the very first step towards more energy efficient economy. And much more needs to be done, including painful but urgently needed reforms as well as energy price increase to reflect full costs in order to attract investment to make the energy utility industry more efficient and sustainable in a long term.

UNDP has a long track of energy efficiency in buildings projects implemented in Central and Eastern Europe and in the CIS region. The Improving Energy Efficiency in Buildings project in Kyrgyz Republic is the earliest one under implementation in Central Asia. Similar projects are being implemented also in Kazakhstan, Uzbekistan, Armenia, and another energy efficiency in buildings project in Turkmenistan has been just approved by GEF CEO in October 2011.

Project justification and its aims

The Kyrgyz building stock has been constructed during the Soviet period without any regard to energy efficiency. Energy use per square meter is significantly higher than in EU countries with similar climate conditions (heating degree days). Energy efficient reconstruction of existing building stock requires investment which is scarce, and no economic motivation exists due to low energy prices and unmetered district heating with no controls. A unique opportunity thus lies in the development of new buildings – energy efficient building design is not costly and thus it represents an affordable market niche also for specific situation in Kyrgyzstan.

The project aims at reducing energy consumption and associated GHG emissions in new buildings in Kyrgyzstan by 30-40% compared to the existing building stock by:

(1) adopting and enforcing mandatory building energy performance codes, standards and labels (the Energy Passport) in line with internationally recognized best-practices;

(2) improving enforcement levels of mandatory energy efficiency building codes

(3) demonstrating feasibility and viability of an integrated building design approach for energy efficiency by construction of pilot public buildings;

(3) strengthening capacity of building and construction professionals to implement new building regulation and promotion of best practices; and

(4) establishing a system to monitor energy consumption and CO_2 emissions in Kyrgyzstan building sector.

According to the Project Document, the total project budget is 4 132 mil USD, of which 0.9 mil USD will be funded by GEF contribution, 0.05 mil USD by UNDP regular funding, and 3 182 mil USD will be in-kind contribution, which includes local investment costs for two pilot buildings to be provided by municipalities in Osh and Bishkek.

This medium-sized project is implemented by UNDP CO in Kyrgyzstan, Implementing Partner is Gosstroy – State Agency for Architecture and Construction.

The Project Document has been signed on December 5, 2008 and is scheduled to last for four years until December 2012.

On September 16, 2008, after the project has been approved by GEF, but before the Project Document has been signed, a meeting of the Local Appraisal Committee took place in Bishkek. Representatives of UNDP CO, governmental ministries and state authorities, national parliament, international organizations, private sector, and NGOs discussed the project goal and agreed to recommend endorsement of the Project Document. Letters of Intent confirming local co-financing have been presented, including 0.1 mil USD contribution from Gosstroy - State Agency for Architecture and Construction, and 1.5 mil USD from the Osh City Administration, and additional 1.5 mil USD from the Bishkek City Administration for the investment costs of the construction of the pilot building.

On November 11, 2008, the project Inception Workshop took place. The Project Document and planned project activities have been discussed again in detail with project partners.

On December 5, 2008 the project has officially started by signature of the Project Document and in early 2009 the project implementation has been launched.

2.2 Purpose of the evaluation

This mid-term evaluation has been performed on a request of the UNDP Country Office in Kyrgyzstan, which serves as a project Implementation Agency. The mid-term evaluation mission took place in October 2011.

The objective of this evaluation is to provide managers (at the Project Implementation Unit, UNDP Kyrgyzstan Country Office and UNDP-GEF levels) with strategy and policy options for more effective and efficient achievement of the project's expected results and for replication of successful project results. It also provides the basis for learning and accountability for managers and project stakeholders.

According to the ToR, 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 an opportunity to assess early signs of project success or failure and prompt necessary adjustments.

2.3 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

The purpose of the mid-term evaluation is to provide advice for the future implementation of the project 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.

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

2.4 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:

I. Project documents review prior to the evaluation mission
II. Evaluation mission and on-site visits, interviews with project management, UNDP CO, project partners and stakeholders, as well as with independent experts. Discussion with project management on key issues to be addressed and implemented till the end of the project, and discussion with the PIU and UNDP CO on the preliminary findings.
III. Drafting the evaluation report and ad-hoc clarification of collected information/collection of additional information
IV. Circulation of the draft evaluation report for comments
V. Finalizing the report, incorporation of comments

2.5 Structure of the evaluation

This mid-term evaluation follows the structure and content as specified in its Terms of Reference and according to the evaluation template of the Handbook on Planning, Monitoring and Evaluating for Development Results.

3. The Project and its development context

3.1 Project start and its duration

The four-year Project officially started with the signature of the Project Document by representatives of the government and UNDP on December 5, 2008, and is scheduled to last till December 2012.

An Inception Report has been prepared in June 2009 with a support of international consultant Mark Chao, after the project implementation has progressed already, and several project activities have started already. During the inception period, international expert Yurij A. Matrosov delivered a series of seminars focused on development of energy efficiency building code (SNiP), a detailed road map for new SNiP development has been prepared, including first estimates of new energy efficiency requirements, recommendations for development of new energy efficiency standard and its enforcement strategies, certification and labeling of buildings as well as monitoring of energy consumption have been formulated. The Inception Report also highlighted a risk of not providing co-financing for pilot projects due to budget cuts. The original LogFrame from the Project Document has been revised. The wording of several targets and indicators has been improved and clarified, and the target to decrease thermal energy consumption for new code-compliant buildings has been made stricter, based on recent data and experience from Russia and Kazakhstan. The revised LogFrame and changes made to the original matrix are shown in Annex 1.

The mid-term evaluation mission took place on October 17 through 26, 2011, in the fourth quarter of the third year of planned four year project implementation period.

After submitting the MTE report, there remain effectively one full year until scheduled termination of the project.

3.2 Implementation status

During the mid-term evaluation, the project was in its 34th month of projected 48 months of implementation, ie. 70% of planned time capacity has been spent.

As of October 2011, the total project expenditures are 649 912 USD, ie. 68% of the combined GEF and UNDP budget of 0.95 mil USD. The project budget spending is very proportional to the period of implementation.

Out of the five components of the project, in four components key planned activities have been implemented already, namely, new energy performance code has been developed and implemented, personnel of Gosstroy were trained in new energy efficiency building codes, two pilot schools have been designed and construction started in September 2011, university curricula on energy efficiency building design developed and building design and construction professionals trained in IBD and application of new SNiP. During the remaining 14 month period of project implementation the construction of two pilot buildings is planned to be finished (by end of 2011 and mid 2012 respectively) and the monitoring system is scheduled to be developed next year. So despite some delays during project implementation (mainly delays with financing and construction of pilot schools) the project is on track in general to accomplish all project deliverables by the planned end of project in December 2012 – except for having metered data on actual energy consumption of pilot buildings available for the whole heating season.

3.3 Problems that the project seeks to address

Until the beginning of this project, the country did not pay any systematic attention to improving poor end-use energy efficiency. Only few and limited activities have been implemented by the beginning of this project, namely the Energy Efficiency Program sponsored by the Norwegian government which supported establishment of a small revolving Energy Efficiency Fund, introduced energy audits, and implemented few energy efficiency and heat metering pilot projects.

Purchase prices of imported gas have increased significantly during the project design period, and energy affordability of both households and municipalities became a hot political topic.

Due to hard economic situation in rural areas, people have been moving into large urban centers in search for job. Major economic activities are concentrated in the largest cities of Bishkek and Osh and new buildings, residential, commercial and public buildings have started to be built in these cities. Mortgage loans became available on the local market which attracted development in residential sector. However, new buildings, and especially residential buildings, often did not comply even with the low energy efficiency building standard of that time, and even not with seismic standards.

The project addresses these problems and opportunity by development of the up-to-date new energy efficiency code, designing and building pilot schools according to the new energy efficiency code, training Gosstroy experts and professionals in principals of IBD and compliance control with the new building code, and by the development of the monitoring system.

3.4 Immediate and development objectives of the project

The project objective is to reduce energy consumption and associated GHG emissions in Kyrgyz building sector.

The target has been enumerated to reduce GHG emissions by 267 000 tCO2eq. This amount is a total lifecycle emission reductions from all new energy efficient buildings built in compliance with the new energy efficiency building code until 2023 – ie. it includes a decade after the project will be terminated. The 267 000 tCO2eq emission savings have been calculated as top-down indirect GHG emission savings according to the methodology described in the GEF Manual for Calculating GHG Benefits of GEF Projects: Energy Efficiency and Renewable Energy Projects (GEF, 2008). The direct and indirect emission reduction target for the project implementation period has been calculated to be 1 140 tCO2 direct lifecycle emission reductions from two pilot public buildings built with support from the project, and additional indirect 22 800 tCO2 lifecycle emission reductions from other buildings being built according to the new energy efficiency code until the project termination at the end of 2012 - bottom-up approach.

The Project Document defines a general expected outcome: “Sustainable development principles integrated into poverty reduction policies and programs”, and a UNDAF outcome: “Poor and vulnerable groups have increased and more equitable access to quality basic social services and benefits in a strengthened pro-poor policy environment”.

3.5 Main stakeholders

The project management – the Project Implementation Unit – consists of four staff hired by UNDP for the period of project implementation. The office of the Project Implementation Unit has been provided for the project free of charge by Gosstroy in its premises. In 2011, the Project Implementation Unit consists of the

Project Manager, Ms. Elena M. Rodina, Chief Engineer Mr. Genadiy F. Kasiev, Administrative Finance Assistant Ms. Elena Pasportnikova, and the driver of the project car, Mr. Sergey A. Izotov.

Project Implementing Partner is Gosstroy, the State Agency for Architecture and Construction under the Government of the Kyrgyz Republic, a governmental body with authority to approve and endorse building codes, former ministry for construction.

Other project partners include State Agency for Environmental Protection and Forestry under the Government of the Kyrgyz Republic, National Agency on Local Self-Governance, Bishkek and Osh municipalities, Kyrgyz Research and Design Institute for Seismic Resistant Construction, local universities, building design institutions, Ministry of Energy, and local NGOs.

3.6 Results expected

The project is structured into 5 components, for each of them the expected results are defined as follows:

1. Improved energy performance codes
   New building energy efficiency technical standard compatible with best international practices for new construction and reconstruction of buildings as well as energy passport with calculated annual consumption of energy for space heating and minimal standards for energy efficiency performance will be developed, approved and implemented.
2. Improved enforcement levels of mandatory energy efficiency building codes
   The compliance rate with existing building codes has been estimated at the beginning of the project to be extremely low at only 10% maximum. The very ambitious goal of the project is to increase the compliance rate to 80% during the project implementation period – in a country which suffers from widespread corruption in practically all economy sectors and all levels of governmental administration. This component includes training of Gosstroy building inspectors and creating of building certification – system of energy passports.
3. Pilot projects utilizing and integrated building design approach
   Two pilot schools in Osh and Bishkek are planned to be designed according to new strict energy efficiency code and should comply with energy efficiency class B. The project budget is planned to support building design only, full investment costs are to be provided by local investors – municipalities. Energy efficiency building design should be replicated in all public buildings in large cities.
4. Promotion of best energy design and building practices in construction sector
   The promotion includes training of professionals and Gosstroy licensing experts, development of new curricula on design of energy efficient buildings for university students, and information dissemination to professional and general public.
5. Monitoring of building energy consumption and GHG emissions
   Regular revisions of the building code should be put in place. Monitoring system should be developed for new buildings to assess actual energy consumption and related GHG emissions and compliance with designed energy efficiency requirements. However, district heating, which is common energy source for space heating in buildings in larger cities, is obsolete and typically is not metered at the building level at all. District heating is priced per floor area only.

3.7 Analysis of the situation with regard to outcomes, outputs and partnership strategy

The project design has properly identified country's needs and opportunities and has defined focus of the project on improving energy efficiency in buildings. Concentration of the project on implementing new state-of-the art energy efficiency building code, training professionals, design and construction of two pilot

buildings financed by local investors, and information dissemination is a low-cost strategy with long-term impact, developing hands-on sustainable experience among local professionals.

This project is the first major activity focused on improving energy efficiency in buildings in Kyrgyzstan – alongside with the previous Norwegian project that introduced energy audit methodology. Much more actions are needed in order to improve the energy efficiency, including key policy reforms, increase of energy prices to reflect full costs – removal of energy price subsidies, upgrading the obsolete and inefficient district heating system, installation of heat controls and meters at the building level, energy efficient reconstruction of existing buildings and much more. The project focuses only on one market segment – newly constructed/reconstructed buildings, which has relatively small share compared to the existing building stock. But it is the best chosen strategy which could be successfully replicated in the future in the country even if needed policy and economic reforms in energy and district heating would not be fully implemented.

Two planned project outcomes, namely ***outcome 2 and 5, as specified by their targets, are very challenging*** and it will be very difficult to fully achieve these targets in the current situation in Kyrgyzstan.

Specifically, *Outcome 2 - Improved enforcement of mandatory energy efficiency building codes* has a target to dramatically increase the compliance rate from the estimated baseline of less than 10% to 80%. There are basically two main reasons of such a low baseline compliance rate. First, the original soviet building code has been updated in 1998, however it assumed the required energy efficiency of wall structures to be met basically by construction of thicker walls only, which in extreme cases was even not technically feasible. Second, and more important, widespread corruption is still a common phenomenon in Kyrgyz business and public administration culture. It can be improved, but it is not realistic to expect that a single energy efficiency project might that significantly improve the situation. Also it should be noted, that there are no measured statistical data on the compliance rate of constructed buildings, but only estimates. The compliance target might be realistic mainly for large commercial/public buildings that are designed by reputable local building design institutions, constructed by large construction companies, and financed by the government or large investors. But the target seems to be unrealistic especially for small residential buildings, built by small local companies or even by individual private investors themselves. It is worth to mention that the compliance of building designs significantly differs from the compliance of actual building constructions with the energy efficiency code. The target compliance rate applied for building design itself is realistic. The target compliance rate for construction of large buildings is realistic as well. The most problematic are small residential buildings where the compliance rate is assumed to be minimal, and the target compliance rate of 80% is unrealistic.

The issue of low compliance with energy efficiency code concerns the quality of the construction, changes made to the design during construction, and quality and reliability of construction supervision especially in case of small residential buildings. At the design stage, no significant problems are observed, and new building designs are reported to be in principle fully in line with requirements of energy efficiency code.

Following examples illustrate the scope of the corruption problem in the country: cases of whole suburb residential projects have been reported to be constructed illegally with no land-use permits, no roads, and no utilities available, not to speak about compliance with building and seismic codes. But after the buildings have been built, the government has decided to legalize them and to invest into construction of electricity and utility networks and roads, despite their tight budgets.

The *Outcome 5 – Monitoring of energy consumption of buildings* would be an extremely complex and costly task if applied to all buildings, including the existing ones. Similar project, implementation of Energy Management System in public buildings, has been implemented in Croatia (country of similar size with population of 4.4 million inhabitants) with UNDP/GEF support. The project was unique in its scope,

covering practically all, but “only” public buildings. The total project costs are 21.5 mil USD provided by the Croatian government, with GEF funding of 4.39 mil USD. The total implementation period has been planned for 8 years (the UNDP/GEF project lasted 6 years).

But even if such monitoring system in Kyrgyzstan would cover only new buildings, it would be impossible to collect data on actual energy consumption in buildings that are supplied by district heating, because district heating is not metered at the building level in Kyrgyzstan so far. Only about a dozen of building/secondary substation level district heat meters have been installed in Bishkek till now. And district heating is a common source of energy especially in large cities, some 30% of all existing building stock in the whole country is supplied by the district heating, in Bishkek and Osh the share is even higher.

Without installation of building level metering of district heating it is impossible to implement functional monitoring system for all new buildings. But the district heating utilities sell heat for regulated prices that are significantly lower than full costs, and thus they face critical shortage of funds for necessary investment into infrastructure modernization, including installation of meters and controls.

Even in case of buildings which use metered electricity and gas for space heating it is not that straightforward to separate energy used for space heating from other energy consumption used by other appliances, if no secondary submeters are installed.

The monitoring system to be proposed and implemented should also reflect the real situation in the country – including widespread corruption. Any robust monitoring system ideally designed and implemented could be bypassed if the input data on energy consumption, potentially fully metered one day, would be incorrectly reported and falsified. Recommendations for the monitoring system are described in Chapter 6.2.

Partnership Strategy

The main project partner – Implementing Partner – is Gosstroy, The State Agency for Architecture and Construction under the Government of the Kyrgyz Republic. Gosstroy is a key governmental agency, former Ministry of Construction, which has strong responsibilities and authorities in the construction industry. The responsibilities of Gosstroy include:

1. Development of policy in the area of urban development in the KR
2. Development of regulatory and legal acts in the area of design and construction
3. Implementation of progressive standards, technologies, materials, equipment
4. Design expertise
5. Standardization and price formation
6. Drafting/development of urban development plans and documentation
7. Licensing of construction specialists
8. Certification of construction products
9. Supervision over norms/standards application and project/construction implementation

All relevant governmental agencies and ministries have been involved in discussions during project preparation, including representatives of the national parliament, ministries, universities, local professionals and experts from the construction and building sector, and local NGOs. Selected institutions and organizations take an active part also during project implementation.

The partnership strategy included all main governmental and non-governmental organizations in the country.

Contacts have been also established also with other international donors and their projects in the country that could potentially utilize project results and assist in the future with their replication.

4. Findings

4.1 Project Formulation

The project idea was initiated by GEF and UNDP in early 2006.

The project scoping study, Project Identification Form, CEO Endorsement Request and Project Document were developed in 2006-2008 under a contract with Austrian KWI Management Consultants and ACE Group and it was financed by the Austrian Trust Fund.

During the project scoping study the consultant worked closely with local partners in Kyrgyzstan, including State Environmental Protection Agency, district heating utilities in Bishkek, State Agency for Architecture and Construction, Kyrgyz-Russian Slavic University, Bishkek City Administration, Ministry of Industry, Trade and Tourism, National Standardization and Metrology Research Institute, State Energy and Gas Inspectorate, National Antimonopoly Policy Agency, and the Demonstration Zone Bishkek on Energy and Water Efficiency.

The original proposal included five components:

1. Stricter standards for new buildings and improved enforcement of energy performance code
2. Pilot project of building with improved energy performance
3. Rehabilitation of district heating networks
4. District heat plant optimization and refurbishment
5. Installation of apartment level heat and hot water meters

The district heating components were removed from the original proposal due to high costs and lack of local co-financing and no local political support for policy and tariff reforms.

The Project Identification Form has been submitted to GEF in July 2007, the final revised version in December 2007. PIF has been approved in January 2008.

The Request for GEF CEO Endorsement/Approval has been submitted in June 2008, and re-submitted in July 2008.

After the GEF CEO endorsement in August 2008, the Project Document has been signed and the project implementation officially started on December 5, 2008.

4.1.1 Project Relevance and Implementation Approach

As discussed above, Kyrgyzstan is a poor country, which suffers from political instability and occasional violent political protests, as well as from a widespread corruption. Energy infrastructure is obsolete, district heating has no meters, nor controls, energy is heavily underpriced, practically no activities in end-use energy efficiency have been implemented prior to this project, except for some limited international projects. Increase of electricity prices (together with a corruption on a top governmental level) is believed to be one of the factors that lead to violent political protests in April 2010 that resulted in withdrawal of the president, subsequent ethnic conflicts, and later on electricity tariffs have been decreased again to original low levels.

This project is focused on development of state-of-the-art new energy efficiency code for construction of new buildings and reconstruction of existing buildings and implementation of IBD principles in building

design, and construction of two pilot buildings in compliance with the new code. The IBD approach is a no-cost strategy combining expertise of architects, construction and HVAC engineers from the very early stages of development building design concept. As an illustration, the following simple IBD principle has been implemented in the design of the pilot school in Osh: the whole school with classroom and sport and other facilities is integrated in a single compact building with minimum external walls, rather than to have built traditionally several buildings for classrooms, gymnasium and dining room which would have much worse external walls area to total building volume ratio, and the investment costs would be in fact even higher. The optimized building design saves energy as well as investment costs, and the saved funds can thus be used for additional improved energy insulation.

The focus of the project on developing IBD expertise in the country, implementing of a new energy efficiency code for buildings, and construction of two pilot schools addresses relatively a small market segment of the whole building stock, but it is perhaps the only low-cost/no-cost energy efficiency strategy that can be implemented and replicated even in situation when the country lacks any economic motivation and sufficient capital for investment into energy efficiency reconstruction of the existing building stock.

The project is also fully in line with the Country Development Strategy 2008-2010.

Project relevance and implementation approach is rated to be *Highly Satisfactory*.

4.1.2 Conceptualization/design

The Project Document was in general well prepared, with detailed and specific information on the baseline situation in the building industry; it provided a detailed methodology on CO2 emissions reductions calculation according to the GEF Manual for Calculating GHG Benefits of GEF Projects and it was supported with statistical data analysis.

The Inception Report did not propose any significant changes to the original project design; it specified in more detail individual activities within each of the project component, and provided minor mainly wording revisions and upgrade of the project LogFrame. The main revision in the LogFrame concerns strengthening of the target 1: Thermal energy consumption for new code-compliant buildings reduced to an average of 100 kWh/m² (by about 30%), instead of original “110 kWh/m² (by 20%)”. The Inception Report also highlighted a risk of dependence of the project construction of pilot buildings on governmental funding in the period of world economic crisis and subsequent “uncertain availability of government co-funding for construction of new schools”, and it changed the original target to revise new EE code “by 2015” from the original wording “each 3 years”.

As discussed in detail in the following chapter, some of the project LogFrame indicators and targets are not specific enough and/or not measurable, because they include period after project termination. Some of the targets are unrealistic, such as radical improvement of the compliance rate with the new energy efficiency code from 10% up to 80%.

Rating of the conceptualization and design is *Satisfactory*.

4.1.3 Logical Framework

Except for the above mentioned minor revisions of the Logical Framework, the structure of the LogFrame and definition of indicators and targets remained in principle unchanged.

LogFrame is often the weakest part of similar UNDP/GEF projects. Proper definition and specification of LogFrame indicators and targets requires specific expertise. Not only expertise in building energy efficiency

and detailed knowledge of the specific country context, but also specific experience in definition and evaluation of LogFrame indicators and targets. Without such experience it is hard if not impossible to design properly the LogFrame. And a LogFrame is a critical part of the Project Document. It is basically what GEF "buys" for its funding. Even in case if the project outcomes and activities are properly designed and implemented and the project achievements and impact are significant and sustainable, if these results do not show in the LogFrame, the GEF in principle could not learn about it.

Targets 1 and 4:

Project objective:
Reduce energy consumption and associated GHG emissions in Kyrgyz building sector
Indicator 1: *Average thermal energy consumption in new/renovated residential/public buildings*
Target 1: *Thermal energy consumption for new code-compliant buildings reduced to an average of 100 kWh/m² (by about 30%)*

Outcome 1: ***Improved energy performance codes***
Indicator 4: *Level of minimum mandatory thermal requirements for buildings*
Target 4: *10-20% decrease to 80 kWh/m² (or lower for larger multifamily buildings)*

Targets 1 and 4 specify average and minimum mandatory thermal requirements for new buildings of 100 kWh/m2 and 80 kWh/m2 respectively, and thus are approximate only and strictly speaking not specific enough, because they do not specify the type, size, shape and location of the building. The calculation of building performance, ie. specific energy consumption for space heating per unit of floor area during a normalized heating period, is a very complex task, the SNiP code itself has 71 pages, together with its Set of Rules it has a total of 243 pages, where the calculation methodology is described in detail. The calculation of energy consumption reflects numerous technical parameters specific for each type of the building and its location within the country. For example, with some simplification the larger the building is, the lower its specific energy consumption is according to the code. Thus the enumeration of thermal requirements in kWh/m2 is not exactly specific, especially not for schools which building types are not as standardized as multistorey apartment buildings for example. The target expressed in kWh/m2 could be used with minimized inaccuracy for example for five-storey multiapartment building in specific climate zone (such as Bishkek). For different schools in different locations the deviations in kWh/m2 could easily be in tens of percent, even if they would comply with the new strict energy efficiency code.

The target expressed in kWh/m2 is very clear and illustrative; however, it should be understood as an approximate indicator/target since it is not paradoxically specific enough if it does not specify in a very detail concrete building.

Suggested revisions of the LogFrame and proposed wording of revised indicators and targets are described in detail in 5.2 Corrective actions for the design, duration, implementation, monitoring and evaluation of the project.

Target 2:

Project objective:
Reduce energy consumption and associated GHG emissions in Kyrgyz building sector
Indicator 2: *New building lifecycle CO2 emission*
Target 2: *5,3 mln tCO2 or 267,000 tCO2 eq less than in baseline*

The Target 2: Total reduction of 267,000 tCO2eq from new building lifecycle emissions is not measurable. It is a top-down estimate of lifetime indirect GHG emissions avoided, calculated according to the GEF Manual as a lifecycle CO2 emission reduction over an estimated lifecycle period of 20 years from all new buildings constructed till 2023 – ie. ten years after planed project termination. This number illustrates very well the potential for replication, the potential total future impact of the project on emission reductions in the country, but as an indicator/target of project implementation results it should not be used, because it cannot be measured during the project implementation period – but only after the year 2023. The LogFrame indicators should be SMART – Specific, Measurable, Attainable, Relevant, Trackable. This Indicator 2, or better said the Target 2, top-down estimate of lifetime indirect GHG emissions avoided, as it was calculated in the Project Document, is not measurable and thus it should not be used as a target in the LogFrame. It should be noted that the calculation follows recommendations of the GEF Manual for Calculating GHG Benefits of GEF Projects and assumptions used are quite conservative and thus the calculated results as well. For example, the useful lifetime of energy efficiency buildings could be even easily more than twice as long as estimated 20 years, because most of the savings are influenced by the integrated design of buildings itself which typically have 50+ year lifetime, and the influence of energy efficiency equipment with shorter lifetime is minor.

The Project Document also calculated direct CO2 lifecycle emission reductions of 1 140 tCO2eq from two pilot buildings to be constructed during the project implementation period, and indirect impact of bottom-up 22 800 tCO2eq lifecycle emission savings from assumed 20 new additional schools with average floor area of 4 750 m2 to be built within two years between 2010 and 2012 in Osh (10 schools) and in Bishkek (10 schools). The assumption to built 10 new schools in Osh with population of 250 000 people between 2010 and 2012, and another 10 schools in Bishkek with population of 1 million people is highly unrealistic. However, this target of indirect 22 800 tCO2eq emission savings could be taken into account if it would cover all types of new buildings being built according to the new code in these cities until the project termination in 2012.

Target 3:

Outcome 1: ***Improved energy performance codes***
Indicator 3: *Adoption of mandatory energy efficient building code and its regular updates implemented*
Target 3: *New performance-based EE code adopted in 2010 and updated by 2015*

The wording of the Target 3 “New performance-based EE code adopted in 2010 and updated by 2015” includes actually two targets. First target “new performance-based EE code adopted in 2010” is measurable, the second target “and updated by 2015” is not measurable because it includes period after planned project termination.

Target 6

Outcome 2: ***Improved enforcement of mandatory energy efficiency building codes***
Indicator 6: *Level of enforcement of new standards (% of new buildings)*
Target 6: *Compliance levels radically improved up to 80%*

Target 6: “Compliance levels radically improved up to 80%” is unrealistic, should it apply to all buildings, including small residential ones. This target is feasible and could be perhaps even higher for public buildings, large commercial buildings and large multi-storey apartment buildings designed by major

recognized design organizations. For small residential buildings the realistic target to be reached within the project implementation period can be probably only much lower.

Target 9c

Outcome 3: ***Pilot projects utilizing an integrated design approach***
Indicator 9: *Energy- and cost-saving and social impact of integrated building design (IBD) in comparison with similar buildings*
Target 9c: *Better comfort for users*

The target 9c "Better comfort for users" is rather general, not specific enough, the baseline for "comfort" is not specified neither. It is clear that new buildings that will comply with the new energy efficiency code would be more comfortable for living than average existing ones, or potentially the new buildings which would not comply with the code, however more precise specification would be needed should this target be measurable.

The thermal comfort in buildings depends not only on building energy performance, but also on the quality of energy supplied. Electricity supplies are often interrupted, district heating in Kyrgyzstan provides in general a very low comfort, because basically no heat controls are installed nor in the distribution system, neither on a building level. Due to poor district heating pipes insulation, building users suffer from overheating, if they are close enough to the district heating plant, or more often they suffer from underheating, if their facility is connected to the grid in a greater distance from the heat source. Thus the thermal comfort depends heavily on local energy utilities, but this project has no powers to improve their performance. The district heating component was removed from the very first draft proposal of project activities, because of lack of funding and lack of governmental commitment to implement necessary complex reforms in energy industry.

Target 10
Indicator 10: *Scale of replication for IBD approach*
Target 10: *IBD introduced to all new public buildings in two largest Kyrgyz cities (Osh and Bishkek) by the end of the project*

The Target 10 is in practical terms not easily measurable. IBD is something different than simple compliance with the energy efficiency building code. IBD is a concept to apply best practices of HVAC and construction engineers from the very early stages of first architectural concept design. It is rather arbitratory to decide whether or not and to what extent IBD has been applied. A building design might comply with energy efficiency code even if IBD was not applied; for example in case that all walls would have thick enough insulation as required. This Indicator 10 somewhat corresponds with Indicator 6 – Level of code enforcement which is simplier to measure and evaluate.

Indicator and Target 13

Outcome 4: ***Promotion of best energy design and building practices in construction sector***
Indicator 13: *Development of new products in conformity with new standards*
Target 13: *Larger availability of efficient materials and services*

The wording of the target is somewhat vague, not specific enough, and not exactly relevant to the actual project scope. The target actually duplicates indicators 1 and 2 which measure the actual achievements in

energy and emission savings of designed and constructed new buildings. Without available energy efficient materials targets 1 and 2 could not be achieved.

The project has not been designed to specifically support development of new products. By implementation of the new energy efficiency code and construction of new buildings complying with the code a demand for energy efficient materials such as wall insulation and energy efficient windows will increase. And locally produced and/or imported energy efficiency materials will become more widely available because local dealers are not limited in expansion of their services. However, to collect credible complex data on "availability" of efficient materials would require a comprehensive market research which is rather costly and will not bring much value added for the project objective itself.

Indicator 14

Outcome 5: ***Monitoring of building energy consumption and GHG emissions***
Indicator 14: *Availability of accurate and up-to date data on energy consumption and CO2 emissions in buildings*
Target 14: *Monitoring system, including institutional framework, trained staff and technical tools and methodology, is in place by the end of the project*

Indicator 14 addresses key assumption for effective implementation of monitoring of energy consumption, rather than specification of the indicator itself. It is out of the scope of this project for example to implement building level district heating meters in the country. The monitoring system could not be fully implemented until the district heating distribution system is upgraded and building level meters installed. Until then the monitoring system can include only those buildings which have energy consumption metered, such as buildings using electricity and natural gas for space heating. But still even in these cases the energy consumed would typically include all energy consumed and not only energy used for space heating.

The definition of indicators and targets needs to be revised to be measurable and realistic. The proposed revision of indicators and targets is provided in Chapter 5.2.

Rating of the designed Logical Framework is *Marginally Satisfactory*.

4.1.4 Country ownership/driveness

The original project idea was initiated by UNDP/GEF, which in that time already had a successful track record from implementing energy efficiency in buildings projects in other countries with economies in transition. The project idea was introduced in Kyrgyzstan in the time when increased price of imported gas created big pressure on public budgets, and energy security and affordability became urgent political topic. In that time, the country had no systematic experience with end-use energy efficiency. Energy efficiency was identified as a policy priority, but not implemented yet.

The timing of this project perfectly fits with actual country needs and thus it was also realistic to develop strong country ownership of the project.

The project has been developed with active involvement of UNDP international consultants, but after broad discussions with local stakeholders, including policy and decision makers, and relevant governmental agencies, and with intensive support of local experts, including Gosstroy.

The draft project proposal was introduced to and discussed with an ad hoc established Local Project Appraisal Committee, comments on project proposal were collected, and awareness of the planned activities was disseminated among local professional community and governmental policy and decision makers.

Rating of the country ownership and driveness is *Satisfactory*.

4.1.5 Stakeholder participation in the design phase

During the project design phase national ministries, governmental agencies, municipalities, universities, local NGOs, energy utility, and foreign agencies for international cooperation have been contacted, and involved in discussions on project focus.

State Environmental Protection Agency, district heating utilities in Bishkek, State Agency for Architecture and Construction, Kyrgyz-Russian Slavic University, Bishkek City Administration, Ministry of Industry, Trade and Tourism, National Standardization and Metrology Research Institute, State Energy and Gas Inspectorate, National Antimonopoly Policy Agency, and Demonstration Zone Bishkek on Energy and Water Efficiency took an active role in the early scoping phase of the project development.

A Local Project Appraisal Committee has been established, which provided comments and suggestions to project design. The LPAC Committee consisted of the following members:

1. Ministry of Finance
2. Ministry of Education and Science
3. Ministry of Industry, Energy and Fuel Resources
4. State Agency for Architecture and Construction under the Government of the Kyrgyz Republic
5. National Agency on Local Self-Government
6. State Inspectorate on Energy and Gas
7. Bishkek Municipality
8. Osh Municipality
9. Kyrgyz Housing Communities Union
10. ARIS – Community Development and Investment Agency of the Kyrgyz Republic
11. GTZ/GIZ – German Society for International Cooperation
12. JICA - Japan International Cooperation Agency
13. SeverElectro – Power Distribution Utility
14. CAMP Alatoo
15. Biom
16. Sustainable Nature Management
17. Public Fund Inon

The key local project partner during the design phase was Gosstroy, which provided valuable inputs for the project design, knowledge of local situation and specification of needs, and data and statistics on building construction in the country. Gosstroy has a specific role on the Kyrgyz building construction market. It is a governmental agency, former ministry for construction, with significant licensing and certification powers and responsibilities. Inviting Gosstroy to be an Implementing Partner was a crucial decision that supported local ownership of the project. The project benefitted also from good human and professional relations with Gosstroy: Genadiy Kasiev, the project Chief Engineer, is for example a former head of the Construction Department at Gosstroy.

Rating of the stakeholder participation in the design phase is *Satisfactory*.

4.1.6 Replication approach and sustainability

The project concept is based on replication of results achieved during project implementation. The project results are in principle designed to create an environment, soft "infrastructure" consisting of legislation, state-of-the-art energy efficiency code, and local capacity and know-how to design, construct and monitor new energy efficient buildings; and this "infrastructure" is designed to be fully employed in a sustainable way especially after project termination. The two pilot schools to be designed and constructed during project implementation serve basically as a demonstration, but the actual impact of the project in terms of amount of CO2 savings is planned to be achieved after the project terminates – when newly constructed buildings in the country in the future will fully deploy IBD principles and comply with the new energy efficiency code.

Replication approach is rated *Highly Satisfactory*.

4.1.7 Cost-effectiveness

The project with GEF/UNDP budget of 0.95 mil USD is designed to deliver new energy efficiency building code, higher compliance rate with the mandatory code, promotion of best practices, monitoring of building energy performance and GHG emission reductions, and design and actual construction of pilot energy efficiency buildings according to the new energy efficiency building code. The investment costs of two new buildings to be constructed with support from the project have been designed to be provided by local investors – municipalities of Bishkek and Osh. This in-kind contribution was estimated to be 3 mil USD. The financing of the building construction investment costs out of the UNDP/GEF budget is definitely a very cost-effective strategy; however, it is in the same time very risky strategy as well.

The Project Document has enumerated CO2 abatement costs to be 15 USD/tCO2, based on the total project budget of 4 mil USD (including in-kind co-financing), and estimated indirect project GHG emission savings of 267 000 tCO2 (lifecycle emission savings from buildings built in 2009-2023, ie. up to 10 years after the project termination, with conservative assumptions on compliance rate with the new EE code). Of the total budget, 3 mil USD have been budgeted to be in-kind local financing for construction of the two pilot schools that would cover 100% of total investment costs.

However, the actual energy efficiency incremental costs would be only a small fraction of total investment costs. If incremental costs are assumed to be 15% of investment costs, the CO2 abatement costs are 5.9 USD/tCO2.

The UNDP/GEF contribution of 0.95 mil USD to the project budget means that for UNDP/GEF the GHG abatement costs are estimated to be 3.6 USD/tCO2.

As the Project Document illustrates, the IPCC Working Group III in their review of climate change mitigation potential in residential buildings suggests that about 32% of the projected global baseline emissions in the residential sector can be avoided cost-effectively through no or low cost best-practice measures cheaper than 20 US$/t CO2.

The rating of estimated cost-effectiveness is *Satisfactory*.

4.1.8 Design of Monitoring and Evaluation

The Project Document includes a design of the Monitoring and Evaluation plan that specifies type of monitoring and evaluation activity, identifies responsible parties, allocates indicative budget, and specifies time frame. A detailed description of Monitoring and Evaluation Plan components is provided in the Section G of the Request for CEO Approval/Endorsement.

The LogFrame is designed to serve as a basis for project progress monitoring and evaluation.

Key responsible parties for performing project monitoring and evaluation include:

- Project Manager
- UNDP Country Office
- Governmental counterparts
- UNDP-GEF Regional Coordination Unit
- External consultants

Rating of the monitoring and evaluation design is *Satisfactory*.

4.2 Project Implementation

4.2.1 Linkages between the project and other interventions within the sector

The main and key activity covering energy efficiency in buildings in addition to the UNDP/GEF project was an EBRD initiative developing a Law on Energy Performance in Building that created an umbrella primary legislation to the Energy Efficiency in Buildings Code – SNiP developed and implemented by the UNDP/GEF project.

The UNDP/GEF project has drafted provisions on energy efficiency in buildings for updates of existing Law on Energy Efficiency, the draft update of the law has been discussed in the parliament, however this legislative process has been interrupted and not finalized. In 2009-2010 the EBRD has funded a project called Enhancing Regulatory Framework for Energy Efficiency in Built Environment that was focused on transposition of the EU directive on Energy Performance of Buildings into national legislation in Kyrgyzstan. A new Law on Energy Performance of Buildings and two bylaws Regulation on Energy Certification of Buildings and Regulation on Regular Inspection of Boilers and Heating Systems were developed, submitted for governmental review and approved by the parliament in mid 2011. The Law will come into force six months after its publication, ie. on February 5, 2012. This Law was prepared parallel to the UNDP/GEF project sponsored development of the energy efficiency code – SNiP, and creates its umbrella primary legislation. It specifies that in principle all buildings, except for residential buildings smaller than 150 m2 of floor area, are subject to compulsory minimum energy efficiency requirements, building certification (energy passport), and compulsory display of energy label; the minimum energy requirement of buildings must be reviewed at least once in 10 years. Buildings that will not comply with the minimum energy efficiency standard will not be granted approval for utilization.

Three other activities and interventions within the sector are described below:

CAMP Alatoo is a local NGO working with rural communities in remote mountainous regions. One of their projects is focused on providing microfinance loans for rural families. The UNDP/GEF project has teamed up with CAMP Alatoo and developed a series of manuals on energy efficiency – Catalogues – that were distributed to families that were potential borrowers of microfinance loans to improve energy efficiency in their homes.

ARIS is a Community Development and Investment Agency of the Kyrgyz Republic which implements project financed by German Development Bank KfW to construct and reconstruct public buildings with improved energy efficiency. The focus of the project is on small facilities, kindergartens and schools for ca 25-50 pupils. The construction is planned for the period of 2012-2013. ARIS has been involved also in

discussions during UNDP/GEF project design phase. During the evaluation mission the evaluation team and the Project Manager visited ARIS and discussed potential future cooperation and utilization of UNDP/GEF project experience in designing and constructing energy efficiency schools.

The UNDP/GEF project organized also a joint training with ESIB on building certification in Bishkek and Naryn. ESIB is an Energy Saving Initiative in the Building Sector in Eastern Europe and Central Asia within the INOGATE program that supports energy policy cooperation between EU and Eastern Europe (Belarus, Ukraine, Moldova), Turkey, Caucasus, and Central Asia.

4.2.2 Management and coordination

The project implementation is executed by the UNDP Project Implementation Unit, which consists of a small team of two professionals – Project Manager and a Chief Engineer, supported by an Administrative Finance Assistant and a driver.

The PIU manages project implementation, including communication with governmental and municipal authorities.

For the actual work on project implementation, such as developing the new energy efficiency code SNiP, a number of short-term local experts have been hired for specific tasks. This arrangement helped the project to be implemented in a cost-effective way, but also to effectively disseminate the energy efficiency expertise across the local professional community.

Implementation of the project benefited from cooperation with both long-term and short-term international experts, including Yurij Matrosov, a Russian expert in building energy efficiency codes, and Mark Chao, a Russian speaking US expert in building energy efficiency. Canadian company Econoler provided one-week training for local experts in energy efficiency building development, and reviewed technical proposals, an international company Grontmij was hired for organization of Kyrgyz expert excursion to Denmark.

The Project Implementation Unit is responsible for overall project implementation. The Advisory Board oversees its execution of project implementation and approves Annual Work Plans and Annual Progress Reports.

UNDP CO administratively supports PIU and pays and expenses directly some of project costs and provides PIU with regular Atlas reports.

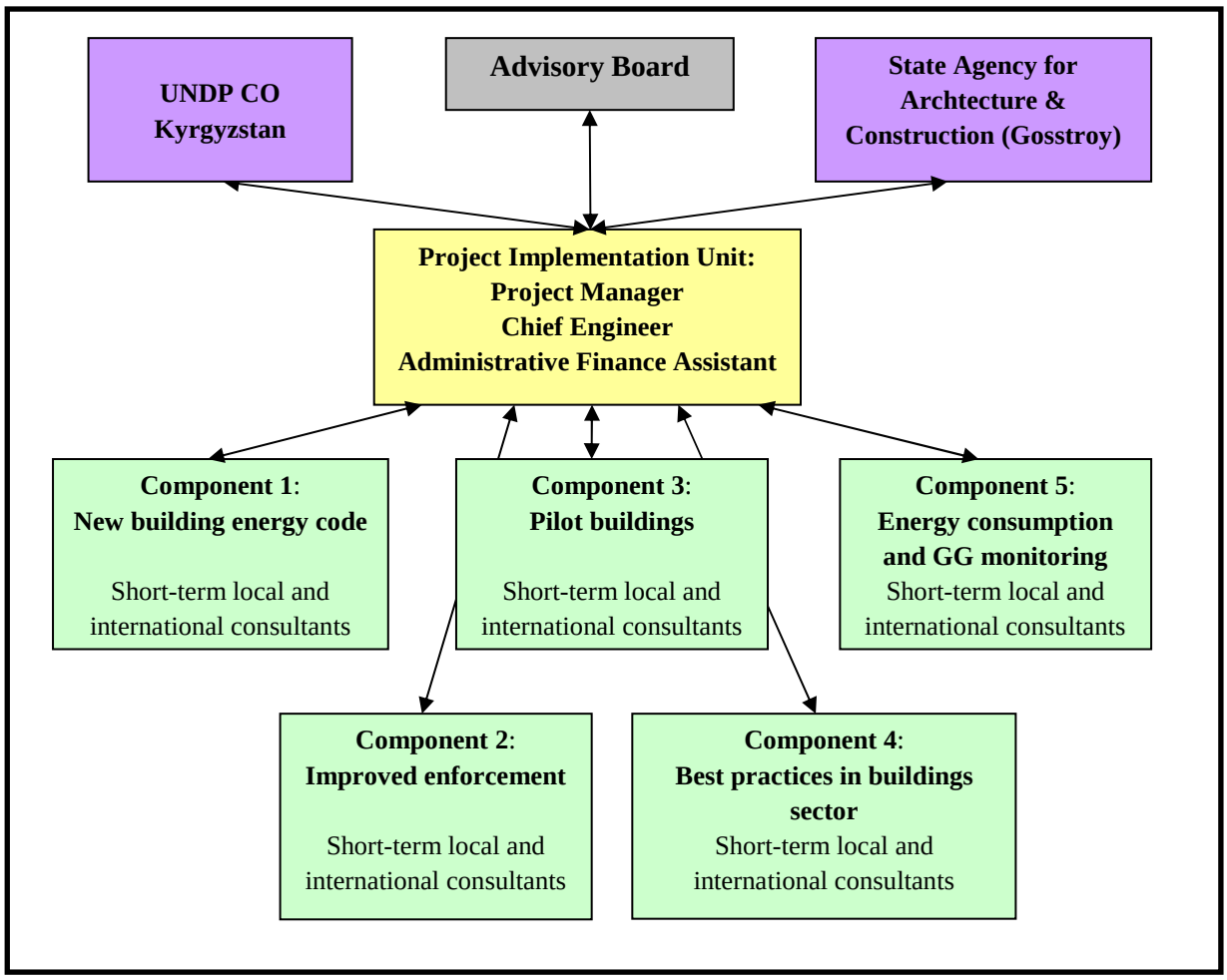
In addition to this project in Kyrgyzstan, UNDP RCU coordinates similar projects in other countries in the region (Armenia, Kazakhstan, Uzbekistan, Turkmenistan), supports information and best practice exchange among these projects and coordinates external expert advice.

The structure of the project management illustrates the following Chart 1: Project Management Scheme.

PIU coordinates works of all five project components. Most of the work in each of the project component is subcontracted to local short-term consultants with support from international consultants.

The project management and coordination is executed in a way as it was originally designed in the project document.

Chart 1: Project Management Scheme



A key role in the project implementation has Gosstroy – State Agency for Architecture and Construction under the Government of the Kyrgyz Republic, which serves as a project implementing partner. Gosstroy, former Ministry for Construction, has authority and responsibility among others in developing and implementing energy efficiency codes, licensing of construction specialists, and supervision of building constructions.

Rating of the management and coordination is *Highly Satisfactory*.

4.2.3 Monitoring and evaluation

The project is subject to standard UNDP monitoring and evaluation procedures. Project planned activities and achievements are regularly reported and approved by the Advisory Board; Annual Work Plans, Annual Progress Reports, Quarterly Reports, and Project Implementation Reports are regularly developed and submitted for approval.

The project has not yet been subject of the external audit.

The Mid-Term Evaluation of the project took place in the 34th month of project duration in October 2011, of the total planned 48 month implementation period. This is 10 month after the exact half of the implementation period.

Board of Directors has been set up in May 2009 to oversee implementation of the project. The Board of Directors, renamed in 2009 to an Advisory Board, consisted of 11 members:

The Advisory Board is chaired by Mr. Narbayev, Director of Gosstroy, the Deputy Chairman of the Board is Mr. Pradeep Sharma, Deputy Country Representative, UNDP. Nine Board members represent Gosstroy, Kyrgyz Research and Design Institute for Seismic Resistant Construction, State Agency for Environmental Protection and Forestry, State Inspectorate for Energy and Gas of the Ministry of Energy and Fuel Resources, NGO "Sustainable Development", and the Kyrgyz State University of Construction, Transportation and Architecture.

The Board of Directors/Advisory Board held a meeting in October 2009, December 2010, and in July 2011. The meeting of the Advisory Board planned for spring 2010 has been cancelled due to the unstable political situation in the country in that time. Next meeting is planned for late 2011, so that the Advisory Board would meet twice a year as originally planned.

The project receives support from the UNDP Country Office. The UNDP CO manages the Atlas system and provides the PIU with regular official reports from the Atlas financial system that includes spending expensed directly by UNDP CO, however the Atlas system does not provide budget lines per project activities, but by project outcomes only.

Rating of monitoring and evaluation is *Satisfactory*.

4.2.4 Financial Management

Project implementation benefits from having a professional Administrative Finance Assistant in the PIU team who has previous experience from other UNDP/GEF projects. The administration of the project finance is well organized and effective.

This is the first time ever the evaluator has seen that the project management does not rely on the Atlas system only, which is not suitable for daily project financial management because of its impractical budget lines structure. In addition to Atlas system, the project uses a specific locally developed spreadsheet for bookkeeping of all individual project expenditures that allows identification of both Atlas budget line code as well as identification of specific project activity. The Project Manager has thus an easily accessible instant one-click access to up-to-date overview of actual project spending and actual delivery – expenditures spent vs. its budget – in required detail up to each project activity and does not need to rely only on periodically accessible reports from Atlas system, which provide detail only according to Atlas budget lines, but not for each individual project activity. This gives the project management possibility to effectively control project costs in required detail on a daily basis. This is not the typical case for other UNDP/GEF projects implemented in other countries.

This very helpful (and simple) spreadsheet for financial monitoring has been developed locally in UNDP Kyrgyzstan and has been utilized by the project since mid 2010. Thus the annual data on project spending in 2009 and 2010 is available only in the structure available in the Atlas reports and CDR reports.

Following tables provide an overview of original project budget, updated annual budgets as approved in Annual Work Plans, and actual expenditures as of October 2011.

The annual project expenditures spent in 2009 and 2010 account for 75% of annual budget updated in the Annual Work Plan. By the end of October 2011, 52% of the annual budget for the whole 2011 year has been spent already.

Total project expenditures spent so far amount to 649 912 USD, ie. 68% of total project budget of 950 000 USD.

Funds available for the rest of this year and for 2012, until the planned project termination amount to 300 087 USD, ie. 32% of the total UNDP/GEF budget.

Table 3: Project Document Budget

Year	2009	2010	2011	2012	Total
Outcome 1	21 875	19 875	14 625	23 625	**80 000**
Outcome 2	61 250	72 050	40 750	35 750	**209 800**
Outcome 3	134 500	180 500	88 000	47 000	**450 000**
Outcome 4	10 150	11 150	11 150	17 550	**50 000**
Outcome 5	7 500	13 500	25 500	23 500	**70 000**
Management	23 300	22 300	22 300	22 300	**90 200**
Total	**258 575**	**319 375**	**202 325**	**169 725**	**950 000**

Table 4: Annual Budgets updated in Annual Work Plans

Year	2009	2010	2011
Outcome 1	78 850	62 718	51 168
Outcome 2	43 050	79 432	88 400
Outcome 3	43 000	166 687	78 000
Outcome 4	28 200	66 681	62 098
Outcome 5	1 000	4 992	39 520
Management	17 550	27 209	24 336
UNDP fee ISS	8 591	134	122
Total	**220 241**	**407 853**	**343 644**

Table 5: Actual Project Expenditures as of October 2011

Year	2009	2010	10/2011	Total by 10/2011	
Outcome 1	71 860	23 289	25 577	**120 726**	19%
Outcome 2	30 827	36 674	53 448	**120 949**	19%
Outcome 3	16 665	154 272	36 554	**207 491**	32%
Outcome 4	24 890	65 582	11 953	**102 425**	16%
Outcome 5	400	4 000	27 233	**31 633**	5%
Management	10 764	9 048	11 946	**31 758**	5%
UNDP direct	10 847	11 795	12 290	**34 932**	5%
Total	**166 251**	**304 661**	**179 000**	**649 912**	100%

Note: "UNDP direct" means project expenditures directly billed by UNDP CO.

The project seems to expend fair competitive prices for required services. For example six properly selected experts have participated in the excursion to Denmark. Each of the participants had a specific task in the project and was responsible in delivering specific inputs to the project based also on their experience gained during the excursion. The evaluation team has witnessed complains of governmental officials who wondered

why they have not been invited to take part in the excursion as well, but even the project manager herself did not participate in the excursion. The funds have been used exclusively to support capacity development of local experts who provided inputs for project implementation and who will utilize their experience in their daily work as well.

The project has hired a driver and purchased a project car which is not typical for UNDP projects, especially in Bishkek, where costs for taxi are low, just few USD for trips within the city center. However, the rational was to save air ticket costs for frequent travelling from Bishkek to Osh, the location of one pilot building, in ca 700 km distance from Bishkek.

Rating of financial management is *Highly Satisfactory*.

4.2.5 Co-financing and in-kind contributions

The project budget includes 0.95 mil USD cash contribution from GEF and UNDP and 3.182 mil USD in-kind contribution. The in-kind contribution consists of 3 mil USD cash co-financing planned to be provided by Osh and Bishkek municipalities for construction of two schools that the cities would invest without the project as well. The remaining amount of 0.182 mil USD was planned to be provided in-kind by the government and its agencies, namely by Gosstroy.

Gosstroy provides office for the PIU free of charge (an equivalent of ca 10 000 USD per three years of project duration), as well as capacity of their key staff participating in the project – members of the project Advisory Board and other Gosstroy experts providing their expertise services.

Due to unforeseen economic constrains, both cities failed to fulfill their financial commitment to provide financing of 3 mil USD for construction of new schools. The project was very fortunate that it attracted interest of TIKA, the Turkish International Cooperation and Development Administration, which provided 100% funds for the construction of the school in Osh, 6.9 mil USD in total. And instead of a new school in Bishkek, a redesigned gymnasium of a school under construction in Ak-Kashat has started to be constructed in 2011 with already approved budget of which 0.157 mil. USD for the gymnasium itself. Of the originally planned 3.182 mil USD in-kind contribution and co-financing, 7.057 mil USD has been already committed as of October 2011, ie. 222% of the original in-kind budget.

The scope of construction decrease of residential and especially public buildings illustrates the following table.

Table 6: New construction of residential and public buildings

	2008	2009	2010	10/2011
Residential buildings (000 m2)	831	840	702	572
Schools (occupancy)	2 500	2 700	6623	464
Kindergartens (occupancy)	290	470	520	40
Hospitals/clinics (visits)	-	461	145	436

Table 7: Financial Planning Co-financing

Co financing (Type/Source)	IA own Financing (mill US$)		Government (mill US$)		Other* (mill US$)		Total (mill US$)		Total Disbursement (mill US$)	
	Planned	**Actual**	**Planned**	**Actual**	**Planned**	**Actual**	**Planned**	**Actual**	**Planned**	**Actual**
– Grants	0.95					6.9	0.95	6.9		0.65
– Loans/Concessional (compared to market rate)										
– Credits										
– Equity investments										
– In-kind support			3.182	0.167			3.182	0.167		0.01
– Other (*)										
Totals	0.95		3.182	0.167		6.9	4.132	7.67		0.66

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

4.2.6 Identification of management risks (Adaptive Management)

The Project Document has identified three risks and has proposed for each risk a mitigation strategy:

- Energy efficiency code enforcement levels will not improve sufficiently
- Cooperation between national organizations will not be optimal
- Integrated Building Design will not be replicated in other cities

The risk mitigation strategy included focus on large urban centers and involvement of Gosstroy and State Agency for local Government Affairs.

At the beginning of the project implementation, the Inception Report has identified additional major risk of negative impact of global economic crisis on potential unavailability of local co-financing for construction of pilot buildings and has proposed mitigation strategies.

The MTE has identified additional risks in the project design. The summary of all project risks is described below together with mitigation strategies. In those cases, where project risks did materialize already, the Project Implementation Unit has adopted effective adaptive management and has implemented adequate measures to mitigate these risks.

The project as it was designed contains following major risks that might potentially influence project results and targets specified in the Project Document LogFrame:

Major project risks and risk mitigation strategies:

1. Approval and implementation of the new energy efficiency code is a legislative action of the government and is out of direct control of the project.

The project has established very good partnership with Gosstroy, key local governmental agency with responsibilities in this field, and it has authority to implement technical codes - SNiP. Gosstroy was appointed to be an Implementing Partner of the project and thus it feels a strong ownership of the project and responsibilities for achievement of planned project results. Gosstroy has approved and implemented the developed energy efficiency code in 2009.

2. Construction of two pilot schools depends on investment financing provided by local investors – municipalities. This is a very cost-effective strategy for the project, which thus does not need to include investment costs into its budget. However, the achievement of this important project result fully depends on availability of investment funds from a third-party. The project has no direct control on availability and actual provision of these funds.

The project has signed a Letter of Intent with two local municipalities in Bishkek and Osh, which declared their interest and intention to finance investment costs of two new energy efficiency schools to be developed and constructed within the project. Each of the municipality made a commitment to provide 1.5 million USD for investment costs. However, due to external impacts of world economic crisis, local political instability, decrease of GDP and subsequent public budget cuts, none of the municipality was in a position to fulfill its commitment to finance new school so far. The Project Implementation Unit has lead intensive negotiations with other potential partners – investors, and was very lucky to find alternative solution.

Instead of the Osh municipality, the Turkish International Cooperation and Development Administration TIKA has decided to fully finance the construction of the pilot school building in Osh,

and to provide 100% financing for the investment costs of 6.9 million USD. The contract has been signed and actual construction started in September 2011.

In case of the planned school in Bishkek, the school has been designed, but the municipality was not able to allocate the necessary investment funds. As an alternative solution the project agreed with the city to focus on additional school already under construction in Ak-Kashat nearby Bishkek. This school was designed to comply with the old code. The project redesigned its one stand-alone building (sport hall/gymnasium) according to the new energy efficiency code. The new energy efficiency design has been developed and the construction of the gymnasium started in September 2011 as well. The investment is provided by the Bishkek municipality from funds approved before budget cuts already. The negotiations with municipality on funding of the planned new school continue, but the result is unclear.

Dependence of the project on third-party investment is critically risky in all similar projects in other countries as well. The risk might be mitigated by signature of more binding, ideally legally binding contract on co-financing. However, since the period between project design phase and construction period might easily exceed an election period, any legally binding commitment is rather hypothetical. Focus on other than municipal investors only might be an option.

3. Target 6 to radically improve energy efficiency code compliance from 10% to 80% is unrealistic and it is more than highly probably that such a target cannot be achieved in the specific situation of Kyrgyzstan over the period of project implementation. More realistic is such target for a segment of new large public buildings financed from the state/public budgets and/or by international donors. And potentially to a certain level also for other large buildings in commercial sector.

Compliance with codes and other technical standards in small residential buildings is heavily influenced by the prevailing business culture and widespread corruption in all levels of state administration and economy. It is clearly out of the scope of the four year energy efficiency project itself to radically improve the situation in this market segment. More complex policy and economic reforms are needed, and more time is needed for step by step improvement.

Project activities designed to support Outcome 2 – Improved enforcement of mandatory energy efficiency building code and the relevant targets, ie. state building inspectors trained, laboratory equipped with energy auditing equipment, professionals trained, and development and implementation of building certification system will definitely help to improve the compliance rate, however the compliance target should be designed more realistically within the specific local conditions.

Should the target be realistically achievable, it should focus on large public and commercial buildings only, including perhaps large multi-storey apartment buildings developed by recognized investors.

The new Law on Energy Performance of Buildings developed with support from EBRD introduced the mandatory minimum energy efficiency requirements and building certification for all buildings except for small residential buildings with area smaller than 150 m2. For this market segment the target is more realistic, although still very challenging.

4. Any energy consumption monitoring system needs to have available data on actual energy consumption. This is not the case of district heating in Kyrgyzstan. Practically no end-use heat meters are installed in the district heating schemes, except for some 10 heat meters installed in

the district heat distribution system in Bishkek. End-use electricity and gas meters are, with exception of some regions, installed.

The monitoring system can thus be developed and implemented only for those buildings which have energy consumption metered.

5. Target 2 to reduce CO2 emissions by 267 000 tCO2 is not measurable during project implementation period because it is based on estimated number of newly constructed buildings according to the new code in the period between 2013 till 2023, 10 years after planed project termination. If only direct and indirect emission reductions that will materialize during project period would be taken into account, the target would be significantly lower: direct 1 140 tCO2 lifecycle savings from two pilot buildings and 22 800 tCO2 indirect lifecycle emission reductions from other 20 buildings/schools estimated to be built by the end of the project.

The LogFrame targets in the project document should clearly distinguish targets achievable by the end of project implementation from credible estimates on replication potential and future, project ex-post emission savings. The Project Document did provide transparent and detailed calculation of both types of CO2 emission savings, however the project LogFrame target, should it be measurable, cannot include emission savings from buildings expected to be built after project termination.

6. The risk of political and economic instability unfortunately fully materialized during project implementation. The violent political protests in April 2010 had significant impact on country's political and economic situation. This kind of risk is undoubtedly out of project control, and the project can only react and try to find innovative adaptive management solutions.

As a result of political instability and economic decrease the project had to cancel several activities in 2010 - planned meeting of the Advisory Board in spring 2010, international conference planned for 2010, and most importantly local investors did not fulfill their commitment to provide financing for the construction of two new schools. The project faced a serious risk that one of key components of the project, demonstration of the energy efficiency building design, would not materialize in construction of pilot buildings. The Project Manager deployed very effective adaptive management and searched for alternative sources of financing. With a portion of good luck an agreement with TIKA, Turkish International Cooperation and Development Administration, was reached, and TIKA decided to fully finance the pilot school in Osh with investment of 6.9 mil USD. Instead of the new school planned to be built in Bishkek, the project find an alternative solution and redesigned a gymnasium of a school in Ak-Kashat already under construction with allocated funds for financing investment costs. The energy efficient gymnasium is under construction already as well. Negotiations with the city of Bishkek on construction of the designed energy efficient school continue, but no commitment on financing has been reached so far.

The project faced significant risks caused by project design, political instability in the country and economic crisis. The project management applied very successful adaptive management and found alternative investor for two pilot buildings. However, the school in Osh is under a construction already also thanks to fortunate interest of TIKA to allocate necessary funds for this project.

Identification of project risks is rated to be *Satisfactory*.

Implemented adaptive management is rated *Highly Satisfactory*.

4.2.7 Stakeholder participation during implementation

During the project implementation the project has continued its cooperation with local partners that have been involved also in the project design phase.

The key local project partner is Gosstroy. Other local partners include national ministries, other governmental agencies, municipalities, universities, building design companies and local NGOs.

Local stakeholders involved actively during project implementation include:

1. Ministry of Industry, Energy and Fuel Resources
2. Ministry of Education and Science
3. Parliament of the Kyrgyz Republic
4. State Agency for Architecture and Construction under the Government of the Kyrgyz Republic
5. Kyrgyz Research and Design Institute of Seismic Construction
6. State Environmental Protection Agency
7. National Agency on Local Self-Government
8. Bishkek Municipality
9. Osh Municipality
10. Kyrgyz-Russian Slavic University
11. Kyrgyz University for Construction, Transport and Architecture
12. Garant Proekt company
13. Kyrgyzgiprostroy
14. CAMP Alatoo NGO
15. ARIS – Community Development and Investment Agency of the Kyrgyz Republic

Stakeholder participation during implementation is rated *Satisfactory*.

4.3 Results

4.3.1 Attainment of Outputs, Outcomes and Objectives

A detailed discussion on definition of project indicators, specification of its targets and related risks are provided in Chapters 4.1.3 and 4.2.6. Evaluation of project targets and achievements and attainment of project objectives and outcomes is provided and discussed in the following overview.

Project objective:
Reduce energy consumption and associated GHG emissions in Kyrgyz building sector

Indicator 1: Average thermal energy consumption in new/renovated residential/public buildings
Target 1: Thermal energy consumption for new code-compliant buildings reduced to an average of 100 kWh/m² (by about 30%)
*Achievement: Two pilot schools and one gymnasium have been **designed** according to the new EE code with designed energy consumption for space heating of 55.3 kWh/m2 (school in Osh for 850 students with a total floor area of 7459 m2, average height of 4.64 m and*

2366 heating degree-days), and 55.6 kWh/m2 in Bishkek (450 students, 4 888 m2 floor area, average height 4.4 m and 2370 degree-days), and of 100 kWh/m2 (gymnasium in Ak-Kashat, 274 m2 floor area, average height 6 m, 2370 degree-days), energy efficiency class A and B, with 49.6%, 60%, and 39.4% better energy performance than the minimum SNiP code requirement. The weighted average of energy consumption for space heating is ***56 kWh/m2****. According to the calculation based on* ***designed*** *building parameters, the target of 100 kWh/m2 is met. However the target expressed in kWh/m2 can be illustrative only, due to different building types and parameters such as height. The kWh/m2 indicator is most representative for standard multi-storey apartment buildings with standard height. The weighted average of designed annual thermal energy consumption for space heating recalculated to a typical storey height of 2,5 m in residential buildings is* ***31 kWh/m2****.*

Rating: *The target is achieved. The energy consumption according to the building designs of 56 31 kWh/m2 is significantly lower (better) than target. Highly Satisfactory.*

Indicator 2: New building lifecycle CO2 emission

Target 2: 5.3 mln tCO2 or 267,000 tCO2 eq less than in baseline

Note: This target includes emission savings from EE buildings estimated to be built until 2023. Direct CO_2 savings from constructed two pilot schools (with total area of 9 500 m2) has a target of 1 140 tCO_2 savings, and indirect CO2 savings from replication of energy efficient buildings by 2012 has a target of 22 800 tCO2.

Achievement: *The* ***designed*** *lifecycle CO2 emission savings calculated according to the methodology specified in Project Document (baseline energy intensity in schools 140 kWh/m2, average energy mix CO2 emission factor for schools 0,12 tCO2/MWh, for electricity 0,09 tCO2/MWh, 20 years useful lifetime of the building) for two designed schools and a gymnasium with a total area of 12 621 m2 is 2 532 tCO2 (with average energy mix). The actual designed lifecycle CO2 savings for school in Osh and gymnasium in Ash-Kabat designed to use electricity for space heating, where construction has started already, is* ***1 156*** *tCO2 (total area of 7 732 m2). The emission factor for electricity is 0.09 tCO2/MWh, ie. lower than for average energy mix, due to the large share of hydro power. The direct lifecycle CO2 emission savings target of 1 140 tCO2 will be met by two pilot buildings under construction – according to their* ***designed*** *parameters.*

Rating: *The 267 000 tCO2 target is not measurable. The direct CO2 savings sub-target in two pilot schools of 1 140 tCO_2 pilot has been reached – 1 156 tCO2 savings according to pilot schools design (subject to verification after building construction). Satisfactory.*

Outcome 1: ***Improved energy performance codes***

Indicator 3: Adoption of mandatory energy efficient building code and its regular updates implemented

Target 3: New performance-based EE code adopted in 2010 and updated by 2015

Achievement: *The new energy efficiency code SNiP 23-01:2009 has been approved in 2009 and came into force on January 1, 2010. If the code will be updated in 2015 is not measurable during project implementation.*

Rating: *The measurable part of the target has been achieved. Highly Satisfactory.*

Indicator 4: Level of minimum mandatory thermal requirements for buildings

Target 4: 10-20% decrease to 80 kWh/m² (or lower for larger multifamily buildings)

Achievement: *The energy efficiency building code does not explicitly specify minimum mandatory thermal requirements of buildings in kWh/m2, because this indicator is not that specific as it might look at first glance. It always depends on a number of other factors that influence the actual designed annual energy consumption for space heating; it depends not only on the size and type of the building, its location, orientation, but for example height of rooms and thus the actual heated space of buildings is one of a decisive factors and might easily differ in a range of a factor 1 - 3, and thus also the minimal thermal requirements expressed in kWh/m2. This is the case of the three school buildings designed. An average storey height is 4.63 m, 4.43 m, and 6 m in the designed school in Osh, and Bishkek and in the gymnasium in Ak-Kashat, while a typical height of apartment ranges between 2.3 – 2.5 m. In other words: the actual minimal thermal requirements will differ by factor 2-2.6 only due to this single factor. The minimum thermal requirements for the designed buildings in Osh, Bishkek and Ak-Kashat are 110 kWh/m2, 139 kWh/m2 and 166 kWh/m2. If recalculated to a standard room height of 2.5 m in residential buildings, the minimum thermal requirement would be 59 kWh/m2, 78 kWh/m2, and 69 kWh/m2, ie. lower and stricter than the target of 80 kWh/m2.*

Rating: *The target recalculated to a typical room height has been achieved. Highly Satisfactory.*

Indicator 5: Capacity of national authorities to design and regularly update advanced building codes

Target 5: Calculation methodology to determine building energy consumption agreed, software obtained and staff trained in its application

Achievement: *The methodology to determine building energy consumption has been agreed and is described in detail in the energy efficiency building code SNiP 23-01:2009 and Rules for Design and Construction SP: 23-101:2009 approved in 2009, a series of seminars on development of EE building code for Gosstroy experts and other professionals were delivered. Instead of a software detailed Rules for Design and Construction were developed and approved.*

Rating: *The target has been achieved. Satisfactory.*

Outcome 2: ***Improved enforcement of mandatory energy efficiency building codes***

Indicator 6: Level of enforcement of new standards (% of new buildings)

Target 6: Compliance levels radically improved up to 80%

Achievement: *The level of compliance could not have been evaluated yet, since the first buildings designed according to the new code have just started their construction in 9/2011; the construction of new buildings according to the new code is scheduled to be finished in mid 2012. The target should be redefined so that it would be in line with article 5.3 of the new Law on Energy Performance of Buildings which specifies buildings to which the Law is applicable, ie. practically all buildings except for residential buildings smaller than 150 m2.*

Rating: *Not evaluated yet during MTE.*

Indicator 7: Capacity to assess building energy performance in line with new standards

Target 7a: Laboratories equipped by end of year 1

Achievement: *Laboratories have been equipped with four infra-red cameras in 2010, ie. in year 3. Achievement delayed, but fulfilled.*

Rating: *The target has been met in year 3. Satisfactory.*

Target 7b: 20 staff from the Agency and University trained to undertake energy performance assessment by end of year 1

Achievement: *26 professionals trained in energy performance assessment, energy savings and energy efficiency in buildings in year 2010.*

Rating: *The target has been achieved with a delay. Satisfactory.*

Indicator 8: Enforcement capacity for EE building code: trained staff, rules and procedures for building certification

Target 8a: Procedures for mandatory building certification system adopted and tested by year 2

Achievement: *Energy passport and methodology for its development and calculation have been developed in 2009 and published in the SNiP code. The system of administration of the building certification to be implemented in line with the new Law on Energy Performance of Buildings.*

Rating: *The target has been partially achieved. Marginally Satisfactory.*

Target 8b: 150 Building Inspectors trained in their application by end of year 3

Achievement: *156 regional architects and construction inspectors from 7 regions and Bishkek were trained in 2010, the year 2, in new SNiP application and calculation methodology of energy passports/building certificates, training in building certification administration not yet fully developed and implemented.*

Rating: *The target has been partially achieved. Marginally Satisfactory.*

Target 8c: Building certification works by year 3

Achievement: *The system of Energy passport development is in place. Energy passports are compulsorily developed as an integral part of building design by design organizations. The administration system for collecting, updating and publishing of building certifications/Energy passports is not yet fully implemented. The mid-term evaluation took place two months before the end of year 3.*

Rating: *The target is not yet fully achieved. Marginally Satisfactory.*

Outcome 3: ***Pilot projects utilizing an integrated design approach***

Indicator 9: Energy- and cost-saving and social impact of integrated building design (IBD) in comparison with similar buildings

Target 9a: No or maximum 10% increase in construction cost

Achievement: *Investment cost of the pilot school in Osh is 6.9 mil USD, 0.157 mil USD of the sport hall in the school in Ak-Kashat, and budgeted cost of the designed school in Bishek is 3.5 mil USD. The specific investment costs are 925 USD/m2 in Osh for calculated useful floor area (разчетная площадъ), 572 USD/m2 in Ak-Kashat for the total area, and 710 USD/m2 for useful area (полезная площадъ). According to Gosstroy, this is with caution in range of 547 to 1 218 USD/m2 of specific investment costs of schools built prior to the new EE code has been designed. Additional investment costs that improved the new building design from the minimum required energy efficiency*

standard of Class C to a boundary between energy efficiency Class A and B (50% energy consumption reduction), are 4% of total investment costs in case of the school in Osh.

Rating: *The target has been achieved according to expected costs and contracted price. Satisfactory.*

Target 9b: 35% decrease in building energy consumption or 1,140 tCO2e from pilot buildings

Achievement: *1156 tCO2 emission savings according to **design** of the school in Osh and gymnasium in Ak-Kashat, both facilities are under construction since 9/2011 and are scheduled to be finished by mid 2012 and end of 2011.*

Rating: *The target has been achieved according to building design. Satisfactory.*

Target 9c: Better comfort for users

Achievement: *Target is not specific enough to be able to be properly evaluated. No buildings have been built yet and put into operation.*

Rating: *The target has not been evaluated at the MTE.*

Indicator 10: Scale of replication for IBD approach

Target 10: IBD introduced to all new public buildings in two largest Kyrgyz cities (Osh and Bishkek) by the end of the project

Achievement: *Not applicable for MTE.*

Rating: *The target has not been evaluated at the MTE.*

Outcome 4: ***Promotion of best energy design and building practices in construction sector***

Indicator 11: New curricula on energy efficient building design for universities

Target 11: Curricula developed, registered with Ministry of Education and introduced in Kyrgyz University for Construction, Transport and Architecture

Achievement: *The curricula has been developed and introduced in two universities – in the Kyrgyz-Russian Slavic University and in the Kyrgyz University for Construction, Transport and Architecture.*

Rating: *The target has been achieved. Satisfactory.*

Indicator 12: Number of trained building engineers and architects

Target 12: At least 100 industry professionals receive training in application of new codes

Achievement: *In total 182 industry professionals trained in application of new energy efficiency code.*

Rating: *The target has been achieved. Satisfactory.*

Indicator 13: Development of new products in conformity with new standards

Target 13: Larger availability of efficient materials and services

Achievement: *The basic energy efficiency materials, including wall insulation and efficient windows, are available on the Kyrgyz market. The problem in general is not unavailability, but affordability of energy efficient materials for local inhabitants, especially in poor remote rural areas. The project has developed a series of manuals – Catalogues of technical solutions for insulation of single family houses and multiapartment buildings, and for construction of energy efficient stoves. The manuals include instructions for utilization of local natural products such as reed cane for insulating*

rural houses. The manuals have been distributed in partnership with a local NGO in rural regions in the country.

Rating: *The target has been in principal achieved. Marginally Satisfactory.*

Outcome 5: ***Monitoring of building energy consumption and GHG emissions***

Indicator 14: Availability of accurate and up-to date data on energy consumption and CO2 emissions in buildings

Target 14: Monitoring system, including institutional framework, trained staff and technical tools and methodology, is in place by the end of the project

Achievement: *Some studies on development of the monitoring system, such as a study on development of a cadastre of new buildings have been subcontracted to local experts in 2011, the actual work on development of the monitoring system is planned for 2012.*

Rating: *The target has not been evaluated at the MTE.*

Table 8: Summary overview of target achievements

Target #	Target	Achievements and ratings
Project objective: ***Reduce energy consumption and associated GHG emissions in Kyrgyz building sector***		
1	Thermal energy consumption for new code-compliant buildings reduced to an average of **100 kWh/m²** (by about 30%)	The weighted average designed annual thermal energy consumption for space heating in three designed schools is **56 kWh/m2**, recalculated to a storey height of 2,5 m it is 31 kWh/m2. The target is met according to building design, although it is not specific enough - HS.
2	267 000 tCO2 of lifecycle savings from buildings built by 2023 (**1140 tCO2** direct savings from pilot buildings, 22800 tCO2 of indirect savings as specified in the Project Document)	The 267 000 tCO2 savings target is not measurable until 2023, it includes savings from buildings estimated to be built after project termination. Direct lifecycle savings from two designed pilot buildings under construction are **1156 tCO2**. Indirect savings are subject to project terminal evaluation. Relevant target of direct emission savings from pilot schools is met according to designed building parameters - S.
Outcome 1: Improved energy performance codes		
3	New performance-based EE code adopted in 2010 and updated by 2015	The EE code SNiP 23-01:2009 has been approved in 2009 and came into force on January 1, 2010. Target is met - HS. The Law on Energy Performance in Buildings require the minimum energy performance to be reviewed at least within 10 years, ie. by 2021. This sub-target is measurable after project termination only.
4	10-20% decrease of minimum code requirements to 80 kWh/m² (or lower for larger multifamily buildings)	The minimum requirement for three designed buildings is 110 kWh/m2, 139 kWh/m2 and 166 kWh/m2. If recalculated to a standard room height of 2.5 m of multifamily buildings, the minimum thermal requirement would be 59 kWh/m2, 78 kWh/m2, and 69 kWh/m2. The target is not specific enough. If the recalculated numbers (for buildings with standard room height as in residential buildings) are taken into account, the target is met - HS.
5	Calculation methodology to determine building energy consumption agreed, software obtained and staff trained in its application	The methodology has been developed and is described in the energy efficiency building code SNiP 23-01:2009 and Rules for Design and Construction SP: 23-101:2009 approved in 2009. A series of seminars on development of EE building code were delivered. The Rules for Design and Construction have been developed instead of the software. Target is met - S.
Outcome 2: Improved enforcement of mandatory energy efficiency building codes		
6	Compliance levels radically improved up to 80%	Target is not evaluated at MTE. Construction of new buildings for which the new energy efficiency code is applicable has not been finished yet.
7a	Laboratories equipped by end of year 1	Infra-red cameras supplied in year 3 (2011). Target met with delay - S.
7b	20 staff from the Agency and University trained to undertake energy performance assessment by end of year 1	26 professionals trained in energy performance assessment, energy savings and energy efficiency in buildings. Target met with delay - S.
8a	Procedures for mandatory building	Energy passport and methodology for its development

	certification system adopted and tested by year 2	and calculation have been developed in 2009 and published in the SNiP code. The administration of the certification system according to the new Law on Energy Performance of Buildings not yet fully implemented. Target partially met - MS.
8b	150 Building Inspectors trained in building certification application by end of year 3	156 regional architects and building inspectors from 7 regions and Bishkek were trained in new SNiP application and energy passports, training in building certification administration not yet fully developed and implemented. Target has been partially met by 10/2011 - MS.
8c	Building certification works by year 3	The system of Energy passport development is in place. The administration of the certification system is not yet fully implemented. Target is not yet fully met (2 months before end of year 3) - MS.
Outcome 3: Pilot projects utilizing an integrated design approach		
9a	No or maximum 10% increase in construction costs	Specific investment costs of pilot schools are 572-925 USD/m2, which is within the interval of 547-1 218 USD/m2 for older schools built before the new EE code has been approved. Target is met - S.
9b	35% decrease in building energy consumption or **1 140 tCO2** emission savings from pilot buildings	Designed emission savings of **1 156 tCO2** from the school in Osh and gymnasium in Ak-Kashat. Target is met according to designed building parameters - S.
9c	Better comfort for users in new buildings.	The target is vague. The buildings are under construction. Target not evaluated/not applicable for MTE.
10	IBD introduced to all new public buildings in two largest Kyrgyz cities (Osh and Bishkek) by the end of the project	Target is not applicable for MTE.
Outcome 4: Promotion of best energy design and building practices in construction sector		
11	Curricula developed, registered with Ministry of Education and introduced in the Kyrgyz University for Construction, Transport and Architecture	The curricula have been developed and prepared in two universities. Target has been met - S.
12	At least 100 industry professionals receive training in application of new codes	A total of 182 industry professionals trained in five seminars in application of new energy efficiency code. Target is met - S.
13	Larger availability of energy efficient materials and services	Necessary energy efficient materials are available, but too expensive for poor people in remote rural areas. Series of manuals – Catalogues of technical solutions for building insulation, and for construction of energy efficient stoves have been developed and distributed. The manuals include instructions for utilization of local natural products such as reed cane for insulating rural houses. Target is not fully relevant with the project focus, in principle met - MS.
14	Monitoring system, including institutional framework, trained staff and technical tools and methodology, is in place by the end of the project	Monitoring system under development. Target is not applicable for MTE.

Target ratings are shown in colors:

The target/redefined target has been achieved, or achieved with delay, Target has been partially met, The target is not measurable during project implementation, Target is not applicable for MTE

Other project achievements

In addition to targets specified in the project LogFrame matrix, the project has developed following additional deliverables according to the updated annual work plans:

- An amendment to the Law on Energy Efficiency with provisions on end-use energy efficiency in buildings has been drafted and submitted to the parliament (after the first reading the parliament has been dissolved.)
- Energy efficiency information leaflets and publications have been developed and circulated, media coverage include 15 articles on energy efficiency
- International website on energy efficiency has been established, and information shared via caresd.net
- One film and one short video on energy efficiency in buildings has been produced and broadcasted on national TV
- Four GOST technical standards have been updated to comply with the new SNiP 23-1:2009
- Three draft provisions, Provisions on Energy Passport and its Implementation Procedures, Provisions on Building Energy Performance Certification and Energy Monitoring for School Buildings, and Provisions on Energy Audit of Buildings have been developed and submitted to Gosstroy.
- Three curricula on Design, Regulations, and Construction of energy efficient buildings have been developed for voluntary training of design and building construction professionals
- Conference on energy and energy efficiency held in Bishkek in September 2011 organized by the Ministry of Energy co-financed and project results presented
- Three Catalogues have been developed and distributed: Catalogue on Technical Solutions for Insulation of External Walls in Multifamily Residential Buildings, Catalogue on Technical Solutions for Insulation of External Walls in Single Family Houses, and Catalogue of Technical Solutions for Construction of Energy Efficient Stoves
- Presentations at the Side-Event at the 7th Ministerial Conference in Astana, September 2011 - Green Buildings
- Draft Law on Energy Efficiency developed and submitted to Parliament for approval. In first reading it was decided to be replaced with Law on Energy Performance in Buildings developed with support from EBRD.

Project indicators and targets, as discussed above, are not in all cases defined as SMART indicators/targets, specific enough, or measurable. In this MTE, the evaluators did use the target definitions from the Project Document and Inception report. The evaluation of achievements thus includes a detailed discussion of targets and their specification if needed. In this sense, the key critical indicator is indicator 2 and its target to reduce new building lifecycle emissions by 267 000 tCO2. This target is not measurable since it includes emission savings from buildings to be built 10+ years after planned project termination. For evaluation of this target relevant direct emission savings calculation from Project Document was taken into account as a relevant and applicable target for MTE.

In principle, most targets have been fully or partially met. Some targets (8a, 8b) have been achieved with delay; however these delays do not have negative impact on the prospect of project achievements by the planned project termination. Achievements of targets 1 and 2 are evaluated based on calculated design building parameters, and should be subject to revision after metered data on actual energy

consumption in constructed pilot schools will be available. Target 9a – maximum 10% increase in investment costs has been exceeded in case of the experimental school in Osh which will have much more advanced energy efficiency equipment installed than in typical schools, including solar heat collectors, heat recuperation, and computer aided indoor temperature controls with individual room controls.

The project has a good prospect to fulfill its main objectives and outcomes by the end of planned project termination if the building certification system and monitoring system will be successfully developed and fully implemented, and construction of pilot buildings finalized according to their design.

The project target to dramatically increase compliance rate up to 80% is not realistic, and the evaluators do not expect that this target could be met, should it apply to all newly constructed buildings, including small residential ones. This target should be redefined to cover separately building design and building construction and only for those buildings which are subject of regulations imposed by the new Law on Energy Performance in Buildings, ie. practically all buildings except for small residential buildings smaller than 150m2.

Overall rating of project outcomes:

1. Improved energy performance building codes – *Highly Satisfactory (HS)*
2. Improved enforcement levels of mandatory energy efficiency building codes – *Marginally Satisfactory (MS)*

   Activities implemented within this Outcome are expected to deliver Satisfactory impact, if remaining activities will be also effectively implemented (such as implementation of administration system of the building certification), and if only larger buildings are considered (in line with the Law on EPB). In residential buildings smaller than 150 m2 the enforcement levels are expected to increase only marginally and to remain low due to economic and social factors that are out of control of the project (widespread corruption etc).
3. Pilot buildings with integrated building design approach constructed – *Satisfactory (S)*
4. Promoted best energy efficiency design and building practices in construction sector – *Satisfactory (S)*
5. Implemented monitoring of building energy consumption and GHG emissions – *not evaluated/not implemented yet*

Rating of the project outcome relevance is *Highly Satisfactory*.

Rating of the project outcome effectiveness is *Satisfactory*.

Rating of the project outcome efficiency is *Highly Satisfactory*.

4.3.2 Project Impact

This UNDP/GEF Improving Energy Efficiency in Buildings project addresses only a small energy efficiency market niche and opportunities in Kyrgyzstan – new buildings. The country faces complex problems in the energy sector and most of the energy efficiency potential remains unaddressed so far. This includes energy pricing reform that would allow energy utilities to collect enough revenues for

urgently needed reconstruction and modernization of its infrastructure. In district heating sector this means specifically installation of heat meters that would help to identify the most urgent energy inefficient segments of its infrastructure for modernization, and installation of heat controls both in the distribution network and on the building level to minimize energy losses. Energy efficient reconstruction of existing building stock is practically none existent due to scarce sources of financing and low capacity of building owners and utilities to accept and repay loans.

In this respect the focus of the project on development of an energy efficiency code for buildings and development of local capacity in Integrated Building Design is perhaps the best, if not the only one low-cost/no-cost energy efficiency strategy applicable in today's Kyrgyzstan. A strategy that can be successfully implemented independently on other needed complex reforms.

Such strategy has a limited impact in short term, during project implementation, due to its focus on small share of new buildings on the whole market. However, its long term potential impact in terms of CO2 savings is substantial. This illustrates also the target 2 which was designed in the Project Document to cover a period of 10+ years after project termination – estimated indirect GHG savings of 267 000 tCO2.

The project evaluation has demonstrated that the project has already delivered substantial impact in terms of development and strengthening of local capacities to design energy efficient buildings, although the actual benefits in terms of CO2 savings from buildings built during project implementation are rather limited. However, this type of capacity building projects in principle cannot generate significant amount of GHG savings during project implementation only, including savings from pilot buildings. The main benefits can follow only in the future, after project termination.

The project has delivered already substantial results and impact: new energy efficient code has been developed, approved, and implemented, local professionals, including architects, designers and building inspectors, were trained, and design of three pilot school buildings have been prepared and a construction of one pilot school and one school gymnasium has started. In a parallel activity sponsored by EBRD a new Law on Energy Performance in Buildings has been developed, approved by the Parliament and will come into force in 2012.

The GEF/UNDP project activities in 2012 should focus primarily on support of full implementation of the administration of the certification system at Gosstroy, and on development and implementation of the monitoring system of actual energy consumption in new buildings. A transparent and published system on building performance control and building certification will increase also compliance rate with the new code even in the situation where corruption is widespread, and will make the project impact sustainable.

Rating of the project impact is *Satisfactory*.

4.3.3 Prospects of Sustainability

Foundations for sustainable project impact laid the adoption of the new energy code and the new Law on Energy Performance of Buildings. Critical factors for sustainability of project impacts are effective administration of the building certification system that will also include revisions of building designs during their construction, energy passports and energy labels that will be made public and thus subject to public control, implementation of effective building inspection, and implementation of effective

monitoring system of actual energy consumption in buildings subject to the new energy efficiency code. All these activities are scheduled to be implemented and finalized by the project by the end of 2012.

The project as of October 2011 has good prospects to fully implement these remaining tasks; however the next year will be critical for securing the sustainability of project impacts in long term.

Sustainability rating:

- Financial resources dimension of sustainability: *Likely*
- Socio-political dimension of sustainability: *Moderately Likely* (risks of political disturbances and widespread corruption)
- Institutional framework and governance dimension of sustainability: *Moderately Likely* (Local entity/ Gosstroy needs to fully adopt administration of the certification system and monitoring)
- Environmental dimension of sustainability: *Likely*

5. Conclusions and Recommendations

5.1 Findings

The overall project rating is *Satisfactory*.

The project design properly addresses the country needs and priorities and reflects the specific situation in Kyrgyzstan – lack of energy sector reforms due to political instability and poor economic performance. The GEF/UNDP project Improving Energy Efficiency in Buildings is a low-cost strategy with a potential to deliver sustainable impacts in long terms even if the government will not implement the needed energy sector reforms in a near future.

The Project Document is quite well developed; the relatively weakest part is LogFrame and specification of project indicators and targets. Some of them are not specific enough, not measurable, and some are not exactly relevant to project objectives and designed activities. The LogFrame needs improvement so that it could properly measure project achievements. However, the specification of the LogFrame has significant impact on proper evaluation of project results, but not directly on actual delivery of project results themselves.

The project faced significant risks, both external and internal. Unexpected critical external factor were the violent political protests in the spring 2010 which resulted in political instability and together with the world economic crisis lead to economic decrease and public budget cuts. This multiplied the key internal risk: the project fully relied on local public investors to provide financing for the construction of pilot buildings to be built in accordance with the new energy efficiency code. And unfortunately neither of both municipalities was in a position to fulfill its commitment to finance the construction costs of pilot schools in Osh and Bishkek.

The PIU deployed effective adaptive management and with a big portion of good luck it managed to secure alternative financing from TIKA, the Turkish International Cooperation and Development Administration, for the school in Osh, and to redesign a gymnasium of another school already under construction in Ak-Kashat, whose budget was already approved and financing provided.

The project target to dramatically increase compliance with the energy efficiency code from estimated 10% to 80% seems unrealistic. In a country with widespread corruption one cannot expect that just implementation of a certification system and training of state building inspectors will guarantee such an significant change, if the target is applicable for all buildings, including small residential where the compliance rate is believed to be the lowest one. The indicator and target might be redefined in accordance with the new Law on Energy Performance in Buildings which is not applicable for residential buildings smaller than 150 m2.

As discussed in detail in Chapter 4.3.1 Attainment of Outputs, Outcomes and Objectives, the main project objectives, outcomes and targets has been in principle reached proportionally to the status of project implementation. Some of the project activities have been delayed, but are expected to be fully achieved by the end of project implementation with one exception: monitoring of actual energy consumption of newly constructed pilot buildings will not cover the whole heating period by the planned termination of the project implementation. New energy efficiency code – SniP has been implemented, four GOST technical norms updated, two schools and one gymnasium has been

designed according to the new code, a construction of one school in Osh and a gymnasium in AK-Kashat has been launched in September 2011, total of 162 professionals have been trained in new energy efficiency code compliance, two energy efficiency in buildings curricula developed and approved for two universities, three manuals – energy efficiency catalogues developed and disseminated, one film and a video were prepared and broadcasted, information leaflets disseminated, information on project results updates published in numerous newspaper articles.

As of October 2011, the third year of total four year project implementation period, a total of 649 912 USD has been spent from the total UNDP/GEF budget of 0.95 mil USD, ie. 68%.

A total of 7.1 mil USD in-kind contribution/co-financing has been provided so far, of which 6.9 mil USD co-financing from TIKA, the Turkish International Cooperation and Development Administration, and 0.157 mil USD co-financing from the state budget for the gymnasium in Ak-Kashat. This represents 222% of originally planned in-kind contribution of 3.182 mil USD.

The project has a good prospect to fulfill main project objectives by the end of project implementation, if the specification of project LogFrame indicators will be improved and made more realistic.

5.2 Corrective actions for the design, duration, implementation, monitoring and evaluation of the project

As discussed in detail in Chapter 4.1.3, several LogFrame indicators and targets are not specific enough and/or not measurable. The LogFrame needs revision and upgrade to make the indicators and targets SMART – Specific, Measurable, Attainable, Relevant, and Trackable. At this point of project implementation one can assume what will be actual target achievements in most cases at the end of the project implementation. In such situation a major redesign of LogFrame indicators might easily end up in such target specification that will be easily achievable. Thus the evaluation team believes it is fair to make a compromise and to make only necessary changes in indicators and target specification, that will make them more specific and measurable, but to keep in place those targets which are not perfectly SMART and include some ambiguity, but guarantee continuity in the LogFrame matrix.

Thus the evaluation team proposes as a minimum to change project indicators and target specification as follows (proposed changes in wording are highlighted in *italics*):

Project objective:
Reduce energy consumption and associated GHG emissions in Kyrgyz building sector

Indicator 1: Average thermal energy consumption in new/renovated residential/public buildings
Target 1: Thermal energy consumption for new code-compliant buildings reduced to an average of 100 kWh/m² (by about 30%) – *recalculated to a typical height of rooms in multiapartment buildings of 2.5 m*

Indicator 2: New building lifecycle CO2 emission
~~Target 2: 5,3 mln tCO2 or 267,000 tCO2 eq less than in baseline~~
Target 2a: Direct lifecycle CO_2 savings from constructed two pilot buildings 1 140 tCO_2 savings
Target 2b: Indirect lifecycle CO2 savings from replication of energy efficient buildings by the end of the project of 22 800 tCO2

Outcome 1: ***Improved energy performance codes***

Indicator 3: Adoption of mandatory energy efficient building code and its regular updates implemented

Target 3: New performance-based EE code adopted in 2010 and updated ~~by 2015~~ – *at least once in 10 years*

Indicator 4: Level of minimum mandatory thermal requirements for buildings

Target 4: 10-20% decrease to 80 kWh/m² (or lower for larger multifamily buildings) – *recalculated to a typical height of rooms in multiapartment buildings of 2.5 m*

Indicator 5: Capacity of national authorities to design and regularly update advanced building codes

Target 5: Calculation methodology to determine building energy consumption agreed, software obtained and staff trained in its application

Outcome 2: ***Improved enforcement of mandatory energy efficiency building codes***

Indicator 6: Level of enforcement of new standards (% of new buildings)

Target 6a: Compliance levels *of building designs* radically improved up to 80% - *in buildings subject to regulations of the Law on Energy Performance of Buildings (Закон об энергетической эффективности зданий) - article 5.3*

Target 6b: Compliance levels *of constructed buildings* radically improved up to 80% - *in buildings subject to regulations of the Law on Energy Performance of Buildings (Закон об энергетической эффективности зданий) - article 5.3*

Indicator 7: Capacity to assess building energy performance in line with new standards

Target 7a: Laboratories equipped by end of year 1

Target 7b: 20 staff from the Agency and University trained to undertake energy performance assessment by end of year 1

Indicator 8: Enforcement capacity for EE building code: trained staff, rules and procedures for building certification

Target 8a: Procedures for mandatory building certification system adopted and tested by year 2

Target 8b: 150 Building Inspectors trained in their application by end of year 3

Target 8c: Building certification works by year 3

Outcome 3: ***Pilot projects utilizing an integrated design approach***

Indicator 9: Energy- and cost-saving and social impact of integrated building design (IBD) in comparison with similar buildings

Target 9a: No or maximum 10% increase in construction cost *of new pilot buildings*

Target 9b: 35% decrease in building energy consumption or 1,140 tCO2e from pilot buildings – this target duplicates the revised target 2 and thus it can be removed

Target 9c: Better comfort for users
This target is vague and can be removed

Indicator 10: Scale of replication ~~for IBD approach~~ *of energy efficiency building design in public sector in large cities*

Target 10: ~~IBD introduced to~~ All new public buildings in two largest Kyrgyz cities (Osh and Bishkek) *comply with the new energy efficiency code SNiP* by the end of the project

Outcome 4: ***Promotion of best energy design and building practices in construction sector***

Indicator 11: New curricula on energy efficient building design for universities

Target 11: Curricula developed, registered with Ministry of Education and introduced in Kyrgyz University for Construction, Transport and Architecture

Indicator 12: Number of trained building engineers and architects

Target 12: At least 100 industry professionals receive training in application of new codes

Indicator 13: Development of new products in conformity with new standards

Target 13: Larger availability of efficient materials and services
This indicator and target are not directly relevant to project objectives and outcomes and can be removed

Outcome 5: ***Monitoring of building energy consumption and GHG emissions***

Indicator 14: ~~Availability of accurate and up-to-date data on energy consumption and CO2 emissions in buildings~~
Implementation of monitoring of building energy consumption and GHG emissions

Target 14: Monitoring system, including institutional framework, trained staff and technical tools and methodology, *including system for energy data collection and calculation of energy use for space heating developed in accordance with the Law on Energy Performance in Buildings*, is in place by the end of the project, *and implemented for project pilot buildings and other buildings built according to the new energy efficiency code by mid 2012 at least*

Due to delays in construction of pilot schools which will be finished in 2012, it will not be possible to monitor and evaluate actual energy consumption for space heating over the whole heating period. In order to be able to evaluate actual energy consumption especially of the school in Osh it would be useful to evaluate its actual energy performance after the end of heating season in 2013. Thus we propose to extend the project implementation period till the end of 2013 and to evaluate the actual energy consumption and energy performance of new pilot and potentially also other buildings built according to the new energy efficiency code. This extension should use remaining funding planned for 2012 and should not require additional budget increase.

Alternatively Gosstroy or a third-party might be contracted for such evaluation after project termination at the end of 2012, but additional funds for such evaluation should be secured. In this case the ex-post evaluation of pilot buildings energy performance would not be subject of terminal project evaluation, should it take place during project implementation period. If the terminal project evaluation would take place after project termination as well, there is a risk that the PIU team will not be available and the terminal evaluators would face difficulties in collecting necessary information. Thus the no-cost project extension seems to be the best option.

5.3 Actions to strengthen or reinforce benefits from the project

The project managed to secure alternative financing for construction of two pilot buildings when both municipalities in Osh and Bishkek failed to fulfill their financing commitment. The target of construction of two pilot buildings will thus be achieved.

During the meeting of the evaluation team and the Project Manager with ARIS - Community Development and Investment Agency of the Kyrgyz Republic, ARIS managers introduced their project financed by German Development Bank KfW to build a dozen of small schools and kindergartens in rural areas of the country and expressed their interest to partner with UNDP/GEF project and to utilize its project results and experience in designing and construction of energy efficient buildings. This gives the project additional opportunity to team up with additional investor in public buildings and to increase project impact and direct GHG emission savings.

The Bishkek municipality was not in a position to finance construction of the designed school in Bishkek so far, however the communication between PIU and the city continues. The PIU is encouraged to proceed with negotiations with this potential investor and/or other investors, including international donor community, that might potentially be willing to finance construction of the designed school or other facilities, and to share project experience gained in design and construction of pilot buildings.

The project has supported and implemented a series of trainings in energy efficient building design and compliance with the new energy efficiency code, a total of 162 professionals have been trained so far and the project target has been reached. However, most of the trainings were implemented before the energy efficient pilot schools have been designed and construction started, ie. when there was only limited local hands-on experience with new energy efficient buildings. The project is encouraged to continue its information dissemination and capacity building activities and to include local professionals with hands-on experience with development, design and construction of energy efficient buildings in these activities.

Most of the trainings focused on compliance with energy efficient code, with some practical experience in Integrated Building Design. The IBD concept covers not only how to comply with energy efficiency code, but primarily how to make clever energy efficient design perhaps even cheaper or more energy efficient than required by the energy efficiency building code. This is relatively advanced concept which requires ideally certain experience with energy efficient building design and compliance with energy efficiency building code. In 2010 the project planned to organize international conference and invited Dr. Wolfgang Feist of the Passive House Institute in Germany, a European guru of low-energy and passive buildings to be a key speaker. Unfortunately, the conference was cancelled due to violent political protests in the spring of 2010. The project might consider organizing similar event in 2012, perhaps jointly with other UNDP/GEF energy efficiency in buildings projects in the region. In this case, local experts will have already their own practical hands-on experience with design and construction of energy efficient buildings and thus it might be interesting for them also to share their experience, as well as to participate in more detail discussions and experience exchange on IBD principles with international experts.

5.4 Proposals for future directions underlining main objectives

Critical activities for the remaining period of project implementation include:

- Implementation of an effective system of building certification administration at Gosstroy according to requirements specified by the new Law on Energy Performance of Buildings. The certification system should include energy passports for all buildings subject to the regulations of the Law on Energy Performance of Buildings with technical parameters specified in the building design, revisions of the design parameters of energy passport according to any changes implemented during building construction controlled and provided by construction supervisors, development of the building energy label and its display at the building façade, publication of full energy passport/energy certificate and building energy label on internet for easy public control.

- Energy monitoring will rely on data on actual energy consumption in those buildings where such data are metered. However, in general metered data on actual energy consumption for space heating will not be available, since district heating is practically not metered at the building level at all, and electricity (and gas) utility consumption data typically include also other consumption than for space heating (lighting, cooking, elevator, and others). Implementation of a robust monitoring system is rather complex and costly task which will have only very limited impact due to lack of actual precise data. Instead the monitoring system might target only selected large public and large commercial/residential buildings, and potentially primarily those buildings that are most energy efficient and whose owners would be motivated to publicize achieved results. Metered energy data from these largest and/or most energy efficient buildings can be than used also for calculation of actual GHG emission savings. This approach would not be representative for all buildings, but rather for the most energy efficient ones only. However, in a situation with widespread corruption this might be an effective way to use the monitoring system for data collection on best examples and to serve also as a promotion of best practices and provide publicity for responsible building developers and owners.

5.5 Suggestions for strengthening ownership, management of potential risks

One of the main remaining activities is development and implementation of the monitoring system of actual energy consumption and GHG emission reductions of newly constructed energy efficiency buildings.

This activity includes a risk that a robust, comprehensive and costly monitoring system would be developed and implemented, but that it would face a lack of actual metered data on energy consumed in newly constructed buildings for space heating. District heating is practically not metered on the building level at all, and electricity and gas metered consumption data contain typically total energy consumption that includes also consumption for lighting, cooking and other appliances. Collection of energy consumption data for space heating would require either installation of secondary meters for space heating only, or calculations based on estimated consumption for other appliances. This might be a demanding task providing just approximate estimated results. Thus the risk of spending excessive efforts and resources on developing comprehensive monitoring system which will have no reliable exact data on energy consumption for space heating is rather high.

When designing the monitoring system to be deployed a compromise should be considered that would balance the effort, resources and costs spent for development and maintenance of such a system, and realistic results achievable in the real world.

Instead of developing monitoring system for all new buildings that would face lack of metered data, an alternative solution might be considered that will target only selected buildings, primarily the largest of those that are subject to regulations of the Law on Energy Performance of Buildings, and/or the most energy efficient ones. A methodology for calculation of energy consumption for space heating only and GHG emission reductions should be prepared, and a realistic system for collection of metered data for selected buildings should be developed. The energy data might be collected in cooperation with energy utilities or with building owners. For pilot buildings and potentially also for several selected key building representatives specific data should be collected. This would include potentially installation of secondary energy (electricity) meters to collect data on lighting and other appliances, if energy consumption for space heating could not be metered directly.

For exact evaluation of energy performance of building and quality of construction additional data on building usage will needed to be collected and/or estimated, including indoor temperature, the way how window ventilation is used etc. Installation of data loggers for on-spot metering of indoor temperature for example might be considered.

It is expected that the target code compliance rate will not be achieved especially in small residential buildings. One cannot expect that the general problems with widespread corruption could be easily eliminated by a single project activity. However, in long term leading by example might help to increase the situation also in this market segment. The project should consider targeting its information dissemination activities to this market segment as well and preparing and disseminating information on simple low-costs energy efficiency measures in residential buildings – in addition to those materials that have been developed and disseminated so far. The project could benefit from numerous materials developed by other UNDP/GEF projects so far, and by other parties as well, and which are available on internet for example. When translating some of the materials into Russian, the project might perhaps share the translation costs with other similar UNDP/GEF projects implemented in the region.

6. Summary of Lessons Learned and Recommendations

6.1 Good practices and lessons learned

- The project has demonstrated that even in a difficult and unstable economic and political situation and in case of low energy prices, a low-cost energy efficiency strategy can be implemented with sustainable long-term impact. The project does not of course and cannot cover all energy efficiency problems in all sectors in the country. But the focus on energy efficiency and Integrated Building Design in newly constructed buildings is probably the only effective and feasible strategy that can be implemented in a sustainable way with limited incremental costs. The project has benefitted from a good project concept and strategy, using best international expertise supported by local team of experts.

- The secret of low-cost energy efficiency strategy in constructing new buildings is to develop smart design – often called Integrated Building Design, and not just to mechanically implement advanced energy efficiency code, such as design of wall insulation as thick as required. IBD is a cost-effective strategy to develop energy efficient buildings with no or low additional costs. Success of IBD approach is based on effective communication and involvement of different advanced expertise of leading architects, building engineers and heating/HVAC engineers from the very early stages of building concept design. IBD principles illustrates a simple example from the design of the pilot school in Osh: the whole school with classrooms and sport and other facilities is integrated in a single compact building with minimum external walls, rather than to have traditionally several separated buildings for classrooms, gymnasium and dining room which would have much worse external walls area to total building volume ratio, and the investment costs would be in fact even higher. The optimized “smart” building design saves energy as well as investment costs, and the saved funds can thus be used for additional improved energy insulation.

- The project, although initiated and developed with substantial international support, has been able to properly address real local needs and to develop strong country ownership. A critical factor was direct involvement of Gosstroy, a key local authority responsible for building construction, which serves as a Project Implementing Partner. Other actively involved project stakeholders include building professionals, design organizations, relevant state agencies, universities and NGOs, and represent the full spectrum of local professional community.

- Excellent results of adaptive management have been achieved and alternative investors have been attracted to finance construction of two pilot buildings when two local municipalities failed to fulfill their co-financing commitment. Although the result materialized thanks to a good portion of good luck as well, critical was a very pro-active approach of the project manager. The lesson learned is that even in difficult economic and political situation, there always is a chance to find a solution.

- Critical success factor is a strong leadership of project management that combines good managerial skills, good knowledge of local conditions, and best international practices. The small Project Implementation Unit has demonstrated effective and professional project

management, including a good communication with all local stakeholders as well as with governmental agencies. The PIU has been effectively supported by international consultants and UNDP Regional Technical Advisor who provided international experience, both from Russia and CIS region, and from western countries.

- Effective transfer of international best practices supported by the project needs to eliminate a language barrier of local professionals, and to overcome limited and costly opportunities for local professionals to participate in international conferences where state-of-the-art experienced is shared and discussed. International experts need to have both an advanced up-to-date international expertise and to have a "feeling" for and to understand in detail local conditions and technical knowledge of local professionals in order to be able to properly address their actual needs, and to eliminate focus on too advanced/expensive technical solutions as well as focus on rather basic technical principles.

- An important lesson learned worth to replicate across all UNDP/GEF projects in other countries is the use of a simple, locally developed financial management tool/spreadsheet for effective daily financial management and control. The project is thus not dependent only on occasional ad hoc reports from the Atlas system, which is not sufficient for daily project financial management because the Atlas system does not allow tracking of project expenditures by individual project activities.

6.2 Recommendations

Recommendations are structured into six general categories:

A. Disseminate locally developed financial management tool/spreadsheet to other UNDP/GEF projects in other countries
B. Improve and revise LogFrame
C. Develop effective administration system for building certification (building energy passports and energy labels)
D. Develop the methodology of the monitoring system and implement the monitoring in pilot schools
E. Strengthen information dissemination and international cooperation
F. Mitigate/diversify risk of unsecured third-party co-financing of energy efficiency building construction

Specific recommendations based on findings during the MTE are described in detail bellow in two groups:

I. for ***UNDP/GEF*** when preparing new similar projects in other countries and

II. for the ***Project*** for the remaining implementation period

I. Recommendations for UNDP/GEF

Ad A: Disseminate locally developed financial management tool/spreadsheet to other UNDP/GEF projects in other countries

- ***The PIU uses a very useful locally developed financial spreadsheet that tracks all project expenditures with both Atlas system budget line code as well as with project activity code.*** This allows project management to have an easy instant one-click overview on actual project spending vs. its budget for each of the project activity. This is core functionality for effective project management because the structure of the Atlas system is not suitable for daily project financial management. But unfortunately, such financial spreadsheet is not typically used in other UNDP/GEF projects in other countries as well. ***UNDP should widely disseminate this spreadsheet as a minimum to all their projects worldwide*** and it should require its utilization, if local project teams would not have another similar financial management tool in place. It is worth to notice that this "magic" financial spreadsheet is actually rather simple Excel spreadsheet, which does not require any sophisticated knowledge of programming in Excel. The magic is in its simplicity.

Ad B: Improve project LogFrame design

- LogFrame is what GEF "buys" for its funding. However LogFrames are typically the weakest parts of Project Documents, because not all targets are defined as SMART indicators. Definition and specification of LogFrame indicators and targets requires specific expertise, ideally also in LogFrame targets evaluations.
    - ***UNDP might consider creation of an ad-hoc group of LogFrame design and review experts to review and/or assist development of LogFrame matrix already in the project design phase in all new UNDP/GEF projects.***

- LogFrame matrix is typically described in a table and does not provide sufficient room for detailed description and definition of indicators and targets and specific methodology for measurement and calculation of their achievements, in cases when a more detailed methodology is necessary (such as calculation of GHG emission savings, or enumeration of target energy performance of buildings). Targets in such cases are defined rather vague and not specific enough.
    - ***Indicators, targets, and methodology for target achievement calculation should be described in detail in the Project Document, and the LogFrame matrix itself should include only a brief name of the indicator/target.***

- ***Avoid definition of targets that include post project activities***. Such targets are not measurable. If main project impacts are expected to materialize after project termination, such as GHG emission savings achieved by construction of new buildings after the project termination, ***provide credible estimates of this future impact, but clearly separate this estimate from LogFrame targets that need to be measurable***.

- ***Avoid targets that are clearly unrealistic***. Detailed knowledge of the situation in the country of project implementation is critical. Mechanical transposition of common standards from advanced economies to economies in transition is not sufficient.

Ad F: Mitigate/diversify risk of unsecured third-party co-financing of energy efficiency building construction

- Co-financing of construction of pilot buildings by a third-party is a very cost-effective strategy, however a very risky as well. In future UNDP/GEF projects ***do not rely on non-binding letters with co-financing commitment only when designing Project Documents.*** To minimize potential risk of not providing the funding for investment, utilize more binding, ideally legally binding, commitments, if possible, or develop alternative solutions for co-financing already in the Project Document.

II. Recommendations for the Project for the remaining implementation period

Ad B: Improve and revise project LogFrame

- ***The project LogFrame should be updated*** at least as it is suggested in Chapter 5.2 Corrective actions for the design, duration, implementation, monitoring and evaluation of the project

Ad C: Develop administration system for building certification (building energy passports and energy labels)

- The project has already developed a methodology for calculation of energy performance of buildings, minimum energy efficiency standards, energy efficiency classes and energy passport/certificate have been defined and published in the energy efficiency code. Designers and other professionals have been trained in the new building code and energy performance calculations. However the system of building certification and building energy labeling has not yet been fully implemented. ***The project should focus in 2012 on design of effective system of administration of the certification and labeling*** by the responsible governmental agency, the design of the label should be prepared in line with the requirements of the building code and the Law on Energy Performance in Buildings. Complex information building energy efficiency labeling, including an overview design of national labels is provided at www.buildingrating.org. In order to make the certification system as transparent as possible, the project might ***consider development and publishing a database of energy passports/certificates and building labels on internet as well***.

- Critical issue in development of effective certification system will be incorporation of any changes that occurred during actual building construction into energy passports developed as

part of the original building design. This will require especially creation of an effective organization and communication among project designers, constructors, construction supervisors and certified specialists for building energy certification. ***The project should develop and publish the methodology for administration of the certification system, and provide additional trainings for relevant building professionals and state building inspectors.***

- When legislation is approved it does not automatically means that it will be implemented in real world as well. ***Support the effective application of the new energy efficiency building code SNiP and the new Law on Energy Performance of Building*** by analyzing their potential weak or non-corresponding parts and propose adequate solutions, including uniform nomenclature, optimal organizational set-up, and same definition of buildings subject to both regulations.

Ad D: Develop the methodology of the monitoring system and implement the monitoring in pilot schools

- The project should develop a detailed methodology for energy and GHG monitoring, and implement the monitoring for its two pilot buildings at least, and for other new buildings constructed by 2012 according to the new energy efficiency code, and for selected representatives of existing buildings for baseline reference – assuming that the total number of monitored buildings would be rather limited. A suitable entity (such as Gosstroy) should be identified which would continue with monitoring of selected buildings after project termination, and which would provide manpower and financial resources for monitoring in the future as well. The project should train the staff which will be in charge of the on-going monitoring.

- Monitoring of the actual energy performance of constructed new buildings and of their actual energy consumption for space heating and related GHG emissions would easily become too complex and costly exercise if targeted to all newly constructed/reconstructed buildings. Even if the monitoring would target only buildings subject to regulations of the Law on Energy Performance of Buildings, ie. except for small residential buildings smaller than 150m2, the task would still be too demanding. Because monitoring of actual energy consumed for space heating would need not only collection of metered energy consumption data, if they are available, ie. except for district heating, but also building specific calculation to distinguish energy use for space heating and for other appliances. This means practically that a special form of energy audit should be performed for each building. This of course is not practically feasible for a large number of buildings. ***The energy and GHG monitoring should not target all new buildings, but rather it should focus primarily on limited number of selected key newly constructed buildings*** – the largest buildings mainly in public sector, and selected most efficient buildings to provide evidence for best practices.

- For monitoring of actual energy consumption and evaluation of actual energy performance of pilot buildings ***purchase and installation of (inexpensive) data loggers to monitor daily/hourly indoor and outdoor temperature profile and installation of secondary electricity sub-meters for metering of energy consumption for space heating only might be necessary*** (in case of the school in Osh the installed energy management and heat control system might provide some of the required data). The work plan and budget for 2012 should incorporate these activities and costs.

- ***Focus of the monitoring on most energy efficient buildings and promotion of best practices*** might motivate building developers, investors and owners, to actively cooperate during the monitoring evaluation. A ***competition for the most energy efficient building*** might be organized and results widely publicized to further attract attention of other building owners and developers/investors.

- The project has a good prospect to finalize all its key activities by its planned termination in December 2012. However, due to delayed construction of the pilot buildings, there would not be a whole heating season available for monitoring and evaluation of actual energy performance and GHG savings from constructed pilot buildings. ***A no-cost project implementation extension till the end of 2013 would be required to allow monitoring and evaluating real achievements of the pilot buildings over the whole heating period.***

Ad E: Strengthen information dissemination and international cooperation

- The project has developed already a significant local expertise and hands-on experience in developing energy efficiency code, and in design and construction of energy efficient buildings that incorporate IBD principles. This creates a new opportunity for effective and strengthened information and experience sharing with other UNDP/GEF projects in the region, as well as for more detailed international expert discussions focusing on integrating low-costs IBD principles into building design. ***Joint workshops and informal discussions with experts from other UNDP/GEF projects in the region as well with other leading international experts might be organized in 2012.*** International experts should have experience primarily with low-cost no-cost IBD concept applicable and affordable in the situation where energy prices are so low, rather than focusing on expensive high-tech solutions. For example utilization of free passive solar gains in winter and solar shading in the summer.

- The new energy efficiency building code SNiP 23-01:2009 and a Code of Rules 23-101:2009 is based on the original Soviet SNiP and updated new Russian code; the new Law on Energy Performance in Buildings is based on the EU directive 2002/91/EC on Energy Performance of Buildings. Both the new SNiP and the Law on EPB is available in Russian. This gives a unique opportunity to share these regulations developed and implemented in Kyrgyzstan and experience gained during this process with other countries in the region which are developing

similar regulations. ***The project should actively offer its expertise and provide developed SNiP and Law on EPB as a model for adoption to other countries - UNDP/GEF projects as well***. The wording of these regulations cannot be just "pasted and copied", but it can very well serve as a model, because the methodology and concept of energy efficiency code is the same in all countries of the region.

- The pilot school in Osh is called "experimental" school. It includes very energy efficient but costly technology, such as triple-glazed windows, heat recovery, and Individual Room Controls. The school gymnasium in Ak-Kashat is designed in an energy efficient way with limited above-standard technologies. The project might organize ***additional expert roundtables and workshops focusing on low-cost but energy efficient building design*** and construction and organization of design works with effective cooperation of architects, construction and heating engineers since the very early development of first building design concepts.

- ***The project should focus its activities in 2012 on further information dissemination, targeted at both professionals as well as owners of apartments and residential buildings***. Cooperation with other UNDP/GEF projects in the region might reduce the costs of collecting and/or developing and publishing of such materials on internet. Lots of information is available in English and in other European languages, but in Russian as well. CENEf in Moscow (www.cenef.ru), Arena-Eco in Kiev (www.arena-eco.com) might be a good source of information without language barrier, FEWE in Poland (www.fewe.pl), SEVEn in Czech Republic (www.svn.cz/ru), EnEffect in Bulgaria (www.eneffect.bg), UNDP/GEF project in Croatia (www.ee.undp.hr) and other UNDP/GEF energy efficiency projects in the region as well as other energy efficiency organizations might be useful source of information and experience, such as Passipedia of the Passive House Institute (www.passiv.de). EU ManagEnergy program website (www.managenergy.net) includes information and contacts on European Energy Agencies as well as case studies implemented.

- UNDP/GEF with EnEffect have recently implemented energy efficiency in buildings project (www.buildingreen.net) in Bulgaria that has developed a comprehensive information materials on energy efficiency ***for architects and professionals***, including ***Ten Books on Green Architecture, Catalogue of 99 Best Practices, and Green Vitruvius Book on Sustainable Building Design***. These materials are available online and as a hard copy as well, however in Bulgarian only. It might be worth to ***consider translation of these materials into Russian*** and share the costs of translation among the UNDP/GEF projects in the region.

- The UNDP in Croatia has recently implemented another energy efficiency in buildings project and among others it has developed and published at www.ee.undp.hr large number of ***information materials and guides on energy efficiency for general public***. These materials are available in Croatian and are localized for specific Croatian conditions (payback, climate etc.), however these materials might serve also as a ***good example for translation and/or***

transposition into Russian. The project should team up with other energy efficiency UNDP/GEF projects in the region and decide on potential cooperation in coordinated information dissemination activities for both general public and professional audience.

- ***Make the project website and/or regional website a comprehensive source of information on energy efficiency in buildings in Kyrgyzstan***. Publish all relevant project products, including the Energy Efficiency Building Code SNiP 23-1:2009, Code of Rules 23-101:2009, related legislation (Law on Energy Performance of Buildings, Law on Energy Efficiency), revised GOST technical standards, developed Catalogue on Technical Solutions for Insulation of External Walls in Multifamily Residential Buildings, Catalogue on Technical Solutions for Insulation of External Walls in Single Family Houses, and Catalogue on Technical Solutions for Construction of Energy Efficient Stoves, energy efficiency information leaflets and publications, project film and video on energy efficiency in buildings, Provisions on Energy Passport and its Implementation Procedures, Provisions on Building Energy Performance Certification and Energy Monitoring for School Buildings, and Provisions on Energy Audit of Buildings, curricula on Design, Regulations, and Construction of energy efficient buildings, conference proceedings/presentation on energy and energy efficiency held in Bishkek, Presentations at the Side-Event at the 7th Ministerial Conference in Astana, September 2011 - Green Buildings, photo documentation of pilot schools construction.

- Personal contacts, sharing experience on best international practices with experts from other countries is crucial for all local experts in such a new field such as energy efficiency in buildings. Due to geographical location of Kyrgyzstan and language barrier, these contacts are costly and not that intensive as for example in countries with similar history in Central Europe. The more valuable is the contact with international community established through this project. However, in order to make such communication and experience sharing as effective as possible it is critical to make sure international consultants understand in detail the actual needs and potential gaps of local expert audience in case of trainings. Also it is critical for ***international experts not only to have state-of-the art expertise in energy efficiency but also to be familiar with the situation in the country*** and its recent development, and ideally to have hands-on experience at least from other countries with similar history of transition from centrally planned economies to market economies, and a "feeling" for what is feasible for specific situation and particular stage of development in the country.

Ad F: Mitigate/diversify risk of unsecured third-party co-financing of energy efficiency building construction

- The project should continue its cooperation with international donors' community and strengthen its partnership with KfW project which is implemented by ARIS and that will develop a dozen of small schools and kindergartens across the country and assist them to make these new facilities energy efficient according to the new code. ***Analyze priorities and potential interest of other international donors to build on project experience and to finance energy efficiency buildings in the country.***

7. Annexes

Annex 1: Original Project Document LogFrame with revisions from the Inception Report

LogFrame specification and changes as of the Inception Report. Removed text is struck through with a line and highlighted in yellow. New text is highlighted in blue.

Project strategy	**Objectively Verifiable Indicators**				
Goal	Promote low GHG intensive buildings in Kyrgyzstan				
	Indicators	**Baseline**	**Target**	**Means of Verification**	**Important assumptions**
Project objective: Reduce energy consumption and associated GHG emissions in Kyrgyzstan building sector	Average thermal energy consumption in new/renovated residential/public buildings	Thermal energy consumption on average: ~~135~~ 140 kWh/m²	Thermal energy ~~demand~~ consumption for new code-compliant buildings reduced to an average of ~~110 kWh/m² (by 20%)~~100 kWh/m² (by about 30%)	National statistics based on data from energy and GHG monitoring system to be set up by the project	High growth rates for new construction sustained Monitoring is accurate
	New building lifecycle CO2 emission	5,6 mln t CO2 eq	5,3 mln tCO2 or 267,000 tCO2 eq less than in baseline		
Outcome 1. Improved energy performance codes	Adoption of mandatory energy efficient building code and its regular updates implemented	Current code exists since 1998 without revisions; it does not provide for performance-based energy consumption standards	New performance-based EE code adopted in 2010 and ~~is being~~ updated ~~every 3 years~~ by 2015	Official publication of adopted ~~legislation~~ building code and supporting guidance documents, with sequence of updates	National institutions remain motivated to implement advanced mandatory legal framework for buildings

	Level of minimum mandatory thermal requirements for buildings	90-100 kWh/m²	10-20% decrease ~~down~~ to 80 kWh/m² (or lower for larger multifamily buildings)	New performance-based EE building code	Cost-effectiveness of stricter minimum thermal performance requirements is demonstrated
	Capacity of national authorities to design and regularly update advanced building codes ~~and ensure their regular update~~	Absence of trained staff and tools	Calculation methodology to determine building energy consumption agreed, software obtained and staff ~~of~~ trained in its application	Available calculation methodology and tools Project progress and M&E reports	Trained staff are not seeking employment elsewhere
Outcome 2. Improved enforcement of mandatory energy efficiency building codes	Level of enforcement of new standards (% of new buildings)	Low levels of compliance: max. 10%	Compliance levels radically improved up to 80%	National energy monitoring system for buildings	Monitoring is accurate Illegal construction of individual single-family houses is decreased
	Capacity to assess building energy performance in line with new standards	Insufficient technological base and absence of trained personnel	Laboratories equipped by end of year 1 20 staff from the Agency and University trained to undertake energy performance assessment by end of year 1	Project progress and M&E reports	Trained staff are not seeking employment elsewhere
	Enforcement capacity for EE building code: trained	Weak capacity of building	Procedures for mandatory building	Project progress and	Mandatory energy-efficiency building codes

	staff, rules and procedures for building certification	inspectorate and lack of regulations/rules to ensure compliance check	certification system adopted and tested by year 2 150 Building Inspectors trained in their application by end of year 3 Building certification works by year 3	M&E reports Statistics on energy certification	are in place Trained staff are not seeking employment elsewhere
Outcome 3. Pilot projects utilizing an integrated design approach	Energy- and cost-saving and social impact of integrated building design (IBD) in comparison with similar buildings	No buildings are built following IBD approach	No or maximum 10% increase in construction cost 35% decrease in building energy consumption or 1,140 tCO2e from pilot buildings Better comfort for users	M&E reports, site visits Specific reporting for the pilot and "reference" buildings, including energy consumption, costs and occupants survey	Co-funding for new school construction secure despite declines in local government revenue Integrated design and equipment properly installed Continued increase in gas and electricity price
	Scale of replication for IBD approach	No buildings are built following IBD	IBD introduced to all new public buildings in	Municipal reports on implementation of public	Availability of trained national staff in building

		approach	two largest Kyrgyz cities (Osh and Bishkek) by the end of the project	construction programmes	industry to implement IBD Cost-effectiveness of IBD is proved and convincingly demonstrated
Outcome 4. Promotion of best energy design and building practices in construction sector	New curricula on energy efficient building design for universities	Absence of regular or vocational training opportunities on EE building design	Curricula developed, registered with Ministry of Education and introduced in Kyrgyz University for Construction, Transport and Architecture	Report on curricula implementation (number of students with certified diploma)	Sufficient capacity of professors to deliver new educational curricula
	Number of trained building engineers and architects	Slow improvement of knowledge by professionals	At least 100 industry professionals receive training in application of new codes	Project progress reports	Industry is willing to comply with new regulations
	Development of new products in conformity with new standards	Construction materials and building industry slow to develop new products	Larger availability of efficient materials and services	Industry reports: catalogue of building products, materials from BishkekBuild Exhibition	Industry has technical and financial capacity to develop new products and services
Outcome 5. Monitoring of building energy consumption and GHG emissions	Availability of accurate and up-to date data on energy consumption and CO2 emissions in buildings	Limited national capacity to monitor and assess energy savings and CO2 emissions in buildings	Monitoring system, including institutional framework, trained staff and technical tools and methodology, is in place by the end of the project	Project progress report and final evaluation report Annual reports on energy and GHG emissions in building sector	New calculation methodology to assess building energy performance and GHG emissions is officially adopted

Annex 2: Evaluation TOR

TERMS OF REFERENCE

MID-TERM EVALUATION OF UNDP-GEF PROJECT
IMPROVING ENERGY EFFICIENCY IN BUILDINGS,
Kyrgyz Republic

I. INTRODUCTION

This Mid Term Evaluation (MTE) is initiated by the UNDP Kyrgyzstan as the Implementation Agency for this project and it aims to provide managers (at the Project Implementation Unit, UNDP Kyrgyzstan 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.

II. Project overview

The project has been implemented since end of 2008 and is expected to be completed in 2012. The project is nationally executed by the State Agency for Architecture and Construction under the Government of the Kyrgyz Republic. The total project budget is $4,132,000 (GEF contribution amounts to $900,000; UNDP - $50,000 matched by $3,182,000 from local project partners).

The project aims at reducing energy consumption and associated GHG emissions in Kyrgyzstan building sector by 30-40% as compared to the current level by:

(1) adopting and enforcing mandatory building energy performance codes, standards and labels (the Energy Passport) in line with internationally recognized best-practices;
(2) demonstrating feasibility and viability of an integrated design approach for energy efficiency in public buildings;
(3) building capacity of building and construction professionals to implement new building regulation; and
(4) establishing a system to monitor energy consumption and CO_2 emissions in Kyrgyzstan building sector.

The project objective is going to be realized through 5 key outcomes:

- Outcome 1. Improved energy performance codes;
- Outcome 2. Improved enforcement of mandatory energy efficiency building codes;
- Outcome 3. Pilot projects utilizing an integrated design approach;
- Outcome 4. Promotion of best energy design and building practices in construction sector;
- Outcome 5. Monitoring of building energy consumption and GHG emissions.

III. EVALUATION OBJECTIVES

The MTE is initiated by UNDP Country Office in Kyrgyzstan 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:

(i) 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;
(ii) To assess the effectiveness and efficiency of the project;
(iii) To analyze critically the implementation and management arrangements of the project;
(iv) To assess the progress to date towards achievement of the outcomes;
(v) To review planned strategies and plans for achieving the overall objective of the project within the timeframe;
(vi) To assess the sustainability of the project's interventions;
(vii) To list and document initial lessons concerning project design, implementation and management;
(viii) To assess project relevance to national priorities;
(ix) To provide guidance for the future project activities and, if necessary, for the implementation and management arrangements;
(x) 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.

The evaluation team is expected to work with key project stakeholders, including UNDP Country Office in Kyrgyzstan, State Agency for Architecture and Construction under the Government of the KR, Bishkek and Osh City Municipalities; National Agency on Local-self Governance; Agency on Environment Protection and Forestry, and members of the Project Advisory Board.

IV. 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:

a. Is the project concept in line with the energy and construction sectoral priorities and development priorities and plans of the country in accordance with the Country Development Strategy (CDS) for the years 2009-2011?
b. Are project outcomes contributing to national development priorities and plans in accordance with the Country Development Strategy (CDS) for the years 2009-2011?
c. How and why project outcomes and strategies contribute to the achievement of the expected results.
d. Examine their relevance and whether they provide the most effective way towards results.
e. 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.*
f. Were the relevant country representatives, from government and civil society, involved in the project preparation?
g. Does the recipient government maintain its financial commitment to the project? Has the government approved policies or regulatory frameworks in line with the project's objectives?

1.2 Preparation and readiness:

a. Are the project's objective and components clear, practicable and feasible within its timeframe?
b. Were the capacities of executing institution – State Agency for Architecture and Construction under the Government of the KR (Gosstroy) and counterparts properly considered when the project was designed?
c. Were lessons from other relevant projects properly incorporated in the project design?
d. Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to project approval?
e. Were counterpart resources (funding, staff, and facilities), enabling legislation, and adequate project management arrangements in place at project entry?

1.3 Stakeholder involvement (R):

a. Did the project involve the relevant stakeholders through information-sharing, consultation and by seeking their participation in the project's design?
b. 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:

a. 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.
b. Re-test the assumptions made by the project management and identify new assumptions that should be made.
c. Assess the effect of any incorrect assumptions made by the project.

1.5 Management arrangements (R):

a. Were the project roles properly assigned during the project design?
b. Are the project roles in line with UNDP and GEF programming guidelines?
c. 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):

a. Assess if the project budget and duration were planned in a cost-effective way?

1.7 Design of project M&E system (R):

a. Examine whether or not the project has a sound M&E plan to monitor results and track progress towards achieving project objectives.
b. 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.
c. Examine whether or not the time frame for various M&E activities and standards for outputs are specified.

1.8 Sustainability:

a. Assess if project sustainability strategy was developed during the project design?
b. Assess the relevance of project sustainability strategy

2. Project implementation

2.1 Project's adaptive management (R):

a. 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.
b. 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[1] appropriately applied?

[1] 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

- How can the UNDP-GEF Risk Management System be used to strengthen the project management?

c. 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[2]? If not, suggest ways to re-orientate work planning.

d. 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)?

e. 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.

f. 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:

b. Assess the role of UNDP and the State Agency for Architecture and Construction under the Government of the KR against the requirements set out in the UNDP Programme and Operations Policies and Procedures[3]. Consider:
   - Field visits
   - Participation in Project Advisory Board meetings
   - Project reviews, PIR preparation and follow-up
   - GEF guidance
   - Operational support

c. 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.

d. Assess the contribution to the project from UNDP and the State Agency for Architecture and Construction under the Government of the KR in terms of "soft" assistance (i.e. policy advice & dialogue, advocacy, and coordination).

e. Suggest measures to strengthen UNDP's soft assistance to the project management.

2.3 Stakeholder participation, partnership strategy (R):

[2] RBM Support documents are available at http://www.undp.org/eo/methodologies.htm
[3] Available at http://content.undp.org/go/userguide/results/project/

a. 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.
b. 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?
c. Consider the dissemination of project information to partners and stakeholders and if necessary suggest more appropriate mechanisms.
d. Identify opportunities for stronger partnerships.

2.4 Sustainability:

a. 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.
b. 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 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 public buildings and state owned buildings funded from the national budget ;
- Adequacy of Additions and Amendments to the Law of the KR on Energy Conservation; and Section on Energy Conservation in Buildings, Urban Planning Code of the KR; and State Energy Efficiency and Energy Conservation Policy in Design, Construction and Upkeep of Buildings and Facilities in the Kyrgyz Republic
- Verification of compliance of Building energy code SNiP KR 23-01:2009 "Thermal Engineering (Thermal Performance of Buildings)" and Guidance Manual/Regulations SP 23-101:2009 "Design of Thermal Performance of Buildings" developed within the framework of this project with the EU Energy Efficiency Directive;
- Verification of compliance of the two energy efficient school buildings design with the new building energy code SNiP KR 23-01:2009 "Thermal Engineering (Thermal Performance of Buildings)" and Guidance Manual/Regulations SP 23-101:2009 "Design of Thermal Performance of Buildings";
- Adequacy and effectiveness of the three curricula/training programmes on Energy Efficiency and Thermal Performance of Buildings for design, construction/installation works, regulatory area specialists; and two Energy Saving/Conservation and Energy Efficiency in Buildings Special Course Syllabus - one for Construction and another for Architecture Specialties in Higher Education including typical special course curricula (passive buildings and low-energy buildings for construction specialties; and passive building design for architecture specialties);
- Adequacy and effectiveness of Catalog of Engineering Solutions. Heat insulation of enclosing parts in residential buildings
- Adequacy of Draft Provision on Rules and Procedures of Energy Passport Formation and Introduction; Draft Provision on Building Energy Performance Certification Procedures and Provisions; Draft Provision on Energy Monitoring and Energy Audit of Buildings;

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 commensurate 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.

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.

V. 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
2. 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
3. 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
4. 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

5. 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
6. Lessons learned
   - Good practices and lessons learned in addressing issues relating to effectiveness, efficiency and relevance
7. 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 Kyrgyzstan within 2 weeks 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.

VI. 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 Advisory Board meetings, GEF quarterly project updates;
- Interviews with Project Management Unit and key project stakeholders, including UNDP Country Office in Kyrgyzstan, State Agency for Architecture and Construction under the Government of the KR, Bishkek and Osh City Municipalities; State Agency on Environment Protection and Forestry, 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.

VII. EVALUATION TEAM

The evaluation will be undertaken by a team composed of an *International Consultant (Team Leader)* and a *Local Consultant*. They will receive the support of UNDP Country Office in Kyrgyzstan 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.

Qualification requirements for the *International Team Leader*:

- Advanced university degree in economics, energy, or related area;
- Extensive (at least 5-year) experience and proven track record with policy advice and/or project development/implementation in energy efficiency;
- Proven track record of application of results-based approaches to evaluation of projects focusing on energy efficiency (relevant experience in the CIS region is a requirement; and relevant experience within UN system would be an asset);
- Familiarity with energy efficiency principles and relevant international best-practices;
- Knowledge of and recent experience in applying UNDP and GEF M&E policies and procedures;
- Excellent English communication skills, knowledge of Russian would be an asset;
- Demonstrable analytical skills;

The *Local Consultant* will provide input in reviewing all the project-relevant documentation and provide the Team Leader with a compilation of information prior to the evaluation mission. Specifically, the Local Consultant will perform the following tasks:

- Review the original documents;
- Participate in the design of the evaluation methodology;
- Organize the mission program, arrange and facilitate meetings with key stakeholders;
- Provide regular translation/interpretation as necessary;
- Draft related parts of the evaluation report, as relevant;
- Assist the International Team Leader in finalizing the draft report by incorporating inputs received;
- Provide other support services for the International Team Leader.

Qualification requirements for the *Local Consultant*:

- Masters degree (or equivalent) in business, economics or related area;
- At least 5-year experience in project development and/or evaluation, preferably in the field of energy efficiency;

- Excellent time-management skills;
- Proficiency in English and Russian;
- Prior experience with UNDP would be an asset.

VIII. Management arrangements

The principal responsibility for managing this evaluation lies with UNDP Country Office in Kyrgyzstan. 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 Kyrgyzstan and the State Agency for Architecture and Construction. These three parties will receive a draft of the final evaluation report and provide comments on it prior to its completion.

The evaluation mission will take place in August-September. The total duration of the assignment will be 25 working days. The following timetable is recommended for the evaluation:

Desk review, development of methodology	4 days
In-country field visits, interviews	10 days
Drafting report	3 days
Draft report circulation	5 days
Finalization of report	3 days

The final version of the evaluation report should be submitted in electronic format (MS Word) to UNDP Country Office in Kyrgyzstan no later than end of September, 2011 (exact date TBD).

8. Annexes:

Annex 1: GEF terminology and project review criteria
Annex 2: List of documents to be reviewed by the evaluators
Annex 3: Revised project logical framework
Annex 4. Lists of project staff, Advisory Board members, stakeholders and partners contact details

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 frameworks in 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 consist of three related, and often overlapping processes: information dissemination, consultation, and "stakeholder" participation. Stakeholders are the individuals, groups, institutions, or other bodies that have an interest or stake 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:

<u>Information dissemination</u>

- Implementation of appropriate outreach/public awareness campaigns

<u>Consultation and stakeholder participation</u>

- 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

<u>Stakeholder participation</u>

- 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[4].
- 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 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.

[4] 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.

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.

Financial Planning Cofinancing

Co financing (Type/Source)	IA own Financing (mill US$)		Government (mill US$)		Other* (mill US$)		Total (mill US$)		Total Disbursement (mill US$)	
	Planned	**Actual**	**Planned**	**Actual**	**Planned**	**Actual**	**Planned**	**Actual**	**Planned**	Actual
– Grants										
– Loans/Concessional (compared to market rate)										
– Credits										
– Equity investments										
– In-kind support										
– Other (*)										
9. Totals										

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

9.1 **Leveraged Resources**

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.

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 Advisory Board Meeting minutes
- Updated risk log

Main documentation produced by the project

- Country Development Strategy (CDS) for the years 2009-2011
- Additions and amendments to the Law of the KR On Energy Conservation;
- Section on Energy Conservation in Buildings, Urban Planning Code of the KR ;
- Building energy code SNiP KR 23-01:2009 "Thermal Engineering (Thermal Performance of Buildings)"
- Guidance Manual/Regulations SP 23-101:2009 "Design of Thermal Performance of Buildings";
- Catalog of Engineering Solutions. Heat insulation of enclosing parts in residential buildings;
- Design documentation on pilot energy efficient school buildings in Osh with a capacity of 850 occupants;
- Design documentation on pilot energy efficient school buildings in Bishkek with a capacity of 450 occupants;
- Draft Provision on Rules and Procedures of Energy Passport Formation and Introduction;
- Draft Provision on Building Energy Performance Certification Procedures and Provisions;
- Draft Provision on Energy Monitoring and Energy Audit of Buildings;
- State Energy Efficiency and Energy Conservation Policy in Design, Construction and Upkeep of Buildings and Facilities in the Kyrgyz Republic
- Three (3) Curricula/Training Programmes on Energy Efficiency and Thermal Performance of Buildings for the following specialties:
    - design;
    - construction/installation works;
    - regulatory area;
- Two Energy Saving/Conservation and Energy Efficiency in Buildings Special Course Syllabus - one for Construction and another for Architecture Specialties in Higher Education including typical special course curricula:
    - passive buildings and low-energy buildings for construction specialties;
    - passive building design for architecture specialties;
- Video film and video clip on energy efficiency in residential buildings ;
- Reports on the delivered seminars/workshops
- Report on study tour on energy efficiency in buildings issues of government employees and project staff to Denmark

Other relevant documentation

- Country Development Strategy for the years 2009-2011.
- National Energy Programme for the years 2008-2010 and Fuel and Energy Complex Development Strategy of the KR for the period till 2025
- Law of the Kyrgyz Republic on Energy Conservation

ANNEX 3 REVISED LOGICAL FRAMEWORK

Project strategy	**Objectively Verifiable Indicators**				
Goal	Promote low GHG intensive buildings in Kyrgyzstan				
	Indicators	**Baseline**	**Target**	**Means of Verification**	**Important assumptions**
Project objective: Reduce energy consumption and associated GHG emissions in Kyrgyzstan building sector	Average thermal energy consumption in new/renovated residential/public buildings	Thermal energy consumption on average: 135 kWh/m²	Thermal energy demand reduced to an average of 110 kWh/m² (by 20%)	National statistics based on data from energy and GHG monitoring system to be set-up by the project	High growth rates for new construction sustain Monitoring is accurate
	New building lifecycle CO2 emission	5,6 mln t CO2 eq	5,3 mln tCO2 or 267,000 tCO2 eq less than in baseline		
Outcome 1. Improved energy performance codes	Adoption of mandatory energy efficient building code and its regular updates implemented	Current code exists since 1998 without revisions; it does not provide for performance-based energy consumption standards	New performance-based EE code adopted in 2010 and is being updated every 3 years	Official publication of adopted legislation and sequence of updates	National institutions remain motivated to implement advanced mandatory legal framework for buildings
	Level of minimum mandatory thermal requirements for buildings	90-100 kWh/m²	10-20% decrease down to 80 kWh/m²	New performance-based EE building code	Cost-effectiveness of stricter minimum thermal performance requirements is demonstrated

	Capacity of national authorities to design advanced building codes and ensure their regular update	Absence of trained staff and tools	Calculation methodology to determine building energy consumption agreed, software obtained and staff of Construction/Architecture Agency trained in its application	Available calculation methodology and tools Project Progress and M&E reports	Trained staff are not seeking employment elsewhere
Outcome 2. Improved enforcement of mandatory energy efficiency building codes	Level of enforcement of new standards (% of new buildings)	Low levels of compliance: max. 10%	Compliance levels radically improved up to 80%	National energy monitoring system for buildings	Monitoring is accurate Illegal construction of individual single-family houses is decreased
	Capacity to assess building energy performance in line with new standards	Insufficient technological base and absence of trained personnel	Laboratories equipped by end of year 1 20 staff from the Agency and University trained to undertake energy performance assessment by end of year 1	Project Progress and M&E reports	Trained staff are not seeking employment elsewhere
	Enforcement capacity for EE building code: trained staff, rules and procedures for building certification	Weak capacity of Building inspectorate and lack of regulations/rules to ensure compliance check	Procedures for mandatory building certification system adopted and tested by year 2 150 Building Inspectors trained in their application by end of	Project Progress and M&E reports Statistics on energy certification	Mandatory energy efficiency building codes are in place Trained staff are not seeking employment elsewhere

			year 3 Building certification works by year 3		
Outcome 3. Pilot projects utilizing an integrated design approach	Energy- and cost-saving and social impact of integrated building design (IBD) in comparison with similar buildings	No buildings are built following IBD approach	No or maximum 10% increase in construction cost 35% decrease in building energy consumption or 1,140 tCO2e from pilot buildings Better comfort for users	M&E reports, site visits Specific reporting for the pilot and "reference" buildings, including energy consumption, costs and occupants survey	Integrated design and equipment properly installed Continued increase in gas and electricity price
	Scale of replication for IBD approach	No buildings are built following IBD approach	IBD introduced to all new public buildings in two largest Kyrgyz cities (Osh and Bishkek) by the end of the project	Municipal reports on implementation of public construction programmes	Availability of trained national staff in building industry to implement IBD Cost-effectiveness of IBD is proved and convincingly demonstrated
Outcome 4. Promotion of best energy design and building practices in construction sector	New curricula on energy efficient building design for universities	Absence of regular or vocational training opportunities on EE building design	Curricula developed, registered with Ministry of Education and introduced in Kyrgyz University for Construction, Transport and Architecture	Report on curricula implementation (number of students with certified diploma)	Sufficient capacity of professors to deliver new educational curricula
	Number of trained building engineers and architects	Slow improvement of knowledge by	At least 100 industry professionals receive training in application of	Project progress reports	Industry is willing to comply with new

		professionals	new codes		regulations
	Development of new products in conformity with new standards	Construction materials and building industry slow to develop new products	Larger availability of efficient materials and services	Industry reports: catalogue of building products, materials from BishkekBuild Exhibition	Industry has technical and financial capacity to develop new products and services
Outcome 5. Monitoring of building energy consumption and GHG emissions	Availability of accurate and up-to date data on energy consumption and CO2 emissions in buildings	Limited national capacity to monitor and assess energy savings and CO2 emissions in buildings	Monitoring system, including institutional framework, trained staff and technical tools and methodology, is in place by the end of the project	Project progress report and final evaluation report Annual reports on energy and GHG emissions in building sector	New calculation methodology to assess building energy performance and GHG emissions is officially adopted

ANNEX 4.

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

List of Project Advisory 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

Annex 3: Itinerary

Program

of Mission to Kyrgyzstan by Mr. Jiří Zeman, International Consultant and Mr. Bakytbek Satybekov, Local Consultant for conduction of mid-term evaluation of UNDP/GEF project " Improving Energy Efficiency in Buildings ".

17 October - 27 October, 2011.

Bishkek, Kyrgyzstan

Time	Activity	Venue	
17 October 2011			
11/00 – 14.40	Meetings with Ms. Elena Rodina, Project manager, Mr. Bakytbek Satybekov, Local Consultant on Mid-Term Evaluation of UNDP/GEF Project Improving Energy Efficiency in Buildings	Gosstroy, UNDP/GEF, Room #411	
15.00 – 15.50	Meeting with Jan Nadolski, UNDSS Security Advisor for Kyrgyzstan	#160 Chui ave., UN House, UNDP CO in Kyrgyzstan,	
16.00 - 17.30	Meetings with Mr. Pradeep Sharma, UNDP Deputy Resident Representative UNDP CO in Kyrgyzstan (members: Mr. Ibragimov, Ms. A. Ashiralieva, Ms. E.Rodina) on mid-term evaluation of the project and optimization of project tasks implementation	#160 Chui ave., UN House, UNDP CO in Kyrgyzstan	
18 October 2011			
9.00 - 10.00	Work with the project team on the optimization of the implementation of project tasks.	Gosstroy, UNDP/GEF Project office, Room #411	
10.00 - 16.00	Meeting with the Manager of the UNDP “Environment Protection for Sustainable Development” Programme with participation of the project team.	Gosstroy, UNDP/GEF Project office, Room #411	
16.00 - 17.00	Work with local consultant and local experts on harmonization of the most effective criteria and methods of evaluation of the project	Gosstroy, UNDP/GEF Project office, Room #411	
19 October 2011			
10.00 - 12.00	Meeting of Mr. Jiri Zeman l, Mr. B. Satybekov, Ms. E.Rodina with representatives of the State Agency on Environment Protection and Forestry (Ms. Baglan Salikmambetova, head of international cooperation department in charge of GEF projects,Ms. Jiparkul Bekkulova, head of strategy and policy department) to evaluate interaction and cooperation of UNDP/GEF project in the course of implementation of project goals and	Office of the State Agency on Environmental Protection and Forestry.	

	objectives.		
13.00 – 18.00	Meetings with the Project Advisory Board members and project partners (Mr. Seitbek Imanbekov, Director of Kyrgyz Research and Design Institute of Seismic Construction (КНИИПСС), Project Advisory Board Member, Mr. Boris Abramov, head of education and methodology department, Kyrgyz Russian Slavic University (КРСУ), Project Advisory Board Member, Ms. Tatiana Ivanova, Project Expert, Ms. Tatiana Glushakova, Chief Specialist, Republic Center of Certification and Standardization in Construction Industry)	KG Research and Design Institute of Seismic Construction, Slavic University, Gosstroy, UNDP/GEF	
20 October 2011			
9.00 - 11.00	Meetings with the project partners		
11-00 – 18-00	Meeting of the evaluation team (Mr. Jiri Zeman, Mr. Bakytbek Satybekov) with the project team to analyze and evaluate information obtained during meetings with the partners.	Gosstroy, UNDP/GEF Project office, Room #411	
24 October 2011 – 25 October 2011			
9.00 - 18.00	Working with international experts and national consultants (Mr. Jiri Zeman, Mr. Bakytbek Satybekov) to prepare a presentation on the topic: "Evaluation of mid-term results of the UNDP/GEF project. Achieved results. Errors and gaps. Recommendations for achieving goals and objectives of the project".	28 Manasa Avenue, Gosstroy, UNDP/GEF Project office, Room #411	
26 October 2011			
13.00 – 14.00	Work with the project team on the optimization of the implementation of project tasks.	Gosstroy, UNDP/GEF	
15.30 - 16.30	Presentation to the project partners (participants: Ms. Shakirat Toktosunova, Assistant Resident Representative, Mr. Ibragimov Danijar, National programme officer, Ms. Aidai Ashiralieva, Programme Associate, Mr. Aleksandr Temirbekov, Programme manager, Mr. Vladimir Grebnev, Programme Coordinator, Mr. Edil Bogombaev, Project Manager, UNDP/GEF project «Small Hydropower Development», Mr. Omurbek Elemanov, Project Manager, UNDP/GEF project «Capacity Building for Improved National Financing of Global Environmental Management in Kyrgyzstan», Elena Rodina, Project manager, UNDP/GEF Project Improving Energy Efficiency in Buildings, Elena Pasportnikova, Administrative Finance Assistant, UNDP/GEF Project Improving Energy Efficiency in Buildings)	#52-54 Orozbekova str., Conference Hall of UNDP Environment Programme	
16.00-17.00	Meeting with ARIS (Community Development and Investment Agency of the Kyrgyz Republic) representatives: Mr. Askar Satybekov, Deputy Executive Director, Mr. Arstan Muktarov, Project Coordinator, Mr. Rysbek Djamangoroev, Project Engineer	ARIS Office	

Annex 4: List of persons interviewed

Project Implementation Unit

Ms. Elena Rodina, Project Manager

Ms. Elena Pasportnikova, Project Administrative Finance Assistant

UNDP

Mr. Pradeep Sharma, UNDP Deputy Resident Representative

Mr. Ibragimov Danijar, National programme officer

Ms. Aidai Ashiralieva, Programme Associate

Ms. Shakirat Toktosunova, Assistant Resident Representative

Mr. Ibragimov Danijar, National programme officer

Ms. Aidai Ashiralieva, Programme Associate

Mr. Aleksandr Temirbekov, Programme manager

Mr. Vladimir Grebnev, Programme Coordinator

Mr. Edil Bogombaev, Project Manager, UNDP/GEF project «Small Hydropower Development», UNDP

Mr. Omurbek Elemanov, Project Manager, UNDP/GEF project «Capacity Building for Improved National Financing of Global Environmental Management in Kyrgyzstan»

Mr. Jan Nadolski, Security Advisor for Kyrgyzstan,

State Agency on Environment Protection and Forestry

Ms. Baglan Salikmambetova, head of international cooperation department in charge of GEF projects, State Agency on Environment Protection and Forestry

Ms. Jiparkul Bekkulova, head of strategy and policy department, State Agency on Environment Protection and Forestry

Project Advisory Board Members

Mr. Seitbek Imanbekov, Director of Kyrgyz Research and Design Institute of Seismic Construction (КНИИПСС), Project Advisory Board Member,

Mr. Boris Abramov, head of education and methodology department, Kyrgyz Russian Slavic University (КРСУ), Project Advisory Board Member

Garant Project

Mr. Manukovskiy Vyacheslav Vladimirovich, General Manager

Kyrgyzgiprostroy

Mr. Andrey Putilov, Chief Engineer

Gosstroy

Ms. Tatiana Glushakova, Chief Specialist, Republic Center of Certification and Standardization in Construction Industry

Ms. Tatiana Ivanova, Project Expert

CAMP alatoo

Ruslan Isaev, Project Coordinator

CEEBA, Center for Energy Efficient Building, Central Asia

Rishat Kojonov, Managing Director

ARIS

Mr. Askar Satybekov, Deputy Executive Director,

Mr. Arstan Muktarov, Project Coordinator,

Mr. Rysbek Djamangoroev, Project Engineer

Annex 5: 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 Advisory Board Meeting minutes
- Updated risk log

Main documentation produced by the project

- Country Development Strategy (CDS) for the years 2009-2011
- Additions and amendments to the Law of the KR On Energy Conservation;
- Section on Energy Conservation in Buildings, Urban Planning Code of the KR ;
- Building energy code SNiP KR 23-01:2009 "Thermal Engineering (Thermal Performance of Buildings)"
- Guidance Manual/Regulations SP 23-101:2009 "Design of Thermal Performance of Buildings";
- Catalog of Engineering Solutions. Heat insulation of enclosing parts in residential buildings;
- Design documentation on pilot energy efficient school buildings in Osh with a capacity of 850 occupants;
- Design documentation on pilot energy efficient school buildings in Bishkek with a capacity of 450 occupants;
- Draft Provision on Rules and Procedures of Energy Passport Formation and Introduction;
- Draft Provision on Building Energy Performance Certification Procedures and Provisions;
- Draft Provision on Energy Monitoring and Energy Audit of Buildings;
- State Energy Efficiency and Energy Conservation Policy in Design, Construction and Upkeep of Buildings and Facilities in the Kyrgyz Republic
- Three (3) Curricula/Training Programmes on Energy Efficiency and Thermal Performance of Buildings for the following specialties:
    - design;
    - construction/installation works;
    - regulatory area;
- Two Energy Saving/Conservation and Energy Efficiency in Buildings Special Course Syllabus - one for Construction and another for Architecture Specialties in Higher Education including typical special course curricula:
    - passive buildings and low-energy buildings for construction specialties;
    - passive building design for architecture specialties;

- Video film and video clip on energy efficiency in residential buildings ;
- Reports on the delivered seminars/workshops
- Report on study tour on energy efficiency in buildings issues of government employees and project staff to Denmark

Other relevant documentation

- Country Development Strategy for the years 2009-2011.
- National Energy Programme for the years 2008-2010 and Fuel and Energy Complex Development Strategy of the KR for the period till 2025
- Law of the Kyrgyz Republic on Energy Conservation

Annex 6: Comments by stakeholders (only in case of discrepancies with evaluation findings and conclusions)