MID-TERM EVALUATION REPORT

of the

UNDP/GEF Full Size Project

Promoting Energy Efficiency in Public Buildings in Uzbekistan

GEF Project ID: 3624

UNDP Project ID: 4158

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

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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
Gosarchitectstroy	State Committee for Architecture and Construction of Uzbekistan
IBD	Integrated Building Design
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
ToR	Terms of Reference
UNDP	United Nations Development Programme

1. Executive summary

GEF Project ID:	3624
GEF Agency Project ID:	4158
Country:	Republic of Uzbekistan
Project Title:	Promoting Energy Efficiency in Public Buildings in Uzbekistan
GEF Agency:	UNDP
Other Executing Partner:	State Committee for Architecture and Construction of the Republic of Uzbekistan - Gosarchitectstroy

Table 1: Project Timeframe

	Expected date	Actual date
CEO endorsement/approval		Aug 2009
Agency approval date	Jul 2009	Oct 2009
Implementation start	Sep 2009	Oct 2009
Midterm evaluation completion	Jan 2012	Apr 2012
Project completion	Dec 2014	
Terminal evaluation completion		
Project closing		

1.1 Brief description of project

The full-size five+ year project (October 2009 - December 2014) has a total budget of 13 384 765 USD, of which GEF grant accounts for 2 913 885 USD and a UNDP regular grant for 270 880 USD. During project implementation period UNDP has provided additional grant of 200 000 USD for project management. Budgeted parallel funding from the government of Uzbekistan is 8.6 mil USD and an in-kind contribution is 1.6 mil USD.

The project Executing Agency is the State Committee for Architecture and Construction, Gosarchitectstroy. The Implementing Agency is UNDP Uzbekistan.

The project aims to reduce energy consumption and associated greenhouse gas emissions in public buildings in Uzbekistan, particularly in the healthcare and educational sectors, by improving building norms and standards, demonstrating integrated building design approaches, and developing the capacity of local specialists in design, construction, and maintenance. The project's goal is to promote energy efficiency of on-going and future state-funded construction and renovation programs in Uzbekistan by revising building norms and standards, building capacity of relevant government authorities and energy managers, and showcasing integrated building design approach through demonstration projects. The project has five components targeting both new and renovated buildings:

1. Development of new performance-based energy-efficiency codes for buildings
2. Auditing, certification, energy and GHG accounting, and energy management
3. Promotion of best practices, outreach, and education
4. Pilot projects employing integrated building design
5. Documentation and dissemination of project results

Project Logical Framework specified project objective and five outcomes as follows:

Project objective:
Reduce energy consumption and associated GHG emissions in new and existing buildings in the educational and healthcare sectors.

Outcome 1: New energy efficient standards and regulations are applied to more than 2 million m^2 of public space in the educational and healthcare sectors commissioned annually
Outcome 2: Government is aware of performance in existing healthcare and educational facilities and can prioritize investments in efficiency
Outcome 3: Uzbek design and construction professionals have the capacity to design efficient buildings and manage their performance
Outcome 4: Energy- and cost-saving potential of integrated building design demonstrated in two new buildings and three reconstructed buildings
Outcome 5: Project findings influence construction practices and public administrative practices in Uzbekistan

1.2 Context and purpose of the evaluation

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

The Mid-Term Evaluation mission took place in Uzbekistan in March through April 2012, i.e. exactly in the middle of planned project implementation, 2.5 years after Project Document signature on October 28, 2009.

1.3 Main conclusions, recommendations and lessons learned

The project has been well prepared and developed and approved in a relatively short period. The Project Document has been signed and project implementation has started on October 28, 2009, less than two years after initial project idea has emerged and was discussed between UNDP and Ministry of Economy.

The project implementation is professionally managed and administered. In addition to that, the project benefits among others from good English knowledge of all project team members. At the time of MTE in March - April 2012, i.e. in the very middle of the 5+ year project implementation period, the project has already delivered key project results

As of March 2012, the project has spent 1 530 344 USD, i.e. 48% of the total budget.

In Component 1 nine newly revised energy efficiency building codes for new and reconstructed buildings have been developed and adopted in June 2011 and came immediately into force. New building codes are based on a combination of traditional descriptive energy efficiency requirements and energy performance requirements. Energy efficiency building codes include three levels of descriptive energy efficiency requirements (thermal resistance R values) – lowest mandatory requirement, and higher recommended values. New minimum mandatory energy efficiency requirements are at least 25% stricter than requirements of the original building code. The lowest level one, which is mandatory for private residential buildings, is (except for windows) rather weak when compared with energy efficiency requirements in other countries in the region with similar climate. Energy efficiency level two that is compulsory for public buildings financed from public funds, and the most demanding energy efficiency level three, represent a good thermal

protection standard compared both to countries in the region as well to the Czech EU harmonized building code of 2007.

For new and reconstructed schools and hospitals financed from the state budget a stricter energy performance requirement applies, that corresponds with the energy efficiency level two.

For other buildings, including residential and other public and commercial buildings, less demanding energy performance requirement applies, that is comparable with energy efficiency level one.

The energy efficiency level one, even when it is rather weak compared to good international standards, it represents about 25% improvement compared to the original situation.

In Component 2 a building certification system, energy auditing scheme and energy management system is under development. A study tour for selected experts has been organized to Denmark. Development of the building certification system has been subcontracted to the Center for Standardization and Certification in Construction which has professional experience in building materials certification. The Center has a best local knowledge and experience in certification schemes and thus is well positioned to design the new building certification scheme, on the other hand this might represent a potential conflict of interest, since the Center for Standardization and Certification in Construction will most probably also implement and operate the building certification scheme. Thus the project should be aware of this potential conflict of interest and work closely with the Center for Standardization and Certification in Construction to design a scheme that will be affordable and appropriate for local conditions also in terms of implementation and operational costs.

In Component 3 six State Educational Standards for Bachelor's and Master's course, nine educational modules on energy efficiency in buildings for Bachelor's and Master's course, and for secondary-special and professional education, and for mid-career education (retraining) of professionals have been developed, approved and implemented in 2011 in two universities in Tashkent. A manual on IBD principles has been prepared. Additional trainings for professionals on implementation of energy efficiency building codes and integrated building design are planned for the next project period as well.

In Component 4 in total eight energy efficiency pilot projects have been designed and re/construction started in early 2012 and is due to be finished by September 1, 2012. Pilot projects include energy efficiency reconstruction of four schools, two rural health clinics, and construction of two new public schools in rural regions. All pilot projects have been designed to meet the energy efficiency level two requirement, which means about 60% calculated energy savings compared to the original situation, and 17% incremental costs. Investment costs are paid from the national investment program; the energy efficiency incremental costs are covered by the UNDP/GEF budget. Even the new school buildings have been based on existing typical school design that is used within the national investment program, and followed its building shapes. Thus it was rather energy efficiency redesign of existing typical design. This did not allow the designers to optimize building compactness and zoning, and to fully implement benefits of Integrated Building Design – and to decrease and optimize investment costs. The same applies for reconstruction projects. The major advantage of IBD – to design energy efficient buildings with standard investment costs, i.e. minimum incremental costs, could not have been demonstrated. The biggest potential in terms of investment costs optimization lies with public schools, since their typical building design is least compact and provides best opportunities both to decrease investment costs and to reduce energy consumption compared with typical rural health clinics and new rural residential buildings financed with the governmental support that have more compact typical building design.

Under Component 5 information on project goals and activities have been published and information disseminated, a project web site is in operation that combines also information on similar UNDP/GEF projects in other countries in the region (Uzbekistan, Kyrgyzstan, Turkmenistan, Kazakhstan and Armenia)

at http://beeca.net/. Trainings for designers on new energy efficiency building code have started and additional information dissemination activities and trainings are planned for the next period of project implementation.

The project has good prospects to deliver all planned project results by the end of project implementation period.

In addition to the planned activities we recommend the project to design at least one new building that will not be limited by existing typical building design and will fully utilize advantages of Integrated Building Design and optimize the energy efficiency to incremental costs ratio. In another words this means to design a building according to energy efficiency level two with standard investment costs, i.e. with minimum incremental costs compared to current typical building designs of similar size. We recommend also working with the government to approve for its investment programs as a new typical building design also the newly developed building design fully incorporating the IBD principles. The best potential for demonstrating advantages of IBD lies with public schools. Rural residential building program provides perhaps the best opportunities for replication. Ideally a new IBD would be developed for both rural residential building and a public school.

The overall rating of the project at the MTE is Satisfactory due to the fact that Integrated Building Design has not been fully utilized because newly designed energy efficient buildings were based on energy efficiency improvements of typical building design only which does not allow to minimize incremental costs.

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
	S				

Table 2: Summary Rating of the Project Implementation

Project Formulation	**Rating**
Project Relevance	Highly Satisfactory
Implementation Approach	Highly Satisfactory
Logical Framework	Moderately Satisfactory
Country ownership/driveness	Highly Satisfactory
Stakeholder participation in the design phase	Highly Satisfactory
Replication approach	Highly Satisfactory
Cost-effectiveness	Satisfactory/Moderately Satisfactory
Sustainability	Satisfactory
Management arrangements	Highly Satisfactory
Project Implementation	
Financial Management	Highly Satisfactory
Monitoring and Evaluation	Satisfactory
Management and Coordination	Highly Satisfactory
Co-financing	Satisfactory
Adaptive Management	Satisfactory
Stakeholder participation during implementation	Highly Satisfactory
Project Results	*Only relevant results as of MTE are evaluated*
Project Objective	Satisfactory
Outcome 1 – Building codes	Highly Satisfactory
Outcome 2 – Certification, energy audits, energy	Not relevant at MTE

management System	
Outcome 3 – Education and training	Highly Satisfactory
Outcome 4 – Pilot Buildings	Satisfactory
Outcome 5 – Replication, best practices dissemination	Not relevant at MTE
Project Impact	Satisfactory
Prospects of Sustainability	Highly Satisfactory

1.3.1 Summary of Lessons Learned

- Energy efficiency redesign of existing typical building design significantly decreases effective utilization of advantages of Integrated Building Design, and leads to higher than necessary incremental costs.
- IBD of new buildings can be developed only without any a priori limitations in order to achieve optimal building compactness, zoning, shading etc., and to minimize incremental costs.
- English knowledge of the project team is essential for effective adoption of best international practice.
- Combination of international consultants with expertise and advanced knowledge from Russia/CIS region, EU countries with formerly centrally planned economies, and developed countries (advanced EU members, US, …) allows to adopt effectively best international experience that is appropriate for specific situation and local conditions in the country.
- There is never enough information exchange. Targeted study tours, participation at international events, or locally organized international conferences will strengthen and facilitate effective capacity building.
- Specification of different required mandatory energy efficiency levels for private residential investors and for institutional investors (in public and commercial sectors), i.e. lower energy efficiency requirements for single family houses than for larger public buildings have a good sense – at least in a certain transitional period – and reflects lower family income level especially in remote rural areas. The significantly lower energy efficiency requirements in residential sector (single family houses and low storey buildings) still represent more than 25% improvement compared to the original building code. Too demanding energy efficiency requirements in residential sector (and thus also more expensive) would lead to problems with compliance rate especially in case of building reconstructions in low income remote rural areas.

1.3.2 Summary of Recommendations

- Work closely with construction companies of each pilot to ensure good quality of construction works.
- Prepare new “full” Integrated Building Design of new buildings that are not limited by an existing typical building design. Focus on best investment costs to energy performance ratio and target the investment limit to standard investment of similar buildings of the same total area.
- Strictly differentiate a goal to design energy efficient building with comparable investment costs (minimum incremental costs) from a goal to design a building with minimum energy requirements (passive house) with typically higher incremental costs. Do not focus on design and demonstration of

passive house concept with minimum energy requirements that would have higher investment costs and thus limited replication potential.

- Work closely with the government to ensure adoption of the newly developed "full" IBD as a new typical building design for replication.

- Work with the government to ensure that at least the energy efficiency level two of the newly revised building code will be typically used in all governmental funded building re/construction programs.

- Analyze the need to draft a new legislation that would be required for implementation of compulsory building energy performance certification system, energy auditing and energy management system in public buildings.

- When designing the certification system, energy auditing and energy management scheme, take into account the costs and benefits when targeted to different types and groups of public buildings. Take into account unavailability of metered actual energy consumption for space heating in buildings supplied by district heating.

- Update and unify both logframes used during project implementation (the GEF format and UNDP format) and use a single set of logframe indicators and targets for project monitoring and progress reporting. Formulate and use additional more detailed specific indicators and targets for operational project management and monitoring if needed that would reflect all individual project activities planned on an annual basis.

Strengthen international exchange of experience concerning integrated building design of energy efficient buildings with affordable/standard investment costs.

- Consider translation into Russian of "10 Books on Green Architecture" and "99 Best Practices" developed by Eneffect within the Bulgarian UNDP/GEF energy efficiency in buildings project.

- In energy audits compare metered building energy performance (where metered energy data are available and energy supply sufficient) with calculated building performance (building certificates) to evaluate users behavior and proper building operation.

2. Introduction

2.1 Project background

Uzbekistan is the second largest country in the Central Asia with the highest number of inhabitants (almost 30 mil) and a large share of young people (27% in the age up to 14 years). The economy after its decline in early 1990s is developing smoothly with annual growth between 5 till 10% in recent years; however the GDP per capita is significantly lower than in other neighboring oil rich countries (source: The World Bank, http://data.worldbank.org).

The president has adopted national programs that provide financing for development and reconstruction of public facilities (schools and health clinics) and development of new residential buildings across the country.

Uzbekistan has a continental climate with relatively short but cold winters and hot summers. According to the http://chartsbin.com, Uzbekistan has on average 2 251 heating degree days, and 1 144 cooling degree days.

The original building codes did not pay special attention to energy efficiency, and building level energy efficiency measures, such as wall insulation etc., have not been incorporated into new building designs.

The project has addressed this opportunity and has been designed with an objective to reduce energy consumption and associated GHG emissions in new and existing public buildings by improving building codes, demonstrating integrated building design approaches, and building capacity of local architectural, construction, and building maintenance specialists.

Five project components include:

1. Development of new performance-based energy-efficiency codes for buildings with at least 25% energy efficiency improvement
2. Development and implementation of energy auditing, certification, energy and GHG accounting, and energy management system in public buildings
3. Promotion of best practices, outreach, and education
4. Design and construction of pilot projects employing integrated building design, combining both construction of new and reconstruction of existing buildings
5. Documentation and dissemination of project results

2.2 Purpose of the evaluation

This mid-term evaluation has been performed on a request of the UNDP Uzbekistan, which serves as a project Implementation Agency.

The objective of this evaluation is to provide managers (at the Project Implementation Unit, UNDP Uzbekistan 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 The outputs of the evaluation and how will they be used

The MTE report will serve as one of the key project monitoring tools to evaluate project progress and achievements, and propose suggestions and recommendations for the remaining project period in order to strengthen achievement of project goals.

Lessons learned during project evaluation will be formulated and disseminated also to other countries in the region that implement similar energy efficiency in building projects.

2.5 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

Achievements of project objectives in terms of relevance, effectiveness, and efficiency are rated in a six level scale as follows:

- Highly satisfactory (HS) - the project had no shortcomings
- Satisfactory (S) - minor shortcomings
- Moderately satisfactory (MS) - moderate shortcomings
- Moderately unsatisfactory (MU) - significant shortcomings
- Unsatisfactory (U) - major shortcomings
- Highly unsatisfactory (HU) - severe shortcomings.

2.6 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 project idea firstly emerged at a joint meeting of Ms. Marina Olshanskaya, UNDP-GEF Regional Technical Advisor, Energy, Infrastructure, Technology and Transport, Bratislava Regional Center for Europe and CIS; Ms. Rano Baykhanova, UNDP CO Climate Change Specialist; and Mr. Jamol Shukurov, Head of Investment Department at Uzbek Ministry of Economy in December 2007. The ministry has introduced the governmental plan to finance reconstruction and construction of health and educational facilities, and accepted the UNDP offer to assist in incorporation of the energy efficiency component into the governmental building re/construction plans.

Project Identification Form has been prepared and approved by GEF on April 25, 2008. The Project Document has been developed with a help of a Project Preparatory Grant of 150 000 USD and has been submitted to GEF for approval on April 30, 2009. The GEF Secretariat endorsed the project on August 6, 2009 without any comments. The Local Project Appraisal Committee approved the project proposal at its meeting on October 6, 2009. The Project Document was signed by UNDP CO Uzbekistan and the Government of Uzbekistan represented by the State Committee on Architecture and Construction on October 28, 2009.

Project Manager has been hired in December 2009 when the first actual project activities started. Other project staff and project component team leaders have been hired during 2010.

Project has been officially launched by the signature of ProDoc on October 28, 2009 with planned project termination on December 31, 2014, the project implementation period is 5 years and 2 months, or 62 months in total.

3.2 Implementation status

The project Inception Workshop has been held on November 17, 2009. The project Inception Report was developed in spring 2010 and finalized on July 22, 2010.

The Mid-Term Evaluation mission to Uzbekistan took place in the period of March 26 through April 5, 2012, 2.5 years after launch of the 5 year project, in the very middle of the project implementation period.

3.3 Problems that the project seeks to address

Public buildings (schools, rural health clinics) that are built and/or reconstructed within a framework of a presidential program according to the original building code do not incorporate energy efficiency measures that would increase building energy performance in heating season and decrease energy needs for cooling in the summer season; no building insulation materials are used in public buildings, and only on an exceptional basis in few private/commercial buildings.

The project aims to address this opportunity and to reduce energy consumption and related GHG emissions in public buildings by:

1. Development of new performance-based energy-efficiency codes for buildings
2. Implementation of an energy auditing, building certification, energy and GHG accounting, and energy management system in public buildings

3. Promotion of best practices in energy efficiency building design and re/construction, including outreach and education of students and professionals
4. Design and reconstruction of existing and construction of new pilot buildings employing integrated building design
5. Documentation and dissemination of project results

3.4 Immediate and development objectives of the project

The project objective is to reduce energy consumption and associated greenhouse gas emissions in public buildings in Uzbekistan, particularly in the healthcare and educational sectors, by improving building norms and standards, demonstrating integrated building design approaches, and developing the capacity of local specialists in design, construction, and maintenance.

3.5 Main stakeholders

Key project stakeholders at the national level include:

- Gosarchitectstroy – Executing Agency
- Ministry of Economy
- Ministry of Health
- Ministry of Education
- Ministry of Higher Education
- Center for hydrometeorology services at the Cabinet of Ministers of Uzbekistan (Uzgidromet)
- "Eco-Energy" Center under the State Committee for Nature Protection
- Energy Institute of the Academy of Sciences
- Tashkent Technical University
- Tashkent Architecture-Construction Institute
- Department for the Fuel and Energy Complex under the Council of Ministers
- Professional building and construction organizations/associations
- Other organizations working on energy efficiency, such as the Energy Centre and the Energy Institute of the Academy of Sciences.

3.6 Results expected

The project is structured into 5 components.

Outcome 1 will strengthen energy efficiency norms and regulations applicable to both new and re-constructed buildings, "building in" efficiency into design;

Outcome 2 will establish a highly-visible energy management system in all targeted public sector buildings;

Outcome 3 will build the capacities of building sector to meet more stringent energy performance requirements for all buildings, both on the design side and the construction technologies side;

Outcome 4 will demonstrate the concept of integrated building design in two new and six re-constructed buildings; and

Outcome 5 will integrate the results of the project into standard practice in the public sector and share results with the residential and commercial sectors.

For each of the Outcome, the expected results have been defined as follows:

Component 1: Development of new performance-based energy-efficiency codes for buildings

Outcome 1: Revised building codes and standards incorporating principles of integrated building design apply to all new buildings in educational and health care sectors. Facilities that fall under this definition include primary schools, secondary schools (lyceums, professional colleges, and vocational schools), hospitals, and athletic facilities. The focus on building codes will also include the sub-codes that feed into the primary code.

1.1 Review and revise building codes for public buildings and other relevant norms and standards to incorporate mandatory provisions for integrated building design and energy performance standards
1.2 Establish an Energy Efficient Building Code Department within the State Committee on Architecture and Construction and train staff on the codes process
1.3 Design and deliver training on the new norms to public servants involved in the compliance process (approval and commissioning), such as the clerks in charge of permitting at the State Committee for Architecture and Construction and the staff of the Construction Quality Control Inspectorate responsible for checking facilities during the construction and usage of buildings.

Component 2: Auditing, certification, energy and GHG accounting, and energy management

Outcome 2: Government is aware of performance in existing healthcare and educational facilities and can prioritize investments in efficiency.

2.1 Expand current regulations on mandatory energy audits to include auditing and reporting in public buildings
2.2 Design and complete a study tour for key personnel in the Codes Office to relevant countries that are using audits and certificate schemes to support code compliance and/or monitor consumption in existing buildings.
2.3 Develop, approve, and apply methodology to monitor building energy performance for each targeted building type
2.4 Develop and introduce a mandatory system of energy performance certificates (“energy passports”) for new and existing public buildings to display performance data and ensure compliance with revised norms and standards
2.5 Develop an energy information management system to systematically collect, store and analyze data on energy consumption and the costs and benefits of energy saving measures and quantify energy savings, financial savings, and GHG emission reductions from the new, energy-efficient norms
2.6 Work with Ministries of Education and Health to establish a system of energy managers in medical and educational buildings, design and deliver continuing education modules for facilities managers and a unit on energy management at the secondary school level, and determine the feasibility of financial incentives for institutions that reduce energy consumption in their facilities.

Component 3: Promotion of best practices, outreach, and education

Outcome 3: Uzbek design and construction professionals have the capacity to design efficient buildings and manage their performance

3.1 Work with the Tashkent Architectural-Construction Institute (TACI) to design and deliver training modules on the new building codes to familiarize architects and engineers with the codes and to provide an overview of compliance.
3.2 Work with Tashkent State Technical University (TSTU) to expand its energy management programs at the bachelors and masters level to include a specialization in energy savings in buildings and include course content on energy savings in buildings and integrated design in the model program for academic disciplines for post-secondary institutions with architecture

and buildings engineering programs. Introduce sustainable buildings information in curricula for post-secondary and technical schools.

3.3 Develop and distribute information on integrated building design for practicing architects and developers through continuing education modules and master classes, publish a how-to guide on applying integrated building design to new and existing buildings in Uzbekistan.

3.4 Provide advisory services to architects and engineers on low or no-cost design measures and best available technologies and materials

3.5 Develop and maintain a database of best available technologies, materials, and services in the sustainable buildings sector.

3.6 Organize presentations on the potential for efficient building technologies at trade fairs and other key events attended by professionals in the construction materials, building technologies, and heat and power industries.

Component 4: Pilot projects employing integrated building design

Outcome 4: Showcase the energy- and cost-saving potential of integrated building design in two new public buildings and six renovated public buildings

4.1 Work with local architects and engineers to ensure that the proposed new buildings selected are designed and constructed according to the principles of integrated building design (i.e., the identification of appropriate location, materials, equipment, energy sources, optimization of energy consumption: heat supply, lighting, ventilation) and will comply with more efficient codes. In the case of buildings that will undergo retrofitting or capital reconstruction, work will include all of the above principles with the exception of building location.

4.2 Co-finance key energy efficient technology options in eight pilot buildings

4.3 Monitor pilot building energy performance and quantify energy savings, financial savings, GHG emission reductions, and other non-energy benefits

4.4 Based on the results of the monitoring, encourage the replication of successful design and construction approaches in other schools and hospitals covered by state-funded programs.

4.5 Promote results of the pilot buildings and integrated building design work nationally through the professional literature and the broader media, regionally through the CARnet network (www.caresd.net), and globally through the UNDP-GEF Framework for Promoting Low Greenhouse Gas Emissions Building and through Uzbekistan's governmental affiliations (as a member government of the CIS, a signatory of the Energy Charter, etc.).

Component 5: Documentation and dissemination of project results

Outcome 5: Project findings regarding efficient buildings influence construction practices and public administration practices. Best practices are disseminated across other sectors which are not directly targeted by the project; i.e., other public buildings and commercial buildings

5.1 Work with the media and directly with major building constructors and owners to raise their awareness on economic, environmental and social benefits of integrated building design and on locally available and tested technologies, materials and other EE practices in buildings

5.2 Develop, publish, and disseminate guidance to accompany the release of the new efficient building codes

5.3 Conduct two independent evaluations of the project: a mid-term evaluation and a final evaluation and disseminate the findings through key channels (see Activity 4.5)

5.4 Develop a strategy paper outlining the approaches for incorporating good practices from the project into public administration (i.e., codes, tendering practices, bulk procurement, policies, sectoral development programs, municipal finance, etc.) and organize a high-level roundtable to discuss implementation

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

The Project Document has provided detailed analysis of the situation in Uzbekistan with regard to project objectives, including detailed estimation of potential for GHG emission savings.

However, basically two versions of the project document have been prepared that include slightly different wording of the project logical framework: the GEF version and the UNDP version that has been signed by the government. The UNDP version is used for project results monitoring and reporting to UNDP in Annual Progress Reports, and the GEF version is used for reporting to GEF in Project Implementation Report.

These two logframes in principle do correspond to each other, however the specification of individual project indicators and targets differs in some cases significantly and thus it is confusing.

Partnership Strategy

The partnership strategy has been properly designed and all key local stakeholders and decision makers have been invited to actively participate in project implementation including top level policy and decision makers, key state institutions and design organizations, universities, and other specialized expert organizations.

4. Findings

4.1 Project Formulation

The first project idea was raised during the meeting of UNDP and the Ministry of Economy in December 2007. Within two years the Project Identification Form and Project Document have been prepared, approved and signed and the project started its actual implementation.

This relatively short period of project preparatory phase and a good quality of project design ensured that project goals and objectives are still relevant for the country and the project can be implemented without a need to substantially change its planned activities.

The Inception Report prepared in the spring 2010 reflected in detail the actual situation and proposed minor changes to project implementation, including:

- Instead of individual local consultants the project cooperates typically with local institutions that have responsibility and authority in respective fields. Thus an official approval of developed project results (buildings codes, university curricula etc) is smooth without unnecessary delays.
- Instead of a creation of a new Building Code Department within Gosarchitectstroy, less costly solution was chosen to support and develop relevant capacities of the existing Department on Monitoring of Activity of Design Organizations.
- New governmental investment programs have been revised and a question of focusing the project on rural residential buildings as well was considered. At the inception period the decision was made to stay focused on public buildings in order to fully utilize the potential for replication and volume of investment in this sector.

4.1.1 Project Relevance

In Uzbekistan energy efficiency potential is practically untapped. In building sector practically no energy efficient materials and measures have been used with an exception of few new modern buildings built primarily in Tashkent. Only locally assembled plastic double glazed windows started recently to be used for windows replacement on a wider scale. No heat regulation is in place; radiators have no valves and are connected in series in a single pipe system that does not allow implementation of individual room heat controls. No external wall insulation is used. Window shading if installed is often obsolete and non functional anymore. Utilization of untapped energy efficiency potential, both in space heating and in cooling, would require significant amount of investment.

Gas supply in cold winter periods is often insufficient, especially in remote rural areas, which results in indoor temperatures as low as 10 ºC only. In such situation the actual energy savings would be smaller than those calculated for the required indoor temperature of ca 20 ºC, however the implemented energy efficiency measures would significantly improve the comfort and indoor temperature even if the problems with gas supply would continue.

The project focus on development of energy efficient building codes that are compulsory in capital reconstruction of existing buildings and construction of new buildings create perhaps the only opportunity

for large scale replication of energy efficiency improvements without a need to finance significant additional costs.

Energy prices are still subsidized which decreases economic motivation to implement energy efficiency. However, energy efficiency in buildings increases the comfort of living in extreme climate conditions (increased indoor temperature in winter, and lower indoor temperature in summer).

The focus of the project is thus very appropriate to the actual situation in Uzbekistan, although it is just the very first step in improving energy efficiency. The project contributes to national development priorities and plans in accordance with the Law of the Republic of Uzbekistan on "Rational use of energy resources", #412-I of 25.04.1997, and to Anti-recession (anti-crisis) program to support economy and increase of export (President's Decree No. UP-4058 as of 28.11.2008).

Project relevance is rated Highly Satisfactory.

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
HS					

4.1.2 Implementation Approach

The Project Document emphasized focus on Integrated Building Design and development of energy performance based building codes. Both Integrated Building Design and energy performance based building codes are relatively new concepts that have been introduced in countries which had already good practice with implementing energy efficiency in buildings.

It should be clearly understood the difference between traditional descriptive energy efficiency building codes and new energy performance building codes, and between improving energy efficiency of buildings and Integrated Building Design.

Traditional descriptive energy efficiency building codes prescribe maximum U or minimum R (thermal resistance) values for each building structures, such as external walls, windows, roofs, ground floors etc. This practically means a minimum required thickness of insulation required by the code.

Energy performance based building code on the other hand requires to meet the requirement of total specific energy used for space heating or cooling in kWh/m^2 of different building types and provides flexibility for building architects and designers on how such requirement will be met – if windows will be smaller or more energy efficient, how compact the building will be, if building orientation will be optimal, and how effective zoning of heated indoor areas will be used etc.

Typically, energy performance building codes have been introduced only after decades of utilization of descriptive energy efficiency building codes, when experience with design and construction of energy efficient buildings have been widespread sufficiently. Energy performance building codes provide more flexibility and opportunity to reach the mandatory energy efficiency standard in less costly way, but they require certain level of experience in energy efficiency. Also it is easier to control compliance with descriptive energy efficiency building codes then with energy performance codes.

Similarly, the Integrated Building Design does not mean only to implement sufficiently thick wall insulation, or efficient windows, but to incorporate into building design other factors as well (building compactness,

indoor room zoning, building orientation, passive solar gains and solar shading etc) in order to reach required energy performance in a cost-effective way with limited or affordable incremental costs.

Effective introduction of both energy performance building codes and Integrated Building Design require certain level of experience of architects, building designers and HVAC engineers with energy efficiency.

In a country where there exists practically no experience with building level energy efficiency these goals might become rather ambitious.

Implementation approach is rated Highly Satisfactory.

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
HS					

4.1.3 Logical Framework

Project uses two LogFrames that have been developed during project preparatory phase: a logframe in a GEF format and terminology, and a UNDP logframe format and terminology. The GEF logframe is used for reporting to GEF in the middle of the calendar year (end of GEF fiscal year) in a combined Annual Project Review (APR) and Project Implementation Report (PIR), and the UNDP logframe is used for project management and for reporting to UNDP on a quarterly and annual basis at the end of the calendar year (Progress Reports). In addition to GEF logframe, UNDP logframe has defined indicators for each year of project implementation and thus is better suited for operational evaluation of project results. GEF logframe in principle serves to evaluate the overall project achievements and thus is not suited (detailed enough) for daily/operational project management control.

These two logframes do in principle correspond to each other, however not in all details and thus it is rather confusing to have in place two slightly different logframes.

Comparison of both GEF and UNDP logframes is shown in Annex 1: GEF LogFrame with revisions from the Inception ReportAnnex 1: GEF LogFrame with revisions from the Inception Report and Annex 2: UNDP LogFrame.

After the Inception Workshop and based on the recommendation of the Inception Report the GEF logframe has been slightly revised in Target 4: the wording “Department for Energy Efficient Codes established by the end of Year 1“ has been removed from the logframe target. See the discussion above in Chapter 4.1: instead of a creation of a separate additional department at Gosarchitectstroy, capacity strengthening and building focuses on an existing Gosarchitectstroy Department for Monitoring the Activities of Design Organizations.

Logical Framework is rated Moderately Satisfactory due to the confusion of using two sets of project indicators and targets in two logframes.

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
		MS			

4.1.4 Country ownership/driveness

The project has been initiated jointly by UNDP and the Government of Uzbekistan and reflects urgent need of Uzbekistan to improve energy efficiency, although energy prices are still regulated below full costs because of low income level of population.

The Project Document has been prepared by international experts that have extensively consulted with local stakeholders.

The project is implemented by local experts and key local institutions. International project consultants provide advice and experience in best international practice, however the actual project deliverables (energy efficient building codes, design of new and reconstructed buildings, educational curricula etc) is developed by local experts.

The project receives full support from Gosarchitectstroy, the key national institution in building construction and an Executing Agency, as well as from the government and involved ministries and other public institutions.

Country ownership/driveness is rated Highly Satisfactory.

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
HS					

4.1.5 Stakeholder participation in the design phase

During the project design phase international consultants have discussed the project idea and focus with key local stakeholders. The following organizations have been invited for discussions and input during project preparatory phase:

- State Committee for Architecture and Construction
- Ministry of Economy
- Ministry of Foreign Economic Relations, Investment and Trade
- Ministry of Health
- Ministry of Public Education
- Ministry of Higher and Specialized Education
- State Committee for Nature Protection
- Center for Hydro Meteorological Service (Uzhydromet)
- Central and regional authorities
- Tashkent State Technical University
- Tashkent Institute of Architecture and Construction
- Construction companies
- Design institutes
    - Closed Joint Stock Company ToshuyjoyLITI
    - Open Joint Stock Company UzShaharsozlikLITI
    - KishlokKurilishLoyiha
- “Eco-Energy” Scientific Center
- Energy Center of Uzbekistan
- GTZ (GIZ) – German Agency for International Cooperation

- TIKA – Turkish International Cooperation and Coordination Agency
- European Commission representation in Uzbekistan

Stakeholder participation in the design phase is rated Highly Satisfactory.

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
HS					

4.1.6 Replication approach

The focus of the project to improve building codes to a better energy efficiency standard, to introduce energy efficiency into training curricula of university students and professionals, to introduce building certification and energy management schemes, to train building designers and professionals and to further disseminate energy efficiency information and experience gained is in principle designed so that local capacity would be developed and pilot projects could be replicated after project termination by local professionals themselves without need of additional external assistance and without excessive additional costs.

Pilot projects are developed, designed and constructed by local experts. The role of international consultants is limited to providing guidance and advice. The project has been designed to develop local capacity to design and construct energy efficiency buildings by local specialists in the future as well.

Energy efficiency reconstruction typically requires additional investment costs. Depending on the price of energy and costs and effectiveness of implemented energy efficiency measures this investment than has a shorter or longer payback period.

Integrated Building Design, which includes design of compact buildings, with good orientation, utilizing passive solar gains in winter and shading in summer, optimized zoning of inner rooms according to their required temperature etc, allows designing and constructing new buildings that are more energy efficient to a certain limit with standard investment costs, without any incremental costs. In this case there is no payback, because there are no additional/incremental investment costs. This is valid also in case of subsidized energy costs.

However, this does not mean that automatically all new buildings designed according to the new energy efficiency building codes will have no or minimum incremental costs. If the Integrated Building Design would not be fully incorporated, even the costs of new buildings might be higher than standard costs of similar buildings. Implementation of Integrated Building Design requires sufficiently skilled and experienced architects, designers and HVAC engineers that effectively cooperate together since the very early stages of building design and have a freedom to choose the optimal building shape, orientation of the building, zoning of inner heated and unheated space etc.

Replication approach is rated Highly Satisfactory.

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
HS					

4.1.7 Cost-effectiveness

Effectiveness of CO_2 reductions

The project target is to reduce 700 000 tons of CO_2 direct 20-year lifetime emissions in more energy efficient buildings designed and constructed within the project implementation period based on the new building code. The total GEF contribution to the project is 2 913 885 USD, which results in costs for GEF of 4.16 USD/tCO_2 of direct GHG emissions saved by direct project intervention. Another 1.75 mil tCO2 20-year lifetime savings are estimated as direct post-project GHG emission savings from energy efficient buildings constructed within a 10-year period after project termination in 2014.

The estimated costs for GEF of direct GHG emission savings of 4.16 USD/tCO_2 are well below the market price of EU Emission Allowances which oscillates typically between 5 and 20 EUR/tCO_2 at the European Energy Exchange (source: http://www.eex.com).

The project design cost-effectiveness is rated Satisfactory.

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
	S				

Six reconstruction pilot projects and two new pilot projects have total incremental investment costs of 668 016 USD, of which 313 508 USD are incremental costs of six reconstructed buildings with calculated annual CO_2 emission savings of 379 tons CO_2 (combined savings in space heating and lighting), and 354 507 USD are incremental costs of two new buildings with calculated annual CO_2 emission savings of 70 tons CO_2. The costs of saved CO_2 emissions over a 20 year lifetime of all eight pilot buildings are 74 USD/ton CO_2, of which 41 USD/ton CO_2 in case of reconstructed buildings, and 253 USD/ton CO_2 in case of newly constructed pilot buildings. In case of emission savings from buildings reconstruction, costs of saved CO_2 are comparable with peak price of EU GHG emission allowances (EUA). In case of GHG emission savings from new pilot buildings, costs of saved CO_2 are significantly higher.

Calculated cost-effectiveness of CO_2 emission reductions from reconstruction pilot projects is rated Moderately Satisfactory. Calculated cost-effectiveness of CO_2 emission reductions from new pilot projects is rated Unsatisfactory.

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
		MS		U	

4.1.8 Sustainability

The project has been designed to develop local capacity in designing and re/construction of cost-effective energy efficient buildings. Implementation and wide-range adoption of IBD principles on a market is a long-term process. It will depend also on building investors in the future if they would require new re/constructed buildings to be more energy efficient with affordable costs, and also to what extent newly re/constructed buildings would comply with higher energy efficiency standards of the new building codes. In public buildings the compliance rate is not expected to be a significant problem. More difficult it might be with private single family houses especially in remote rural areas – concerning higher than the basic level one energy efficiency building code requirement.

However, the project has been designed to provide sustainable solutions and implement energy efficiency building re/constructions in a sustainable way.

Sustainability is rated Highly Satisfactory.

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
HS					

4.1.9 Linkages between project and other interventions within a sector

The project, and its component to re/construct pilot buildings, has been designed in accordance with and adjusted to national investment programs in public sector, namely investment program focusing on reconstruction and construction of schools and health clinics in rural areas.

The project cooperates with the Center of Economic Researches (CER) under the Cabinet of Ministers on studies related to greening of buildings, and the supports locally the RIO+20 process (including participation in the Round Table to support the national preparations to Rio+20; and contribution to baseline assessment of greening potential of building sector in Uzbekistan conducted by the CER as a part of the National Report to Rio+20).

The project contributed to development of NAMAs on buildings by the UNDP project "Supporting Uzbekistan in transition to low-emission development path" (2011-2015); to joint piloting of green rural homes within the national program on rural construction, and it was involved in development of a business-line concept for the Government of Uzbekistan "Better Housing – Green Jobs".

4.1.10 Management Arrangements

Project Implementation Agency is UNDP. Gosarchitectstroy has been appointed to serve as a project Executing Agency. Project Implementation Unit established by UNDP is responsible for daily management and actual implementation of the project.

Executing Agency, Gosarchitectstroy, has appointed National Project Coordinator who has the overall executive responsibility over the project implementation.

The overall responsibility over the project has a Project Board (Steering Committee) where governmental ministries and agencies are represented.

Project Implementation Unit is supported by UNDP Country Office Uzbekistan.

The project is implemented by local institutions and experts who are supported by international consultants.

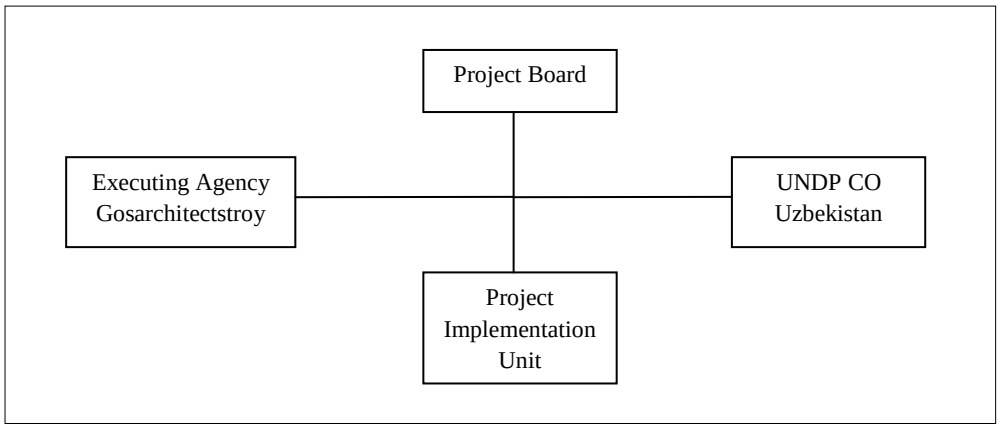
International consultants include:

- International Technical Advisor (Mr. Mark Chao, Institute for Market Transformation, USA),
- International Building Codes and Capacity Building Expert (Mr. Vadim Iosifovich Livchak and Mr. Mikhail Tarabanov of AVOK, Russia, Mr. Sergey Ivanovich Burtsev, Managing Partner of ZAO "BYURO TECHNIKI", Russia was hired as well to deliver training on building codes)

- International Architect – Designer (Mr. László Szekér, Intervallum Architects, Hungary), and
- International Energy Management and Certification Expert (Mr. Živko Dimov of TED Consulting, Macedonia).

The scheme of project management organization illustrates the following Chart 1.

Chart 1: Project Management Arrangements



Management arrangements are rated Highly Satisfactory.

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
HS					

4.2 Project Implementation

4.2.1 Financial management

The project benefits from having an experienced Project Manager as well as Administrative/Financial Assistant in place that both have earlier experience from managing and administration of other UNDP projects.

The project is professionally managed and administered.

The Mid-Term Evaluation cannot replace an external financial audit which has not been implemented yet, but the evaluators checked with Ms. Kim, the Administrative/Financial Assistant random financial records and found the financial documents to be properly administered and recorded.

The following Table 3: Project Document Budget provides information on originally planned total project budget and estimated annual budgets over the whole period of project implementation as of Project Document.

Table 3: Project Document Budget

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Total	
Outcome 1	136 670	94 100	64 460	33 320	19 831	**348 381**	*11%*
Outcome 2	191 484	154 238	58 492	93 246	21 721	**519 181**	*16%*
Outcome 3	38 182	32 083	100 527	10 527	3 750	**185 069**	*6%*
Outcome 4	159 160	774 980	689 006	16 986	3 797	**1 643 929**	*52%*
Outcome 5	4 212	4 212	27 371	75 371	81 159	**192 325**	*6%*
Management	108 776	46 776	46 776	46 776	46 776	**295 880**	*9%*
Total	**638 484**	**1 106 389**	**986 632**	**276 226**	**177 034**	**3 184 765**	*100%*

The Table 4 shows updated annual budgets in respective Annual Work Plans, it means annual budgets prepared before the actual year of project implementation. During the actual year the budgets have been typically revised, but these revisions are not reflected in this Table 4 to illustrate and compare original Project Document budgets with annual budgets prepared before actual annual budgeting periods.

Table 4: Annual Budgets as updated in respective Annual Work Plans

Year	2009	2010	2011	2012
Outcome 1	13 800	122 870	221 945	239 645
Outcome 2	20 100	169 138	226 622	243 790
Outcome 3	1 300	36 882	165 194	37 536
Outcome 4	0	159 160	164 638	724 485
Outcome 5	2 500	1 712	43 436	64 644
Management	21 880	86 896	75 239	68 467
Total	**59 580**	**576 658**	**897 074**	**1 378 567**

Table 5 provides information on actual project expenditures spent since the project launch in late 2009 till end of March, 2012 when the Mid-Term Evaluation took place.

Table 5: Actual Project Expenditures as of March 30, 2012

Year	2009	2010	2011	03/2012	Total	*% of respective total budget line*	*% of total expenditures*
Outcome 1	2 677	98 099	111 361	158 530	**370 667**	*106%*	*24%*
Outcome 2	0	108 781	85 340	293 376	**487 497**	*94%*	*32%*
Outcome 3	0	35 285	143 327	9 413	**188 025**	*102%*	*12%*
Outcome 4	0	12 318	126 448	37 635	**176 401**	*11%*	*12%*
Outcome 5	0	22 420	40 616	7 084	**70 120**	*36%*	*5%*
Management UNDP	13 818	103 907	72 145	7 052	**196 922**	*80%*	*13%*
Management GEF	4 184	27 039	9 117	372	**40 712**		*3%*
Total	**20 679**	**407 849**	**588 354**	**513 462**	**1 530 344**	*48%*	*100%*
% of total budget	*1%*	*13%*	*18%*	*16%*	*48%*		

The percentage of respective total budget refers to the relevant original budget in Project Document. It shows that the originally planned budgets for Outcome 1, 2 and 3 have been in principle spent already (all planned activities within Outcome 1 and 3 have been already delivered). Annual budgets in Annual Work Plans have revised the original Project Document budget accordingly. The principal change in budget planning is decrease of the actual Outcome 4 budget and transfer of part of these budgeted funds to other project components.

UNDP provided additional 200 000 USD for the project to cover the costs of project management that includes costs of Project Manager, Admin/Finance Assistant and a driver. GEF Project Management expenditures in the amount of 3% of total expenditures as of March 30, 2012 relate to procurement of vehicle ($22,500) and vehicle related expenses (insurance, technical maintenance, 50% of driver's salary etc.) The Table 5 does not include expenditures of co-financing costs of pilot buildings re/construction (of almost 700 mil USD) that will materialize in 2012 and that will significantly decrease percentage of management costs.

At the time of the MTE, in the very middle of planned project implementation, the project has spent 48% of total project budget. Budget revisions include in principle partial transfer of funds originally allocated for Outcome 4 and 5 (and saved with no impact on delivery of planned activities) to support Outcomes 1, 2, 3 and the management budget line.

The construction and reconstruction of all eight pilot buildings has started early in 2012 already, and are scheduled to be finished by September 1, 2012. Thus the project expects major expenditures for co-financing of these re/construction works during the year 2012.

The spending of the budget is very well proportional with the period of implementation (48% of budget spent at the middle of the project implementation), and results of the project delivered so far. The originally planned amount of co-financing of pilot projects is actually lower than planned which provides the project with sufficient funds to be allocated over the remaining project period for all remaining activities.

Financial management is rated Highly Satisfactory.

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
HS					

4.2.2 Monitoring and Evaluation

The project results are regularly reported to UNDP and GEF on a quarterly and annual basis [UNDP Quarterly Progress Reports (QPRs) and Annual Review Reports (ARRs), and GEF Quarterly Operational Reports (QOR) and Project Implementation Reviews (PIRs)].

The Project Board that oversees project implementation meets regularly twice a year, the four meetings have been held so far on July 29, 2010, November 24, 2010, June 10, 2011 and November 28, 2011. Project Board approves Annual Work Plans and Budgets as well as progress reports on project achievements.

The Tripartite Project Reviews have been combined with regular Project Board meetings.

The Inception Report was approved by the Project Board at its first meeting in July 2010.

Mid-Term Evaluation took place in March/April 2012, in the middle of the project implementation period.

Monitoring and evaluation has been implemented according to the GEF/UNDP practice and in line with the monitoring and evaluation plan described in the Project Document.

Monitoring and evaluation is rated Highly Satisfactory.

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
HS					

4.2.3 Management and coordination

The project team consists of a Project Manager, Administrative/Finance Assistance, four Team Leaders, driver, and includes:

Mr. Kakhramon Usmanov, Project Manager
Mr. Rustam Kuchkarov, Team Leader on Building Codes and Standards (Component 1)
Mr. Alisher Temirov, Team Leader on Demonstration Buildings (Component 4)
Mr. Petr Pozachanyuk, Team Leader on Energy Audit and Monitoring (Component 2)
Mr. Elyor Abbosov, Team Leader on Training, Education and Outreach (Component 3 and 5)
Ms. Alyona Kim, Administrative and Finance Assistant
Mr. Anatoly Verkhnyatsky, Driver
Ms. Feruza Muminova, Cleaner

Activities under each project component are organized and managed by project Team Leaders and implemented mostly by project partners – national organizations with a support from international consultants (project components 1, 2 and 4).

A key role in the project implementation has Gosarchitectstroy – State Committee for Architecture and Construction of Uzbekistan, which serves as an Executing Agency. Gosarchitectstroy, has an authority and responsibility among others in developing and implementing energy efficiency codes, licensing of construction specialists, approving building designs, and supervision of building constructions.

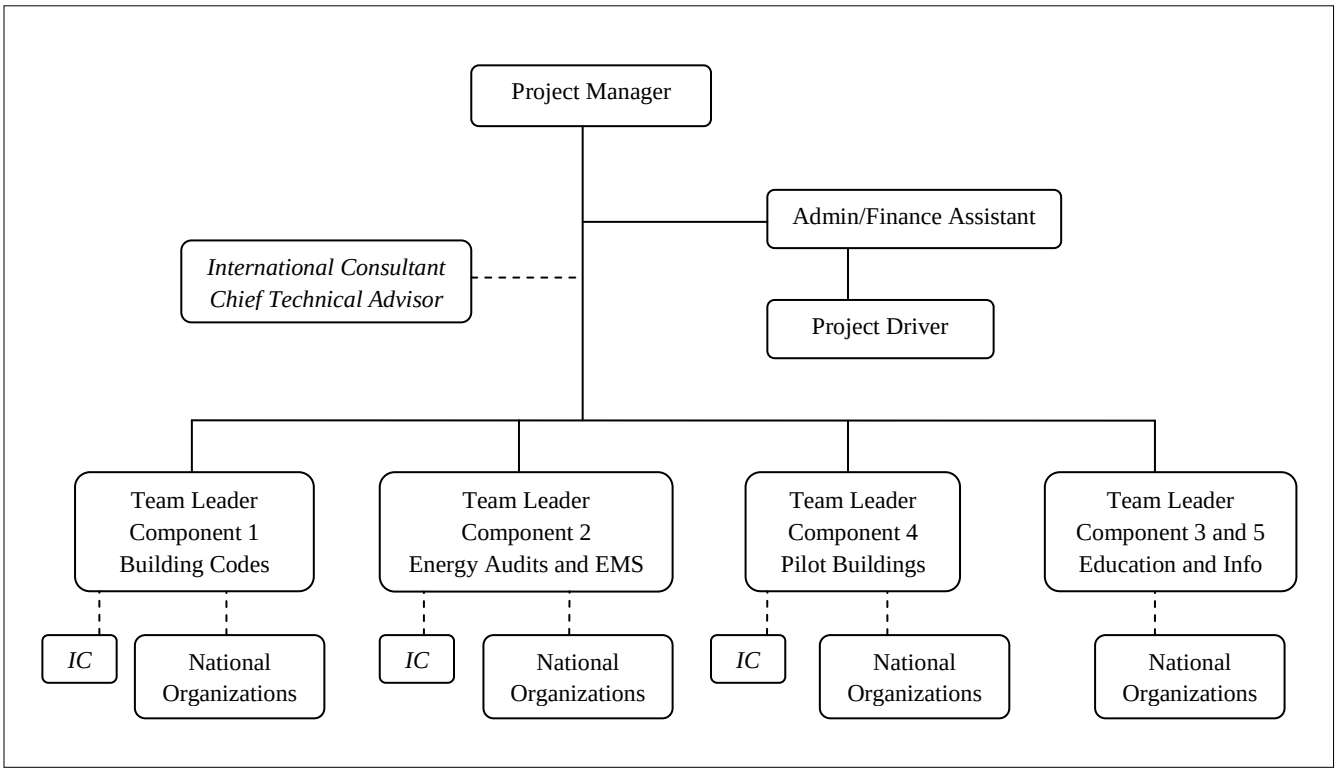
The project implementation and Project Implementation Unit is overseen by the Project Board (Steering Committee) which meets regularly twice a year. The chair of the Project Board serves in the same time as a National Project Coordinator representing Gosarchitectstroy, the Executing Agency.

Members of the Project Board (Steering Committee)

1. Khalkhodjaev M., National Project Coordinator, Head of the Department for Monitoring the Activities of Design Organizations under the State Committee for Architecture and Construction (formerly Mr. Achilov M.K., Deputy Chairman of the State Committee for Architecture and Construction)
2. Shoabdurakhmanov R.M., Deputy Minister of Economy
3. Javlonov Sh.S., First Deputy Minister of Higher and Secondary Specialized Education, Director of Center of Secondary Specialized and Professional Education
4. Sabirov A.Z., Deputy Minister of Public Education
5. Khodjaev M.J., Director of Innovation and Research Center Ecoenergy of State Committee for Nature Protection
6. Kadirov B.Sh., First Deputy of General Director of Uzgidromet
7. Ergashev B.T. Head of Department, Ministry of Health
8. Cilliers J., Deputy Resident Representative, UNDP
9. Abdurahmanov A., Head of Environment and Energy Unit, UNDP

The project receives support from the UNDP Country Office in Uzbekistan, and is overseen namely by Ms. Rano Baykhanova, UNDP Climate Change Specialist.

Chart 2: Organizational Structure of the Project Team



Management and coordination is rated Highly Satisfactory.

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
HS					

4.2.4 Co-financing and in-kind contributions

The following table shows planned total costs of reconstruction of six pilot buildings (four schools and two rural health clinics) and of construction of two new pilot buildings (schools) and the GEF co-financing.

Table 6: Pilot project investment costs and project contribution

Name	Total investment costs [000 UZS]	GEF contribution [000 UZS]	Total investment costs [USD]	GEF contribution [USD]	GEF contribution [%]
School #2 in Rishtan district, Fergana region	592 914	94 823	321 711	51 450	16%
School #35 in Khatyrchi district, Navoi region	734 939	130 120	398 773	70 602	18%
School #20 in Karshi district, Kashkadarya region	546 030	125 885	296 272	68 304	23%
School #5 in Kanlykul district, Republic of Karakalpakstan	629 494	108 000	341 559	58 600	17%
Rural health clinic "Oktepa" in Pskent district, Tashkent region	348 431	54 666	189 056	29 661	16%
Rural health clinic "Dekhibaland" in Nurata district, Navoi region	325 063	64 302	176 377	34 890	20%
New school in Kurgantepa district, Andijan region	2 311 803	435 189	1 254 370	236 131	19%
New school in Nurata district, Navoi region	1 547 680	218 168	839 761	118 377	14%
Total	**7 036 354**	**1 231 153**	**3 817 881**	**668 016**	**17%**

Note: Exchange rate used in this table is 1843 SOM/USD. Projects are under construction and final total costs might change.

The planned project GEF cash contribution for re/construction of pilot projects is 668 016 USD, i.e. on average 17%, ranging from 14% to 23%.

The share of project contribution for pilot reconstruction projects is on average 18.2% and for construction of new pilot buildings 16.9%.

The reconstruction of existing schools and rural health clinics is very substantial. Basically only the structure of the building remains unchanged and everything else is subject to full reconstruction (removal and new construction), including all utilities - new electricity wiring, water and waste water pipes, new heating system (heat pipes, radiators with thermostatic valves, new heat boilers with regulation), new insulation under the floor, new plastic double glazed windows, double entrance doors, new thermal insulation of walls, roof and building foundations, new efficient lighting, etc.

The scope of reconstruction illustrate following pictures of the Rural Health clinic in Oktepa under reconstruction.

Picture 1: Reconstruction of the Oktepa Rural Health clinic

Co-financing is rated Satisfactory.

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
	S				

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	0.27088	0.47088					0.27088	0.47088	0.47088	0.219
– Loans/Concessional (compared to market rate)										
– Credits										
– Equity investments			8.6	8.6			8.6	8.6	3.15	0.817
– In-kind support			1.6	1.6			1.6	1.6	1.6	0.158
– Other (*)										
Totals	0.27088	0.47088	10.2	10.2			10.47088	10.67088	5.22088	1.194

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

UNDP has increased its contribution from originally planned 270 880 USD by another 200 000 USD to the actual total of 470 880 USD. UNDP funds are used to cover the project management costs.

4.2.5 Identification and management of risks (Adaptive Management)

The project implementation faced several risks influenced by external factors that caused minor delays, but the project did implement adaptive management effectively to overcome these problems and the project is delivering its results in principle in due time. Some partial results have been delivered later than originally planned; some results have been delivered even earlier than planned. In general the project has delivered key results especially in project component 1, 3 and 4 already at the middle of its implementation.

The Inception Report significantly extended the list of potential project risks as they were defined in the Project Document and in the Request for GEF CEO Endorsement.

There have been two important strategic risks identified in the Inception Report:

- Delays in timely addressing of issues raised by the project (expansion of replication strategy due to recent changes in government programs)
- Non-fulfillment of project target to reduce CO2 emissions due to changes in Government policy and construction/retrofitting programs

These risks were logged in May 2010 with a status indicating "reduced" in the first case and "avoided" in the second case.

However, these two above mentioned factors/risks – sufficient replication and re/construction of energy efficient buildings and achievement of the project target to reduce 35 000 tons of direct project CO_2 emissions annually (or total direct 700 000 tCO_2 life-cycle emission savings) are critical for project success and need to be closely watched. Also the target of post-project GHG emission savings (87 500 tCO_2 annually in 2020) should be carefully evaluated if it is feasible and if necessary adequate adaptive management solutions should be implemented to ensure full roll-out of at least second level energy efficiency standard of newly built and reconstructed buildings – and especially of those financed from governmental funds.

More detailed discussion on these risks is in the Chapter 4.3.

Adaptive management is rated Satisfactory.

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
	S				

4.2.6 Stakeholder participation during implementation

During the implementation period, a wide range of local stakeholders have been directly involved in project implementation. The following list provides an overview of main stakeholders actively involved in the project implementation so far:

- State Committee for Architecture and Construction (Gosarchitectstroy)
- Department for Monitoring the Activities of Design Organizations under Gosarchitectstroy

- The Republican Center of Certification and Standardization in Construction Industry under Gosarchitectstroy
- Ministry of Public Education of Uzbekistan
- Ministry of Heath of Uzbekistan
- Institute of Energy and Automation under the Academy of Sciences of Uzbekistan
- Tashkent State Technical University (TSTU)
- Tashkent Architecture and Construction Institute (TACI)
- "ToshUyjoyLITI" Design Institution
- "UzTibLoyiha", Design Institution for Medical buildings,
- Regional authorities
- Regional Engineering Companies
- Local construction companies
- Local design companies
    - Oktepa region Engineering Company
    - "Madalim Kuruvchi" Construction Company
    - Oktepa regional/municipal authority
    - Navoi region Engineering Company
    - "Khamroh" construction company
    - "Pakhtakor XX" construction company
    - "Pakhtaobod talim plus", construction company
    - «Navoi shaharsozlik loyihalash» design organization
    - "Bukhoro Loyiha" design organization
    - Kashkadarya region Engineering Company
    - «Qishloq Qurilish Lyuks» design organization

Stakeholder participation during implementation phase is rated Highly Satisfactory.

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
HS					

4.3 Results

Component 1 – Building codes

Nine newly revised energy efficiency building codes for new and reconstructed buildings have been developed and adopted in June 2011 and came immediately into force without any transitional period (of which one code was completely newly designed). The new building codes followed in principle the structure of existing building codes and are based on a combination of traditional descriptive energy efficiency requirements and energy performance requirements.

The descriptive building code KMK 2.01.04-97* on Thermal Building Engineering describes three levels of minimum required thermal resistance R-values of individual building structures such as walls, windows, roofs and floors for different building types.

Energy performance requirements are specified in a building code KMK 2.01.18-2000* on Normative Energy Consumption for Space Heating, Ventilation and Air-conditioning in Buildings and Constructions. The energy performance component is described as maximum energy loss expressed in W/m^2 of total building area (these values can be recalculated to maximum energy consumption in kWh/m^2). The minimum energy performance of buildings is specified for different specific building types differently.

The most strict minimum energy performance refers to schools and hospitals financed by public budgets and requires energy losses not to exceed 59-102 W/m^2 of total area according to the specific building type in regions with 2000-3000 heating degree days. This in principle refers to energy efficiency level two of the descriptive building code KMK 2.01.04-97*.

Residential buildings and other public and commercial buildings (theaters, shops, banks, …) are subject to a lighter energy performance requirements that refer to the energy efficiency level one of the descriptive building code KMK 2.01.04-97*. The minimum required energy performance (maximum energy losses for space heating) of residential buildings ranges between 70-139 W/m^2 of total building area according to the specific building type in regions with 2000-3000 heating degree days, and between 75-140 W/m^2 for other public and commercial buildings.

The KMK 2.01.04-97* building code prescribes three levels of required minimum R-values.

The following

Table 8 illustrates comparison of these requirements in Uzbekistan with those in the Czech Republic, Turkmenistan and Kyrgyzstan for regions in each country with similar heating needs (3000 heating degree days).

The following comparison serves for illustration only, since a proper comparison would require a very complex methodology and specification of model buildings.

Table 8: **Comparison of Uzbek and Czech, Turkmen and Kyrgyz minimum R-values**

	Czech (EU harmonized) building code ČSN 73 0540-2: 2007 R [m^2. K/ W]	**Uzbek** building code KMK 2.01.04-97* of 2011 R [m^2. K/ W]	**Turkmen** building code SNT 2.01.03-98 as of 2000 R [m^2. K/ W]	**Kyrgyz** building code SNiP KR 23-01: 2009 R [m^2. K/ W]
Roof	**4.17 – 14.3**	**1.6/3.2/4.2**	**3.7**	**3.7**
Wall	**2.63 – 9**	**0.94/2.2/3.0**	**2.45**	**2.45**
Window	**0.59 – 2**	**0.39/0.42/0.53**	**0.375**	**0.375**

Source: Czech code ČSN 73 0540-2:2007, Uzbek code KMK 2.01.04-97 revised and adopted in 2011, Turkmen code SNT 2.01.03-98 adopted in 1998 with values applicable as of 2000, Kyrgyz code SNiP KR 23-01:2009, parameters of residential buildings, health and educational facilities for 3000 heating degreedays.*

Note: The higher R-value of the thermal resistance, the more energy efficient and better insulated the building structure is. Typical heating degree days are in the Czech Republic 3 569, in Uzbekistan 2251, in Turkmenistan 2218, in Kyrgyzstan 3161 (source http://chartsbin.com). The higher heating degree days, the colder and/or longer the winter season is. Values in the Czech code illustrate the interval between the minimum required values for standard buildings and recommended values for passive houses for regions with 3000 heating degree days, values in Uzbek code illustrate three levels of required values for degreedays >3000, Turkmen and Kyrgyz values are calculated for 3000 heating degree days as an arithmetical average of required values for 2000 and 4000 degreedays.

The three numbers (R-values) for Uzbek building code illustrate three energy efficiency levels. The lowest number/least demanding level applies as a minimum requirement for privately financed single family and low storey residential buildings, and the level two applies as a minimum requirement for public buildings (schools and hospitals).

For windows, the Uzbek code sets up in all three energy efficiency levels stricter requirements than the Turkmen and Kyrgyz codes, and is somewhat weaker compared to the Czech/EU harmonized code.

For walls and roofs, the second and third (most energy efficient) levels correspond well with both existing Kyrgyz and Turkmen codes as wells as with the Czech/EU code.

The first level of the Uzbek KMK 2.01.04-97* building code (relevant for private residential buildings) prescribes significantly weaker standard for roofs and walls compared not only to the Czech/EU code, but compared to the Turkmen code of 1998 and a Kyrgyz code of 2009 as well.

Note: the compared values are representative for similar climatic conditions during winter with 3000 degree days in all countries.

The first level of R-value requirements in the Uzbek code (especially for roofs and walls) have been designed basically to comply with hygienic requirements to avoid condensation of moisture at the inner side of walls and to avoid mildew. Practically speaking this means construction of walls with a thickness of two bricks in length (51 cm) instead of 1.5 brick layer (38 cm) which was practice until now – with no additional insulation.

The first level of the revised building code, although it is more than 30% stricter than the original code, cannot be considered as sufficiently energy efficient compared with European standards but neither compared with new building codes in other countries in the region of Central Asia with similar climate.

Schools and hospitals financed from public funds should comply at least with the second level of energy efficiency requirements. The second level was used also in pilot projects and energy savings are calculated at about 60% compared to the original situation (energy consumption decrease to 40% of original levels).

Component 2 – Building certification, energy auditing and energy management

The public building energy performance certification system, including compulsory energy auditing and energy management system is under development. The project should also identify and analyze feasibility of costs associated with implementation and operation of such systems. If there would be a need identified to adopt new legislation that would impose the obligation of responsible parties to develop, publish, administer and finance the certification, energy auditing and energy management system, the project should initiate drafting of such legislation early enough, so that the system could be implemented within the project implementation period.

Component 3 – Trainings and educational programs

University laboratory has been equipped (computers, software for calculation of building heating needs, infra red camera, …), and educational programs and curricula for university students and graduates on energy efficiency in buildings have been developed, approved and implemented since the beginning of the 2011/2012 school year in 2011, including: six State Educational Standards for Bachelor's and Master's course, nine Educational Programs on energy efficiency in buildings for Bachelor's and Master's course, and for secondary-special and professional education, and for mid-career education (retraining) of professionals.

In total 28 master level students, 395 bachelor students, about 6 000 college students, and 160 practitioners are enrolled in new energy efficiency educational programs and trainings annually.

Additional trainings for professionals on implementation of energy efficiency building codes and integrated building design are planned for the next project period as well.

Component 4 – Pilots

In early 2012 implementation of total of eight pilot projects has started. Energy efficient reconstruction of four schools and two rural health clinics have been designed according to the energy efficiency level two of the building code and during the MTE mission the reconstruction works have been in full progress. Two new pilot school buildings have been designed according to the energy efficiency level two of the building code and construction is underway as well.

The pilot projects are implemented within a governmental building investment programs that provides financing of standard investment costs and the UNDP/GEF project provides co-financing of the additional energy efficiency incremental costs – on average 17%.

As a common practice, governmental investment programs in Uzbekistan use exclusively approved typical building designs for construction of new schools, health facilities and residential houses.

Thus in case of two new school buildings the project has redesigned the existing officially approved building design and upgraded it to meet the energy efficiency level two requirements of the newly revised building code.

Key components of the Integrated Building Design include optimized design of building compactness, appropriate zoning of heated and unheated rooms within a building, optimized orientation within specific local urban planning limits, passive solar gains in winter and shading in the summer periods and others. This approach can lead to construction of more energy efficient buildings with equal or even lower investment costs than standard buildings that only accommodate required insulation, but do not incorporate IBD principles.

In another words, IBD cannot be fully applied in reconstruction of existing buildings, because the compactness of the building, structure and zoning of inner areas according to their required indoor temperature, building orientation etc. is given and cannot be changed. Energy efficiency reconstruction of existing buildings, i.e. installation of additional insulation on building structures, replacement of windows for more efficient ones etc. thus typically requires additional costs.

This also applies for energy efficiency retrofit of typical designs of new buildings to be constructed. Energy efficiency upgrade of existing typical building designs is in principle similar to building reconstruction – there is no possibility to change the shape and compactness of the building and integrate other IBD principles that would decrease investment costs.

Six pilot projects focused on energy efficiency reconstruction of existing buildings and energy efficiency designs have been developed and reconstruction started. In these cases there is practically no opportunity to implement IBD.

Two pilot projects focused on construction of new buildings, however the existing typical building designs have been used which again limited the opportunities to fully implement IBD opportunities and to reduce investment costs while significantly improving energy efficiency.

IBD can be fully implemented, and the best ratio of building investment costs and building energy performance can be reached only in case of newly designed buildings that are not limited with binding old typical building designs that did not incorporate IBD principles (building compactness, zoning, passive solar gains and shading etc).

Especially in case of new school buildings based on existing typical building designs, the A/V ratio (total external surface in m^2 to volume in m^3) – the building compactness – is far not optimal. It has a negative effect on actual energy performance in kWh/m^2 of such buildings, but most important is that new energy efficiency redesign of these school buildings cannot benefit from optimizing the building compactness which would also significantly reduce investment costs because relatively smaller amount of external walls would be needed. *This is the main factor that hampers utilization of key advantage of IBD: to design new energy efficiency buildings with standard investment costs (with no or minimum incremental costs).* In this case energy efficiency redesign of typical building design is similar to reconstruction of existing buildings where energy efficiency incremental costs cannot be significantly reduced.

Calculated energy savings in pilot buildings have been estimated to reach about 60% with 17% incremental costs. The amount of calculated energy savings is impressive. Due to the fact that especially in rural areas during the last cold winter period there was insufficient supply of gas and the indoor temperature was often as low as 10 ºC, the actual energy savings compared to this last winter

would be lower. However, even if problems with insufficient supply of gas would repeat, the implemented energy efficiency measures would significantly improve the quality of indoor environment both in the winter and summer periods, and increase the indoor temperature in winters, and decrease the indoor temperatures in hot summers, and the heating period will be significantly shortened as well.

Component 5 – Information dissemination

Information posters and leaflets on the project goal have been prepared, published and disseminated, international project information website has been developed and is maintained by the project with information on all other UNDP/GEF energy efficiency in buildings project in the region (Uzbekistan, Kyrgyzstan, Turkmenistan, Kazakhstan and Armenia) - http://beeca.net/. The project team publicizes and provides advice on energy efficiency also in local media.

The full rollout of information dissemination will be organized after construction of pilot projects and evaluation of their performance.

4.3.1 Attainment of Outputs, Outcomes and Objectives

Project objective:
Reduce energy consumption and associated GHG emissions in new and existing buildings in the educational and healthcare sectors

Indicator 1: Average thermal energy and power consumption in new/renovated public buildings
Target 1: Thermal energy demand reduced to an average of 140 and 150 kWh/m² (by 25%) for new and retrofitted buildings respectively
Achievement: *Average thermal energy consumption in existing pilot public buildings to be renovated has been calculated to be 333 kWh/m^2 per year, according to energy monitoring data collected by the project and the required indoor temperature. Average new thermal energy consumption requirements for pilot buildings is set around 217 kWh/m^2,i.e. 35% lower.*

Calculated energy performance of six pilot reconstruction projects that have been designed to meet the second energy efficiency level are 130 kWh/m^2 for space heating, i.e. 60 % reduction. Electricity consumption for lighting has been calculated to decrease by 70%.

Revision of nine building codes adopted by the Government in 2011 introduced new performance requirements. Revision of the code KMK 2.01.18-2000 reduces allowed thermal energy consumption by 25 to 50 percent overall. For schools, new average required values for specific heat consumption are 150 and 110 kWh/m^2.yr for one-story and two-story buildings respectively. For health-care facilities, new required values are 140 and 120 kWh/m^2.yr, also for one-story and two-story buildings respectively.
Rating: *Target has been met.*

Indicator 2: CO2 emissions of new and reconstructed education and healthcare buildings in 2014 (cca 840 new and reconstructed buildings using different space heating systems over 2010-2014, replication calculated in a similar way as in the bottom-up indirect method)

Target 2: By the end of the project (2014): 106,000 tons CO2, (lifecycle emissions = 2.1 million tons CO2), or 35,000 tons CO2 less than the baseline (lifecycle savings = 700,000 tons CO2). By the end of 10-year project influence period: 265,000 tons CO2, in 2020 (lifecycle emissions = 2.2 million tons CO2), or 87,500 tons CO2 less than the baseline.

Achievement: *Not applicable for MTE.*

Rating: *The target of 35 000 tons of CO2 emission reductions means 25% reduction compared with the baseline. Pilot projects have achieved ca 60% GHG emission reductions. Achievement of the target will depend on successful replication of pilot projects across the country within the project implementation period.*

Outcome 1: ***New energy efficient standards and regulations are applied to more than 2 million m^2 of public space in the educational and healthcare sectors commissioned annually***

Indicator 3: Approval of updated versions of the five building codes relevant to energy consumption in public buildings

Target 3: Updated codes for public buildings reduce allowable consumption by at least 25%. By the end of Year 3, all healthcare and educational facilities will be constructed or reconstructed (approx. 2 million m2) using designs that ensure a minimum 25% reduction in energy consumption from the baseline year assuming constant conditions.

Achievement: *9 building codes on Thermal Performance, Roofs, Heating, Ventilation, Architectural terms, etc. have been revised and energy efficiency requirement strengthened by ca 25% (the first level of building code requirements). Gosarchitectstroy has approved and endorsed all 9 building codes in June 2011. New building codes are mandatory since June 2011 without any transitional period for all newly constructed and reconstructed buildings.*

Rating: *The target has been achieved.*

Indicator 4: Capacity of Gosarkhitektstroy to implement energy efficiency codes

Target 4: Approximately 20 staff trained in efficient codes and able to oversee implementation and provide guidance to design organizations by the end of Year 2.

Achievement: *26 experts from national leading design organizations, including 5 staff of Gosarchitectstroy, were trained and familiarized with international best practices in energy management and energy efficiency building codes in 2011. Additional trainings primarily of designers to comply with new building codes are under preparation.*

Rating: *The target has been achieved.*

Outcome 2: ***Government is aware of performance in existing healthcare and educational facilities and can prioritize investments in efficiency***

Indicator 5: Implementation of mandatory energy audits

Target 5: 80 audits are carried out annually (40 in schools and 40 in hospitals) by the end of the project

Achievement: *Temporary and final methodology on energy auditing, including draft energy passport of a building has been developed and approved by Gosarchitectstroy. Nine phases of energy monitoring has been completed based on the approved methodology and recommendations on improving energy efficiency in six selected pilot health and educational facilities has been developed based on energy audits. Six energy audits in six pilot buildings selected for reconstruction have been implemented.*

Rating: *Not applicable for MTE.*

Indicator 6: Capacity to monitor performance of existing buildings

Target 6: Energy performance certificate scheme introduced in at least two pilot regions by the end of the project. Data collected during certification process is available through the information system

Achievement: *Roadmap for introduction of energy performance certification system is agreed with Gosarchitectstroy. The system of building certification is under development.*

Rating: *Under development, not applicable for MTE.*

Indicator 7: Functioning system of energy managers in at least one region for two ministries: Ministry of Health and Ministry of Public Education

Target 7: By Year 3, job duties of building maintenance personnel in pilot regions include energy management tasks.

Achievement: *At least 20 energy managers from pilot schools and rural hospitals, and representatives of Ministries of Health and Public Education trained on energy performance and management. Roadmap for introduction of energy management system is agreed with both ministries.*

Rating: *The system of energy managers has not yet been implemented as of March 2012. The system should be in place by the end of 2012. Under development, not applicable for MTE.*

Outcome 3: ***Uzbek design and construction professionals have the capacity to design efficient buildings and manage their performance***

Indicator 8: Ability of practicing architects to 1) comply with more efficient codes; and 2) integrate more efficient design into their buildings

Target 8: Submitted designs meet and exceed the requirements of more efficient codes by the end of the project. At least 300 architects trained by the end of the project.

Achievement: *40 leading Uzbek design and construction organizations throughout the country are aware of newly revised building codes as the Order of the Chairperson of Gosarchitectstroy on mandatory application of new building codes was issued and distributed in the country.*

Rating: *Not applicable for MTE.*

Indicator 9: Ability of students in engineering and architecture to understand energy management in buildings and use efficient techniques and technologies in their work

Target 9: Bachelors and masters program in energy management expanded to cover a specialization in buildings. Integrated building design introduced as a subject for architecture students

Achievement: *Six educational standards and nine programs on energy saving and management have been developed, approved by the Ministry of Education in 2011 and adopted by the Tashkent State Technical University and Tashkent Architecture and Construction University. Since the beginning of the academic year in 2011, educational curricula include topics on energy management, savings, and energy audits for secondary specialized educational system, bachelor level students, master level students and construction industry specialists, and students attend these courses.*

Rating: *The target has been achieved.*

Indicator 10: Awareness of building sector professionals of the efficient construction materials and technologies market and awareness of suppliers about potential sales.

Target 10: Increased sales of materials that promote energy efficiency in buildings by Year 4 of the project.

Achievement: *Initial version of official database on recommended energy efficient construction materials has been developed to raise awareness of building sector professionals.*

Rating: *Not applicable for the MTE.*

Outcome 4: ***Energy- and cost-saving potential of integrated building design demonstrated in two new buildings and three reconstructed buildings***

Indicator 11: Construction and commissioning completed for buildings that used the concept of Integrated Building Design

Target 11: Six buildings retrofitted or reconstructed by the end of Year 2 of the project. Two buildings using integrated design principles constructed by the end of Year 3 of the project. Energy performance documented by the end of the project.

Achievement: *Energy efficiency reconstruction of six pilot buildings (four schools and two rural health clinics) and a construction of two new energy efficient buildings has started in February/March 2012 and is scheduled to be finished by end of August 2012 i.e. in the Year 3, and should be opened for education/operation as of September 1, 2012. All eight pilot building designs comply with energy efficiency level two of the revised building code with calculated energy savings of about 60% and on average 17% incremental costs. However, IBD cannot in principle be fully used in case of reconstruction and in case of new pilot energy efficient buildings which are based on energy efficiency re-design only of a binding existing typical building design. The project plans to install data loggers to pilot buildings to be able to properly monitor energy performance.*

Rating: *The target relevant for MTE has been partially achieved as of MTE. Pilot projects are under construction, high energy savings are expected (60%) to be achieved, however with relatively high incremental costs (17%), because the project did not fully implement IBD. Target to document energy performance of pilot projects is not relevant for MTE yet.*

Indicator 12: Project facilitates the replication of results

Target 12: Plans and prototype information circulated to 36 leading design institutes and other design organizations by the end of Year 2 of the project.

Achievement: *None. To be implemented after results of pilot projects will be available – at least after construction.*

Rating: *The target has not been met. The deadline Year 2 is unrealistic.*

Indicator 13: Awareness of the findings and application among key stakeholders in Uzbekistan and abroad

Target 13: Designs and performance information for pilot buildings will be available nationally and internationally by end of Year 4.

Achievement: *None.*

Rating: *Not applicable at MTE.*

Outcome 5: ***Project findings influence construction practices and public administrative practices in Uzbekistan***

Indicator 14: Good practice related to Energy Efficient Buildings integrated into at least one component of public administration.

Target 14: By the end of the project, there is a change in practice in at least one of the areas described in the "Baseline" column.

Achievement: *None.*

Rating: *Not applicable at MTE.*

Table 9: Summary overview of target achievements

Target #	**Target**	**Achievements and ratings**
Project objective: Reduce energy consumption and associated GHG emissions in new and existing buildings in the educational and healthcare sectors		
1	Thermal energy demand reduced to an average of 140 and 150 kWh/m² (by 25%) for new and retrofitted buildings	New codes are 25-50% stricter, with average required energy performance of 110-150 kWh/m2 annually. Target met.
2	35 000 tons CO_2 savings by 2014	Not applicable for MTE. About 60% GHG emission savings in pilot projects.
Outcome 1: New energy efficient standards and regulations are applied to more than 2 million m^2 of public space in the educational and healthcare sectors commissioned annually		
3	Updated building codes reduce allowable consumption by at least 25%.	New codes adopted in 6/2011 and define three energy efficiency level. Minimum requirement is 25% stricter. Target met.
4	Approximately 20 Gosarkhitektstroy staff trained in efficient codes by Year 2	26 experts from national leading design organizations, including 5 staff of Gosarchitectstroy were trained. Target met.
Outcome 2: Government is aware of performance in existing healthcare and educational facilities and can prioritize investments in efficiency		
5	80 audits are carried out annually by the end of the project	Not applicable for MTE. Energy audit methodology developed and approved.
6	Energy performance certificate scheme introduced in at least two pilot regions by the end of the project	Not applicable for MTE. Certification scheme under development.
7	By Year 3, job duties of building maintenance personnel in pilot regions include energy management tasks	Not applicable for MTE. Facility managers trained in energy management.
Outcome 3: Uzbek design and construction professionals have the capacity to design efficient buildings and manage their performance		

8	Submitted designs meet and exceed the requirements of more efficient codes by the end of the project. At least 300 architects trained by the end of the project.	Not applicable for MTE.
9	Bachelors and masters program in energy management expanded to cover a specialization in buildings. Integrated building design introduced as a subject for architecture students	Six educational standards and nine educational energy efficiency programs approved and implemented at two universities in 2011. Target met.
10	Increased sales of materials that promote energy efficiency in buildings by Year 4	Not applicable for MTE.
Outcome 4: Energy- and cost-saving potential of integrated building design demonstrated in two new buildings and three reconstructed buildings		
11	Six buildings reconstructed by the end of Year 2. Two buildings using IBD constructed by the end of Year 3. Energy performance documented by the end of the project.	8 pilot buildings under construction in March 2012, scheduled to be finished in September 2012. Energy savings 60%, incremental costs 17%. No IBD implemented. Target has been exceeded in number of re/constructed pilot buildings, but partially achieved in terms of implementation of IBD.
12	Plans and prototype information circulated to 36 leading design institutes and other design organizations by the end of Year 2	The target has not been met. The deadline Year 2 is unrealistic. Information is scheduled to be disseminated after pilot project construction is finalized.
13	Designs and performance information for pilot buildings will be available nationally and internationally by end of Year 4	Not applicable at MTE.
Outcome 5: Project findings influence construction practices and public administrative practices in Uzbekistan		
14	Change in practice related to Energy Efficient Buildings	Not applicable at MTE.

Target ratings are shown in colors:
The target has been achieved, Target has been partially met, Target has not been achieved, Target is not applicable for MTE

The logframe indicators and targets do not fully address the progress of the project that has been achieved in the middle of project implementation period at that was subject of the MTE, because often they are relevant only for later years of project implementation.

The following list provides summary of all project deliverables that have been developed so far:

- Updated building codes with strengthened energy efficiency requirements:
- Building Code KMK 2.01.04-97* “Thermal Building Engineering”;
- Building Code KMK 2.04.05-97* “Heating, Ventilation, and Air Conditioning”;
- Building Code KMK 2.01.18-2000* “Standards of Energy Consumption for Heating, Ventilation and Air Conditioning of Buildings and Structures”;
- Building Code KMK 2.03.10 – 95* “Roofs”;
- Building Code ShNK 2.08.02-09* “Public Buildings and Structures;
- Building Code KMK 2.08.04-04* “Administrative Buildings”;
- Building Code KMK 2.08.05-97* “Hospitals and Hospitals and Health-Care Facilities” (recommended format of an Energy Passport enclosed)
- Amendment #1 to Building Code KMK 1.01.04-98 “Architecture and construction terminology;

- Amendment #1 to Building Code КМК 1.03.09-97 “Provisions of Chief Project Engineer (Chief Project Architect)”
- Report on results of analysis and comparison of recommended amendments to revised normative documents (КМК, ШМК) for increased energy efficiency in public buildings;
- Training material on energy efficiency in buildings based on best international practice (Master Class);
- Advanced project of Energy passport for the system of certification of public buildings in the Republic of Uzbekistan;
- Capacity development Strategy of the Department for monitoring design organizations (UMDPO) under Gosarchitectstroy;
- Analytical paper on the Strategy for introduction of mandatory energy audit, certification of energy consumption of buildings (updated version based on the results of energy auditing of 6 pilot sites);
- Temporary methodology on “Energy audit of the pilot medical and school facilities in the Republic of Karakalpakstan, Kashkadarya, Navoi, Ferghana and Tashkent regions”;
- Standard methodology for energy inspection (audit) of public buildings (Approved by Deputy Chairperson of Gosarchitectstroy on 09.09.2011);
- Combined Report on the results of energy monitoring of 6 pilot sites in the Republic of Karakalpakstan, Kashkadarya, Navoi, Ferghana and Tashkent regions;
- Overview of International best practice on Energy Management:
- Introduction of Energy management system; Information system on EE for public buildings. Regular collecting, storing and analyzing data.
- Six State Educational Standards on Energy Efficiency in buildings for the following group of students:
    - Bachelor level Education;
    - Master level Education;
- Nine Educational Programs on Energy Efficiency in buildings for the following groups:
    - Bachelor level Education;
    - Master level Education;
    - Secondary-Special and professional Education;
    - Mid-career Education (retraining);
- Ten training modules on Energy Efficiency for mid-career education (retraining programs);
- Design and estimate documentation on pilot energy efficient school # 2 building in Rishtan district of Fergana region with a capacity of 360 occupants;
- Design and estimate documentation for retrofitting of the secondary school #35 with the capacity of 260 occupants and construction of an additional building for 120 seats in Khatyrchi district of Navoi region;
- Design and estimate documentation for retrofitting of the secondary school #5 with the capacity of 260 occupants and construction of an additional building for 40 seats in Kanlykul district of the Republic of Karakalpakstan;
- Design and estimate documentation for retrofitting of the secondary school #20 with the capacity of 320 seats in Karshi district of Kashkadarya region;
- Design and estimate documentation for retrofitting of the rural health clinic “Oktepa” for 50 visitors per shift in Pskent district of Tashkent region;
- Design and estimate documentation for retrofitting of the rural health clinic “Dekhibaland” for 50 visitors per shift in Nurata district of Navoi region;
- Design and estimation documentation for construction of the new secondary school building in Kurgantepa district of Andijan region with the capacity of 315 occupants;
- Design and estimation documentation for construction of the new secondary school in Nurata district of Navoi region with the capacity of 216 occupants;
- Analytical paper with recommendations, developed for eight pilot buildings;
- Report on inefficiency of current construction and tendering policies in Uzbekistan;
- Concept paper on Integrated Building Design approach;
- Reports on the delivered seminars/workshops;

- Report on study tour on energy efficiency in buildings issues of government employees and project staff to Denmark;

4.3.2 Project Impact

As of the MTE, the project has a good prospect to improve energy efficiency especially of newly designed buildings in public sector, and in other sectors as well. However, there still is a potential for further improvement of the impact.

The newly refined building codes are in place and are at least 25% stricter in terms of energy efficiency (level one requirement) than original requirements. However, this compulsory minimum requirement level one is not energy efficient enough when compared with today's common practice even in countries in the region with similar climate. The project impact would be improved if the energy efficiency level two (that is comparable with energy efficiency building codes in neighboring countries) would become mandatory (after certain transitional period) for all new and reconstructed buildings financed from public funds (all public buildings, including residential buildings financed with governmental support – subsidized mortgage etc), and for all other regularly utilized buildings with a total area larger than a minimum threshold. Currently the energy efficiency level two is mandatory for schools and hospitals financed from public funds only, but not for residential, and other public and commercial buildings.

Pilot projects are under construction, and neither the reconstruction projects nor the newly built buildings could fully implement IBD principles because they were based on existing typical building designs that were upgraded to comply with the new building code energy efficiency level two, but the architects/designers did not have a chance to change the building structure and compactness etc. Especially in case of schools where existing typical designs prescribed buildings that are not compact, the potential to minimize incremental costs of newly designed buildings remained unused (compact buildings would reduce investment costs and these saved investment costs could be then used for additional energy efficiency measures so that the incremental costs would be minimized). Minimal incremental costs would for sure improve replication factor of new buildings designed according to higher than the minimum energy efficiency level.

In the Component 3 the project has already introduced new educational energy efficiency programs in two universities and about 300 students have been trained in these courses since 2011.

Project impact is rated Satisfactory.

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
	S				

4.3.3 Prospects of Sustainability

The project has been designed to deliver sustainable impact because the building codes, educational programs, information and experience gained by designing and construction of pilot projects could hardly be recalled once they have been adopted and implemented already. Implementation of project deliverables in component 1, 3, 4 and 5 requires mainly upfront costs and support to strengthen local capacity, but limited support and/or financing in a long-term.

Financial, socio-political, institutional framework and governance risks and environmental risks to sustainability of these project outcomes are thus rated to be minimal, and the sustainability rating of the project Outcomes 1, 3, 4 and 5 is rated *Likely*.

In case of Outcome 2 – Energy efficiency building certification, audit schemes and energy management system in public facilities – the situation is slightly different, because also keeping the system in place and fully operational will require certain level of financing on an annual operational basis. The financial risk is thus rated slightly higher, between negligible and moderate, other risks remain unchanged, and the sustainability of Outcome 2 is rated *Moderately Likely*.

Rating scale includes: Likely (L): no or negligible risks, Moderately Likely (ML): moderate risks, Moderately Unlikely (MU): significant risks, and Unlikely (U): severe risks.

Prospects of sustainability are rated Highly Satisfactory.

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
HS					

5. Conclusions and Recommendations

5.1 Findings

The project is professionally managed and administered, and has delivered substantial results already at the time of the Mid-Term Evaluation:

Within component 1 energy efficiency building codes have been revised, approved and adopted in 2011, and Gosarchitectstroy officials and designers have been trained in building code compliance. Nine revised building codes include three energy efficiency levels. For schools and hospitals financed from public funds the energy efficiency level two applies as a minimum requirement. This energy efficiency requirement is advanced enough and comparable with new building codes in countries of the region, and roughly with the Czech EU harmonized building code as well, and it represents about 60% heat savings compared to the original situation.

For residential buildings the minimum energy efficiency level one applies, which represents about 25% improvement, but still this minimum requirement is rather weak compared even with the standard of neighboring countries with similar climate.

Within component 2 a study tour to Denmark has been organized for key local building experts, and a system of building certification, energy auditing and energy information and management system is under development.

Under component 3 energy efficiency educational programs have been designed, approved, adopted and introduced in 2011 at the Tashkent State Technical University and Tashkent Architecture and Construction Institute.

In component 4 eight pilot project are under construction, of which six are reconstruction and two construction of new buildings, all of them have been designed to meet the energy efficiency level two, which means 60% reduction of energy consumption for space heating according to building design, and 17% incremental costs on average.

Integrated Building Design could not have been fully implemented because even the new pilot buildings constructed within a governmental program relied on already existing typical building designs.

Activities under component 5 are under development and information and best practices will be disseminated after completion of construction of pilot projects.

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

Proposed changes in the logframe

Indicators and targets as specified in the GEF logframe require in some cases rewording. The following overview of project indicators and targets include the original wording as approved after the Inception Report and a proposed new wording. The Inception Report introduced a single change in Target 4 where the wording "Department for Energy Efficient Codes established by the end of Year 1" was deleted.

The original wording that is proposed to be changed is ~~crossed~~, and new proposed wording of indicators and targets is shown in *italics*. Indicators and targets that are not proposed to be changed are not shown here.

~~Indicator 1: Average thermal energy and power consumption in new/renovated public buildings~~
Indicator 1: Average thermal energy consumption in new/renovated public buildings

~~Indicator 2: CO2 emissions of new and reconstructed education and healthcare buildings in 2014 (ca 840 new and reconstructed buildings using different space heating systems over 2010-2014, replication calculated in a similar way as in the bottom-up indirect method)~~
Indicator 2: CO2 emissions savings from new and reconstructed education, healthcare or other buildings in 2014

~~Target 2: By the end of the project (2014): 106,000 tons CO2, (lifecycle emissions = 2.1 million tons CO2), or 35,000 tons CO2 less than the baseline (lifecycle savings = 700,000 tons CO2). By the end of 10-year project influence period: 265,000 tons CO2, in 2020 (lifecycle emissions = 2.2 million tons CO2), or 87,500 tons CO2 less than the baseline.~~
Target 2: By the end of the project (in 2014): 35,000 tons CO2 annual savings, i.e. 20-year lifecycle direct project savings of 700,000 tons CO2.

~~Indicator 10: Awareness of building sector professionals of the efficient construction materials and technologies market and awareness of suppliers about potential sales.~~
Indicator 10: Awareness of building sector professionals of the efficient construction materials and technologies and ability to apply them in new building designs.

~~Target 10: Increased sales of materials that promote energy efficiency in buildings by Year 4 of the project.~~
Target 10: 100% of designs of new public buildings and newly reconstructed (capital reconstruction) public buildings meet at least second level of the revised building code KMK 2.01.04-97 by the end of the project.*

~~Indicator 11: Construction and commissioning completed for buildings that used the concept of Integrated Building Design~~
*Indicator 11: Construction and commissioning completed for pilot buildings that meet at least the second energy efficiency level of the revised building code KMK 2.01.04-97**

~~Target 11: Six buildings retrofitted or reconstructed by the end of Year 2 of the project. Two buildings using integrated design principles constructed by the end of Year 3 of the project. Energy performance documented by the end of the project.~~

Target 11: Three energy efficiency buildings reconstructed by the end of 2012. Two new energy efficiency buildings constructed by the end of 2012. Energy performance documented by the end of the project, first draft developed by the end of 2013.

Note: The wording of Target 11 has been changed to include "*Three* energy efficiency buildings reconstructed …" to reflect the wording of the project outcome 4, although the actual achievement at the MTE is six reconstructed buildings.

Indicator 12: Project facilitates the replication of results

~~Target 12: Plans and prototype information circulated to 36 leading design institutes and other design organizations by the end of Year 2 of the project.~~

Target 12: Plans and prototype information on energy efficiency measures used, costs and calculated energy savings in pilot buildings circulated to 36 leading design institutes and other design organizations by the end 2012, updated with monitored energy performance in 2013 and 2014.

~~Indicator 14: Good practice related to Energy Efficient Buildings integrated into at least one component of public administration.~~

Indicator 14: Good practices related to Energy Efficient Buildings disseminated and integrated into public administration policies and procedures.

~~Target 14: By the end of the project, there is a change in practice in at least one of the areas described in the "Baseline" column.~~

Target 14: Guidance manual on building codes published and disseminated, information on energy efficiency performance of pilot projects disseminated to potential investors in public and other sectors, including residential, energy efficiency best practice and policy manual/strategy paper disseminated to key relevant national and regional governmental stakeholders, energy efficiency policies adopted by public sector administration (incl. focus on level two and three of a building code, effective system of energy performance certification of public buildings implemented, building certificates/labels publically displayed and publicized, energy auditing scheme of public buildings in place).

New indicator and target

Indicator 13a: Capacity to develop Integrated Building Design and integration of new IBD as a typical building design into national investment programs

Target 13a: At least one new building design (public school or rural family house) is developed and fully based on IBD, i.e. it reaches at least energy efficiency level two with standard investment costs (minimum incremental costs) as buildings with the same total area. New full IBD is submitted to the government for approval as a new typical building design to be constructed, financed and replicated within one of its national investment program.

5.3 Actions to strengthen or reinforce benefits from the project

The project has a good prospect to reach its goals and objectives within the planned project implementation period.

However, since the IBD has not been fully utilized because of reliance on typical building design, the project should develop an Integrated Building Design for new buildings of the same total area that are constructed and financed by the national programs in public and/or residential sectors (public schools, rural family houses) with standard investment costs (minimal incremental costs), and with at least energy efficiency level two. The project should work closely with the government to approve these new Integrated Building Designs as a new typical building design for implementation and replication within national investment programs. Thus the project would demonstrate that full implementation of IBD principles (such as optimal building compactness, shading etc) can lead to significant energy savings with no additional increase of investment costs.

5.4 Suggestions for strengthening management of potential risks

Actual replication of experienced gained in pilot project will be critical for achieving the ultimate project goal to reduce GHG emissions in the building sector.

According to the existing national programs it is expected that the government will finance construction and reconstruction of approximately 0.8 – 1 mil m^2 of public schools and rural health clinics annually and 1 – 1.2 mil m^2 of rural residential buildings annually until at least 2015. In addition to these national programs, government and private investors construct and reconstruct regularly residential and infrastructure buildings in urban and rural areas. Thus it is expected that at least 2 mil m^2 of public and residential buildings will be re/constructed annually until 2015.

If for any reason these construction volumes will not materialize, the project should implement adequate adaptive management to ensure adequate replication of energy efficiency building re/constructions in order to reach at least the planned 35 000 tons of CO_2 emission savings annually within the project implementation period.

6. Lessons Learned and Recommendations

6.1 Lessons learned

- Utilization of typical building designs, which is a common practice in Uzbek national investment programs, facilitates replication of selected and approved typical building designs. On the other hand, energy efficiency redesign of existing typical building design significantly decreases effective utilization of advantages of Integrated Building Design, and leads to higher than necessary incremental costs.

- Effective implementation of Integrated Building Design should not be limited by binding old typical building designs. IBD of new buildings can be developed only without any a priori limitations in order to achieve optimal building compactness, zoning, shading etc., and to minimize incremental costs. Newly developed Integrated Building Designs, if successful and approved, then can serve as a typical building design for effective replication.

- English knowledge of the project team is essential for effective adoption of best international practice. All project team members have a good or at least working knowledge of English which allows them to collect and adopt information on best international practices that is widely available on internet as well.

- Selection of experienced international consultants is critical for effective know-how transfer. Combination of international expertise and advanced knowledge from Russia/CIS region, EU countries with formerly centrally planned economies, and developed countries (advanced EU members, US, …) allows to adopt effectively best international experience that is appropriate for specific situation and local conditions in the country.

- However, there is never enough information exchange. In addition to support from project international consultants, targeted study tours for properly selected experts, participation at international events, or locally organized international conferences or workshops with other leading international experts will strengthen and facilitate effective capacity building.

- Specification of different required mandatory energy efficiency levels for private residential investors and for institutional investors (in public and commercial sectors), i.e. lower energy efficiency requirements for single family houses than for larger public buildings have a good sense – at least in a certain transitional period – and reflects lower family income level especially in remote rural areas. The significantly lower energy efficiency requirements in residential sector (single family houses and low storey buildings) still represent more than 25% improvement compared to the original building code. Too demanding energy efficiency requirements in residential sector (and thus also more expensive) would lead to problems with compliance rate especially in case of building reconstructions in low income remote rural areas.

6.2 Recommendations

- Work closely with construction companies of each pilot to ensure good quality of construction works with a special focus on proper implementation of energy efficiency measures and

construction details according to the project design. Avoid thermal bridges, ensure good air tightness, and avoid condensation of moister inside the construction structures.

- Prepare new Integrated Building Design of new buildings that are not limited by an existing typical building design, and that have the highest potential for replication within governmental funded programs in public sector or other sectors as well (residential). Focus on best investment costs to energy performance ratio and target the investment limit to standard investment of similar buildings of the same total area. The highest potential to decrease investment costs of the building structure is in cases where standard buildings based on existing typical design have the highest A/V ratio (worst compactness), such as in case of several typical designs of public schools. Do not focus on design and demonstration of passive house concept with minimum energy requirements that would have higher investment costs and thus limited replication potential.

- Involve several open-minded experienced teams of architects, construction and HVAC engineers, practitioners as well as academicians to work closely together since early phases of developing integrated building design concepts. Allow for sufficient time to discuss and analyze pros and cons of different approaches during the design phase. Engage experienced international experts in IBD to provide advise especially in early phases of drafting first building design concepts and to review the developed integrated building designs. Regularly check the optimum investment costs to energy performance ratio both for winter (heating) and summer (cooling) periods, and control the investment costs to be comparable with the costs of standard construction of the same area. Strictly differentiate a goal to design energy efficient building with comparable investment costs (minimum incremental costs) from a goal to design a building with minimum energy requirements (passive house) with typically higher incremental costs. The new IBD should have energy performance comparable at least with the energy efficiency level two of the newly revised building code.

- Work closely with the government to ensure its adoption of the newly developed “full” IBD as a new typical building design for large scale rollout in its investment programs, including the residential investment program.

- Work with the government to ensure that at least the energy efficiency level two of the newly revised building code will be typically used in all governmental funded building re/construction programs.

- Analyze the need to draft a new legislation that would be required for implementation of compulsory building energy performance certification system, energy auditing and energy management system in public buildings.

- When designing the certification system, energy auditing and energy management scheme, take into account the costs and benefits when targeted to different types and groups of public buildings. Take into account unavailability of metered actual energy consumption for space heating in buildings supplied by district heating.

- Update and unify both logframes used during project implementation (the GEF format and UNDP format) and use a single set of logframe indicators and targets for project monitoring and progress reporting. Formulate and use additional more detailed specific indicators and targets for operational project management and monitoring if needed that would reflect all individual project activities planned on an annual basis.

- Strengthen international exchange of experience concerning integrated building design of energy efficient buildings with affordable/standard investment costs and other project components among local experts and experts in other countries in the region and in Europe and/or other countries with advanced know-how in energy efficiency in buildings. Utilize information available from international projects and programs (for example the Energy Saving Initiative in the Building Sector in the Eastern European and Central Asian Countries (ESIB) project of INOGATE, **www.inogate.org**, Energy Auditing training in Tashkent, **http://www.inogate-ee.org/kb/cases/981**) Consider organizing international seminars/workshops jointly with other countries in the region implementing GEF/UNDP energy efficiency in building projects to share the costs, and inviting experienced international speakers, and/or attending international events abroad or organize targeted international study tour for key local experts – if project funds will be available. Explore opportunities of international or bilateral programs to co-finance such international experience sharing activities.

- Evaluate appropriateness for the situation in Uzbekistan of "10 Books on Green Architecture" and "99 Best Practices" developed by Eneffect within the Bulgarian UNDP/GEF energy efficiency in buildings project, and consider translation and publishing of these (or other relevant) publications into Russian (in cooperation with other UNDP/GEF energy efficiency projects in the region) or into Uzbek language.

In order to implement effective building certification system *consider*:

  - Establishment of a publically accessible internet based national centralized register of building certificates

  - Implementation of a system of random ex-post quality check of building certificates (of few % of issued building certificates)

  - Supplementing certificates with visualized building energy performance label (with energy efficiency classes A- G for example) to be publically displayed at the building

  - Consider utilization of certificates based primarily on calculated rating. Certificates based on calculated rating (and perhaps infiltration blow-door test) better reflect actual building energy performance. Certificates based on metered energy consumption include also users' behavior which can overlay actual building energy performance.

- Use the metered energy consumption data (where metered energy data are available and energy supply and indoor temperature sufficient), and compare the metered building energy performance with calculated building performance (building certificates) to evaluate users behavior and proper building operation (regulation of the heating system, controlled ventilation, proper usage of air-conditioning etc.)

7. Annexes

Annex 1: GEF LogFrame with revisions from the Inception Report

Project strategy	Objectively Verifiable Indicators				
Goal	Reduce greenhouse gas emissions in Uzbekistan by improving energy efficiency in the buildings sector				
	Indicators	**Baseline**	**Target**	**Means of Verification**	**Important assumptions**
Project objective: Reduce energy consumption and associated GHG emissions new and existing buildings in the education and healthcare sectors	Average thermal energy and power consumption in new/renovated public buildings	Thermal energy demand of new and existing building on average: 185 and 200 kWh/m^2 respectively	Thermal energy demand reduced to an average of 140 and 150 kWh/m^2 (by 25%) for new and retrofitted buildings respectively	National statistics augmented by data from the energy and GHG monitoring system to be established by the project	Government continues to construct and retrofit facilities at the planned rates Monitoring established by the project is accurate and indicative
	CO_2 emissions of new and reconstructed education and healthcare buildings in 2014 (cca 840 new and reconstructed buildings using different space heating systems over 2010-2014, replication calculated in a similar way as in the bottom-up indirect method)	141,000 tons CO_2 in 2014 (lifecycle emissions are 2.8 millions tons CO_2) and 352,500 tons CO_2 in 2020 (lifecycle emissions are 7.05 million tons CO_2)	By the end of the project (2014): 106 thousand tons CO_2 (lifecycle emissions are 2.1 million tons CO_2) or 35,000 tons CO_2 less than the baseline (lifecycle savings = 700,000 tons CO_2). By the end of 10-year project influence period: 265,000 tons CO_2, in 2020 (lifecycle emissions = 2.2 million tons CO_2), or 87,500 tons CO_2 less than the baseline		
Outcome 1. New energy efficient standards and regulations are applied to more than 2 million m^2 of public space in the educational and	Approval of updated versions of the seven building codes relevant to energy consumption in public buildings	Codes for public buildings are outdated and allow energy consumption that is significantly higher than international	Updated codes for public buildings reduce allowable consumption by at least 25%. By the end of Year 3, all healthcare and educational facilities will be constructed or reconstructed (approx. 2 million m^2) using	Published regulations. Comparison with other codes in the region and international best practice (through international databases).	Government will approve the revised codes.

healthcare sectors commissioned annually.		standards	designs that ensure a minimum 25% reduction in energy consumption from the baseline year assuming constant conditions.		
	Capacity of Gosarchitectstroy to implement energy efficiency codes	No government organization works specifically on improving energy efficiency in buildings codes; staff lack training in efficient codes	Approximately 20 staff trained in efficient codes and able to oversee implementation and provide guidance to design organizations by the end of Year 2.	Annual report of Gosarchitectstroy. Institutional analysis. Structured interviews with staff and clients.	Government will support capacity building of the department on create the Department and dedicate staff to training. Trained staff will remain with the agency.
Outcome 2. Government is aware of performance in existing healthcare and educational facilities and can prioritize investments in efficiency	Implementation of mandatory energy audits	Energy audits are not carried out in the public buildings sector	80 audits are carried out annually (40 in schools and 40 in hospitals) by the end of the project	Project documentation, legislative record, interviews and documentation from implementing agency	Government provides and enacts necessary regulations to mandate the audits Auditing equipment for public buildings is available and accessible to auditors
	Capacity to monitor performance of existing buildings	No certification of energy performance in existing buildings, no consolidated energy information system to allow for benchmarking	Energy performance certificate scheme introduced in at least two pilot regions by the end of the project. Data collected during certification process is available through the information system.	Project documentation; data from certification system. Review of information system and cross-check with certificates issued.	Governments in two pilot regions support the certification process Implementing agency staff are tasked with system administration
	Functioning system of	Building	By Year 3, Job duties of building	Project documentation	Ministries will enrol pilot

	energy managers in at least one region for two ministries: Ministry of Health and Ministry of Public Education	maintenance personnel do not take energy savings into account in operations and maintenance work	maintenance personnel in pilot regions include energy management tasks.	on training courses. Record of certificates issued. Interviews with energy managers and ministry personnel.	facilities. School and hospital directors will designate energy managers and allocate time for training and EE-focused tasks.
Outcome 3. Uzbek design and construction professionals have the capacity to design efficient buildings and manage their performance	Ability of practicing architects to 1) comply with more efficient codes; and 2) integrate more efficient design into their buildings	Designs do not emphasize energy efficiency and are above international standards for energy consumption	Submitted designs meet and exceed the requirements of more efficient codes by the end of the project. At least 300 architects trained by the end of the project.	Review of prototype efficient designs. Survey of first-time acceptance rate for plans and statistics on building commissioning. Independent review of energy performance of a sample of designs submitted. Structured interviews. Documentation on use of advisory services.	Architects and engineers will be interested in participating in training. Design institutes will be willing to allocate staff for training.
	Ability of students in engineering and architecture to understand energy management in buildings and use efficient techniques and technologies in their work	No option for studying energy management in buildings; architecture students not exposed to efficient design concepts	Bachelors and masters program in energy management expanded to cover a specialization in buildings. Integrated building design introduced as a subject for architecture students.	Review of model curriculum; structured interviews	Proposed curricula will be approved by the Ministry of Higher Education.
	Awareness of building sector professionals of the efficient construction materials and technologies	Low awareness of available materials that can save energy. Efficient	Increased sales for materials that promote energy efficiency in buildings by Year 4 of the project.	Sales records, number of companies and products on the market and company	Overall market conditions will be favourable to manufacturers and

	market and awareness of suppliers about potential sales.	materials market is almost non-existent.		performance, number of new products certified, trade show documentation structured survey of builders assessing awareness.	distributors.
Outcome 4. Energy- and cost-saving potential of integrated building design demonstrated in two new buildings and six re-constructed buildings	Construction and commissioning completed for buildings that used the concept of Integrated Building Design	Buildings not currently designed to emphasize efficient use of energy.	Six buildings retrofitted or reconstructed by the end of Year 2 of the project. Two buildings using integrated design principles constructed by the end of Year 3 of the project. Energy performance documented by the end of the project.	Public records, analysis of designs, audit records (including baseline audits for reconstructed facilities and audits for current prototype schools and hospitals; i.e., a control group).	Government will construct and reconstruct public buildings as planned.
	Project facilitates the replication of results	Design institutes currently lack prototype plans on efficient buildings.	Plans and prototype information circulated to 36 leading design institutes and other design organizations by the end of Year 2 of the project.	Project documentation. Review of designs submitted under construction tenders for public buildings. Selected review of buildings funded by budgetary and extra-budgetary construction funds for schools, hospitals and athletic facilities.	Efficient designs will be replicable and incorporated by architects.
	Awareness of the findings and application among key stakeholders in Uzbekistan and abroad	Results from a limited number of pilot projects in EE/RE in public buildings (10 identified over the	Designs and performance information for pilot buildings will be available nationally and internationally by end of Year 4.	Project documentation; media review; records from international meetings, databases.	Pilot buildings will be operational and provide performance data according to schedule.

		past 2 decades) are not widely available.			
Outcome 5. Project findings influence construction practices and public administration practices in Uzbekistan	Good practice related to Energy Efficient Buildings integrated into at least one component of public administration.	Tendering, construction programs, procurement regulations, and budgetary allocations do not provide incentives for using energy more efficiently. Buildings codes for the residential sector are also relatively inefficient.	By the end of the project, there is a change in practice in at least one of the areas described in the “Baseline” column.	Review of project documentation and structured interviews. Review of government regulations as appropriate.	Ministries will be motivated to reduce the operating costs of their facilities.

Annex 2: UNDP LogFrame

Intended Outcome as stated in the Country Programme Results and Resource Framework:

Obligations under international environmental conventions and agreements fulfilled through improved effectiveness of environment management and development of clean energy sources

Outcome indicators as stated in the Country Programme Results and Resources Framework, including baseline and targets:

Indicators: Improved capacity in environmental management through reorganization of environmental governance structures. National renewable energy strategy and national waste management strategy adopted and implementation started;

Baseline: National policy/strategic plans in place, but poorly implemented;

Target: Uzbekistan meets obligations under United Nations Framework Convention on Climate, United Nations Convention on Biodiversity and United Nations Convention to Combat Diversification and timely reports on implementation

Applicable Key Result Area (from 2008-11 Strategic Plan): 4.2 Catalyzing environmental finance.

Partnership Strategy: State Committee for Architecture and Construction is a National Execution Agency. Other partners are Ministry of Health, Ministry of Primary Education and Ministry of Higher Education, municipal and regional governments, National Technical University, Tashkent Institute for Architectures and Building Constructors, State Committee for Nature Protection, National Centre for Hydrometeorological Services (Uzhydromet), building companies, design institutes, NGOs

Project title and ID (ATLAS Award ID): Promoting Energy Efficiency in Public Buildings in Uzbekistan; Project ID: # 00070640 (Atlas Award 00057241)

INTENDED OUTPUT(S)	OUTPUT BASELINE(S)	OUTPUT INDICATOR(S)	OUTPUT TARGETS	INDICATIVE ACTIVITIES	RESPONSIBLE PARTIES	
Output 1: Reduced energy consumption and	1. Building codes and standards for public buildings are outdated and	1.1 Number of approved Building Codes and Standards, where	**2009** **Target 1** At least 5	**1 Activity Result** New energy efficient standards and regulations applied to more than 2 million m^2 of public space	**Activity 1** Gosarkhitektstroy, Ministry of Health, Ministry of Primary Education	

associated GHG emissions in new and existing buildings in the education and healthcare sectors	energy consumptions in buildings are significantly higher than international standards. The thermal energy demand for new and existing buildings on average: 185 and 200 kWh/m^2 respectively, which much more higher then international standards. There is no government organization that deals with energy efficiency measures in public buildings and in construction sector as well. 2. Government is not aware of the current energy consumptions in public buildings.	energy efficient measures factored in. 1.2 Institutional strengthening, at least one Department on energy efficient building codes established within the Gosarhitekstroy 1.3 One study tour for foreign country completed for key personnel of this department to familiarize with the Energy Efficient Regulations in buildings. 2. Establishment of Mandatory Energy Audits and Certification System for Energy Performance and	existing building codes and norms revised. The first draft on proposal for the establishment of Energy Efficient Building Code Department prepared. **Target 2** Analytical report on mandatory energy audit and certification system implementation strategy prepared. **Target 3** Methodological base for new training modules and educational programs prepared. **Target 4** Concept of Integrated Building Design Approaches prepared and approved. **Target 5** Justification report on inefficiency of current construction and tendering policies prepared and accepted by government.	in the educational and healthcare sectors commissioned annually **Actions:** - Review and revise building codes for public buildings and other relevant norms and standards to incorporate mandatory provisions for integrated building design and energy performance standards; -Establish an Energy Efficient Building Code Department within the State Committee on Architecture and Construction and train staff on the codes process; - Design and deliver training on the new norms to public servants involved in the compliance process (approval and commissioning), such as the clerks in charge of permitting at the State Committee for Architecture and Construction and the staff of the Construction Quality Control Inspectorate responsible for checking facilities during the construction and usage of buildings **2 Activity Result** Government is aware of performance in existing healthcare and educational facilities and can prioritize investments in efficiency **Actions:** - Expand current regulations on mandatory energy audits to	and Ministry of Higher Education, building companies, design institutes **Activity 2** Gosarkhitektstroy, Ministry of Health, Ministry of Primary Education and Ministry of Higher Education, State Committee for Nature Protection, National Centre for Hydrometeorological Services (Uzhydromet), municipal and regional	

	Hence there are no compulsory energy audits, systems of energy performance and the specialists, which are responsible for building energy performance. 3. Current building designs do not take into account energy efficiency measures and do not meet to international standards. Hence training modules and educational programs on design of energy efficient buildings for practicing architects and engineers as well as for current students are not developed. Therefore they do not know about	functioning system of energy managers in public buildings introduced and are in force. 3. Improved training modules and educational programs on energy efficient building codes and designs, and number and types of study programs introduced in Tashkent Institute on architecture and construction and Tashkent State Technical University. 4. Implementation of pilot demonstration sites based on integrated building design approaches showcased and the energy- and cost-	**2010** **Target 1** Energy Efficient Building Code Department established in the Head Office of Gosarhitektstroy. At least 20 staff of this department trained and completed study tour. **Target 2** Monitoring data collected on the energy consumption and cost at 6 project demonstration sites before the insulation works in the buildings. **Target 3** At least two training workshops with architects and enginners are conducted. Discussion of context of proposed training modules and Energy Efficient Building curricula for study programs ofTashkent Institute on architecture and construction and Tashkent State Technical University	include auditing and reporting in public buildings; - Design and complete a study tour for key personnel in the Codes Office to relevant countries that are using audits and certificate schemes to support code compliance and/or monitor consumption in existing buildings; - Develop, approve, and apply methodology to monitor building energy performance for each targeted building type; - Develop and introduce a mandatory system of energy performance certificates (“energy passports”) for new and existing public buildings to display performance data and ensure compliance with revised norms and standards; - Develop an energy information management system to systematically collect, store and analyze data on energy consumption and the costs and benefits of energy saving measures and quantify energy savings, financial savings, and GHG emission reductions from the new, energy-efficient norms; - Work with Ministries of Education and Health to establish	governments **Activity 3** Gosarkhitektstroy, National Technical University, building companies, design institutes, Tashkent Institute for	

	available construction materials, which can save energy in buildings. 4. Low awareness of Integrated Building Design Approaches, which directed to the development of energy efficiency buildings among current architects and designers, as well as among decision making government organizations. 5. Current tendering, construction programs, procurement regulations, and budgetary allocations do not provide incentives for using energy	saving potential of integrated building design approaches calculated/tested and results disseminated to all beneficiaries of the project. 5. Adoption of new practices in construction and public administration. Implementation of new policies and dissemination of best results of the project across the country.	held. **Target 4** Analytical paper on advantages and cost-effectiveness of implementation of Integrated Building Design Approaches in project demonstration sites prepared and discussed. **Target 5** At least one analytical report on economic, environmental and social benefits of integrated building design and on locally available and tested technologies, materials and other EE practices in buildings prepared and disseminated to all beneficiaries and to 36 leading design institutes. **2011** **Target 1** At least the first draft for 5 updated codes for public buildings prepared.	a system of energy managers in medical and educational buildings, design and deliver continuing education modules for facilities managers and a unit on energy management at the secondary school level, and determine the feasibility of financial incentives for institutions that reduce energy consumption in their facilities **3 Activity Result** Uzbek design and construction professionals have the capacity to design efficient buildings and manage their performance **Actions:** Work with the Tashkent Architectural-Construction Institute (TACI) to design and deliver training modules on the new building codes to familiarize architects and engineers with the codes and to provide an overview of compliance; - Work with Tashkent State Technical University (TSTU) to expand its energy management programs at the bachelors and masters level to include a specialization in energy savings in buildings and include course content on energy savings in buildings and integrated design in the model program for academic disciplines for post-secondary	Architectures and Building Constructors	

	more efficiently. Buildings codes for the residential sector are also relatively inefficient.		**Target 2** Monitorign data collected on the energy consumption and cost at 6 project demonstration sites after the insulation works in the buildings **Target 3** At least 4 training modules developed for current practicing architects and engineers. Proposal at least for one educational curricula and study program (specialization) on Energy Efficient Buildings prepared and submitted Ministry of Higher and Secondary Education. **Target 4** Two new buildings using integrated design principles constructed. **Target 5** Mid term independent evaluation conducted and Evaluation report prepared, published and findings disseminated	institutions with architecture and buildings engineering programs. Introduce sustainable buildings information in curricula for post-secondary and technical schools; - Develop and distribute information on integrated building design for practicing architects and developers through continuing education modules and master classes, publish a how-to guide on applying integrated building design to new and existing buildings in Uzbekistan; - Provide advisory services to architects and engineers on low or no-cost design measures and best available technologies and materials; - Develop and maintain a database of best available technologies, materials, and services in the sustainable buildings sector; - Organize presentations on the potential for efficient building technologies at trade fairs and other key events attended by professionals in the construction materials, building technologies, and heat and power industries **4 Activity Result** Energy- and cost-saving potential	**Activity 4** Gosarkhitektstroy, Ministry of Health, Ministry of Primary Education and Ministry of Higher Education, State Committee for Nature Protection, National Centre for Hydrometeorological Services (Uzhydromet), municipal and regional governments, building companies, design institutes, National Technical University, Tashkent Institute for Architectures and Building Constructors, NGOs	

			to all beneficiaries. **2012** **Target 1** 5 new energy efficient building codes and standards approved and in force. **Target 2** Methodological base and its concept to monitor energy performance for each targeted building type and software developed. **Target 3** Theoretical aspects of integrated building design approach developed and How-to guide reference book on applying integrated building design approach published for practicing specialist and educational modules of universities. **Target 4** At least one report and analytical paper on energy performance, energy savings, financial savings, GHG emission reductions in project demonstration sites	of integrated building design showcased in project demonstration sites **Actions:** - Work with local architects and engineers to ensure that the proposed new buildings selected are designed and constructed according to the principles of integrated building design and will comply with more efficient codes. In the case of buildings that will undergo retrofitting or capital reconstruction, work will include all of the above principles with the exception of building location; - Co-finance key energy efficient technology options in eight pilot buildings; - Monitor pilot building energy performance and quantify energy savings, financial savings, GHG emission reductions, and other non-energy benefits; - Based on the results of the monitoring, encourage the replication of successful design and construction approaches in other schools and hospitals covered by state-funded programmes; - Promote results of the pilot buildings and integrated building	**Activity 5** Gosarkhitektstroy, Ministry of Health, Ministry of Primary Education and Ministry of Higher Education, State Committee for Nature Protection, National Centre for Hydrometeorological Services (Uzhydromet), municipal and regional governments, building companies, design institutes, National Technical University, Tashkent Institute for Architectures and Building Constructors, NGOs	

			prepared. **<u>Target 5</u>** At least one guidance to accompany the release of 5 new approved building codes and standards published and disseminated to current construction architects and engineers and for educational modules of universities. **<u>2013</u>** **<u>Target 1</u>** At least 25% reduction in energy consumption in buildings achieved due to enforcement of new building codes and standards. **<u>Target 2</u>** A government regulations (law, Government Decree etc.) on mandatory system of energy performance certificates ("energy passports") established and adopted. Behavioral and attitude change of energy managers in buildings achieved. **<u>Target 3</u>** A databases of best available technologies, materials and services in the	design work nationally through the professional literature and the broader media, regionally through the CARnet network and globally through the UNDP-GEF Framework for Promoting Low Greenhouse Gas Emissions Building and through Uzbekistan's governmental affiliations. **5 Activity Result** Project findings provided regarding efficient buildings influence construction practices and public administration practices. Best practices disseminated across other sectors which are not directly targeted by the project **<u>Actions:</u>** - Work with the media and directly with major building constructors and owners to raise their awareness on economic, environmental and social benefits of integrated building design and on locally available and tested technologies, materials and other EE practices in buildings; - Develop, publish, and disseminate guidance to accompany the release of the new efficient building codes; - Conduct two independent evaluations of the project: a mid-term evaluation and a final		

			sustainable building sector developed and disseminated to all beneficiaries by CD. **<u>Target 4</u>** At least 5 new state funded buildings replicate the best results of project demonstration sites in design and construction process. **<u>Target 5</u>** Strategy paper outlining the approaches for incorporating good practices from project into public administration prepared and published. **<u>2014</u>** **<u>Target 1</u>** Thermal energy reduction to an average of 140 and 150 kWh/m^2 (25% reduction) achieved for new and retrofitted buildings respectively due to new building codes and standards. 5 new approved building codes and standards are applied to other construction sectors (commercial buildings etc.). **<u>Target 2</u>** Energy	evaluation and disseminate the findings through key channels; - Develop a strategy paper outlining the approaches for incorporating good practices from the project into public administration (i.e., codes, tendering practices, bulk procurement, policies, sectoral development programmes, municipal finance, etc.) and organize a high-level roundtable to discuss implementation		

			information management system developed and established to collect, store and analyze data on energy consumption. 80 audits carried out annually (40 in schools and 40 in hospitals) **Target 3** At least 300 architects trained. Submitted designs meet and exceed the requirements of more efficient codes **Target 4** Best results of project demonstration sites disseminated across other commercial and private housing sectors. **Target 5** Final independent evaluation conducted and Evaluation report prepared, published and findings disseminated to all beneficiaries.			

Annex 3: Evaluation TOR

UNITED NATIONS DEVELOPMENT PROGRAMME

TERMS OF REFERENCE / INDIVIDUAL CONTRACT

I. Position Information	
Position Title:	International Consultant/Evaluator
Type:	Individual Contract (International)
Project Title/Department:	UNDP/GEF Project "Promoting Energy Efficiency in Public Buildings in Uzbekistan" / Environment and Energy Unit
Duration of the service:	25 working days during the period from 1 March – 15 April 2012
Duty station:	Home-based with one mission to Tashkent, Uzbekistan, including 8 project site visits in Fergana, Kashkadarya, Navoi, Tashkent, and Andijan provinces and the Republic of Karakalpakstan
Reports to:	Head of Environment and Energy Unit, UNDP Uzbekistan

II. Background

In Uzbekistan, buildings account for almost half of the country's total energy consumption, or 17 million tons of oil equivalents, annually. Many buildings are now physically worn out and planned for reconstruction or rehabilitation. Increasing population places growing demand in education and healthcares services, which requires further renovation of the existing ones and construction of new public buildings. To respond to these demographic and social challenges, the Government of Uzbekistan has embarked on a series of large-scale programmes for renovation and construction of public buildings, which include schools, colleges, kindergartens, hospitals, and athletic facilities. It is expected that the programmes will deliver more of new and reconstructed space by 2015 – a tremendous opportunity for "building in" energy efficiency through improved design and technologies. The joint project of United Nations Development Programme, Global Environment Facility and State Committee for Architecture and Construction of the Republic of Uzbekistan works to support the Government in improving

energy efficiency of public buildings, thus contributing to national reduction of carbon dioxide emissions.

The implementation of the full-scale UNDP/GEF Project "Promoting Energy Efficiency in Public Buildings in Uzbekistan" was started in October 2009 with an objective to reduce energy consumption and associated greenhouse gas emissions in public buildings in Uzbekistan, particularly in the healthcare and educational sectors (schools, colleges, rural health clinics and hospitals), by improving building norms and standards, demonstrating integrated building design approaches, and develop capacity of local specialists in design, construction, and maintenance. The Project is planned for five years (October 2009 - December 2014).

III. Functions / Key Outputs Expected

I. Objective of the Mid-Term Evaluation

This Mid Term Evaluation (MTE) is initiated by the UNDP Uzbekistan as the Implementing Agency for this project and it aims to provide managers (at the Project Implementation Unit, UNDP Uzbekistan 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 2009 and is expected to be completed in

2014. The project is nationally executed by the State Committee for Architecture and Construction of the Republic of Uzbekistan. The total project budget is $13,584,765 (GEF contribution amounts to $2,913,885; UNDP - $470,880 matched by $10,200,000 from the Uzbek Government).

The project aims at reducing energy consumption and associated GHG emissions in Uzbekistan public building sector by at least 25% 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;
(4) establishing and enforcing the mandatory energy audits and certification system for energy performance and functioning system of energy managers in public buildings, and;
(5) establishing a system to monitor energy consumption and CO_2 emissions in Uzbekistan building sector.

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

- Outcome 1. New energy efficient standards and regulations applied to more than 2 million m^2 of public space in the educational and healthcare sectors commissioned annually
- Outcome 2. Government is aware of performance in existing healthcare and educational facilities and can prioritize investments in efficiency;
- Outcome 3. Uzbek design and construction professionals have the capacity to design efficient buildings and manage their performance;
- Outcome 4. Energy- and cost-saving potential of integrated building design demonstrated in two new buildings and three reconstructed buildings;
- Outcome 5. Project findings influence construction practices and public administration practices in Uzbekistan.

III. EVALUATION OBJECTIVES

The MTE is initiated by UNDP Country Office in Uzbekistan 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 Uzbekistan, State Committee for Architecture and Construction of the Republic of Uzbekistan, Ministry of Health, Ministry of Primary Education and Ministry of Higher Education, municipal and regional governments of Fergana, Kashkadarya province; Navoi, Tashkent, and Andijan provinces and the Republic of Karakalpakstan, National Technical University, Tashkent Institute for Architectures and Building Constructors, State Committee for Nature Protection, National Centre for Hydrometeorological Services (Uzhydromet), building companies, design institutes, NGOs, and members of the Project 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. Are project outcomes contributing to national development priorities and plans in accordance with the Law of the Republic of Uzbekistan on "Rational use of energy resources", #412-I of 25.04.1997, and Anti-recession (anti-crisis) program to support economy and increase of export (President's Decree No. UP-4058 as of 28.11.2008)?
b. How and why project outcomes and strategies contribute to the achievement of the expected results?
c. Examine their relevance and whether they provide the most effective way towards results.
d. 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.*
e. Were the relevant country representatives, from government and civil society, involved in the project preparation?
f. 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 Committee for Architecture and Construction of the Republic of Uzbekistan (Gosarkhitektstroy) 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?
     - 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*:

- Assess the role of UNDP and the State Committee for Architecture and Construction of the Republic of Uzbekistan against the requirements set out in the UNDP Programme and Operations Policies and Procedures[3]. Consider:
- Field visits
- Participation in Project Board meetings
- Project reviews, PIR preparation and follow-up
- GEF guidance
- Operational support
- Consider the new UNDP requirements outlined in the UNDP Programme and Operations Policies and Procedures, especially the Project Assurance role, and ensure they are incorporated into the project's adaptive management framework.
- Assess the contribution to the project from UNDP and the State Committee for

[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
[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/

Architecture and Construction of the Republic of Uzbekistan in terms of "soft" assistance (i.e. policy advice & dialogue, advocacy, and coordination).

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

2.3 *Stakeholder participation, partnership strategy (R)*:

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

2.4 *Sustainability*:

- Assess the extent to which the benefits of the project will continue, within or outside the project scope, after it has come to an end; commitment of the government to support the initiative beyond the project.
- The evaluators may look at factors such as mainstreaming project objectives into the broader development policies and sectoral plans and economies.
  - The sustainability assessment will give special attention to analysis of the risks that are likely to affect the persistence of project outcomes. The sustainability assessment should also explain how other important contextual factors that are not outcomes of the project will affect sustainability. The following four dimensions or aspects of sustainability will be addressed:

- *Financial resources:* Are there any financial risks that may jeopardize sustenance of project outcomes? What is the likelihood of financial and economic resources not being available once the GEF assistance ends (resources can be from multiple sources, such as the public and private sectors, income generating activities, and trends that may indicate that it is likely that in future there will be adequate financial resources for sustaining project's outcomes)?
- *Socio-political:* Are there any social or political risks that may jeopardize sustenance of project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained? Do the various key stakeholders see that it is in their interest that the project benefits continue to flow? Is there sufficient public / stakeholder awareness in support of the long term objectives of the project?
- *Institutional framework and governance:* Do the legal frameworks, policies and governance structures and processes pose risks that may jeopardize sustenance of project benefits? While assessing this parameter, also consider if the required systems for accountability and transparency, and the required technical know-how are in place.
- *Environmental:* Are there any environmental risks that may jeopardize sustenance of project outcomes? The terminal evaluation should assess whether certain activities will pose a threat to the sustainability of the project outcomes.
  - On each of the dimensions of sustainability of the project outcomes will be rated as follows:
- *Likely* (L): There are no or negligible risks that affect this dimension of sustainability.
- *Moderately Likely* (ML): There are moderate risks that affect this dimension of sustainability.
- *Moderately Unlikely* (MU): There are significant risks that affect this dimension of sustainability
- *Unlikely* (U): There are severe risks that affect this dimension of sustainability.

3. Project results (outputs, outcomes and objectives)

3.1 *Progress towards achievement of intended outputs, outcomes/measurement of change*:

Progress towards results should be based on a comparison of indicators before and after (so far) the project intervention, e.g. by comparing current conditions for energy efficiency in buildings (legal and regulatory frameworks, results of energy efficiency and energy conservation activities, etc.) to the baseline ones.

The evaluation should specifically look into:

- Adequacy of 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 funded from the national budget;
- Adequacy to the Law of the Republic of Uzbekistan on "Rational use of energy resources", #412-I of 25.04.1997, and Antirecession (anti-crisis) program to support economy and increase of export (President's Decree No. UP-4058 as of 28.11.2008);
- Verification of compliance of the building codes:
    - ҚМҚ 2.01.04-97* "Thermal Building Engineering";
    - ҚМҚ 2.04.05-97* "Heating, Ventilation, and Air Conditioning";
    - ҚМҚ 2.01.18-2000* "Standards of Energy Consumption for Heating, Ventilation and Air Conditioning of Buildings and Structures";
    - ҚМҚ 2.03.10 – 95* "Roofs";
    - ShNK 2.08.02-09* "Public Buildings and Structures";
    - ҚМҚ 2.08.04-04* "Administrative Buildings";
    - ҚМҚ 2.08.05-97* "Hospitals and Hospitals and Health-Care Facilities" (recommended format of an Energy Passport enclosed);
    - Amendment #1 to ҚМҚ 1.01.04-98 "Architecture and construction terminology";
    - Amendment #1 to ҚМҚ 1.03.09-97 "Provisions of Chief Project Engineer (Chief Project Architect)"

  revised within the framework of this project with the best practices on energy efficient building codes, including the EU Energy Efficiency Directive;

- Adequacy of the level and proposed approach Strategy on introduction of mandatory energy audit, certification of energy consumption of buildings under the UNDP project on "Promoting energy efficiency in public buildings in Uzbekistan"; Standard methodology for energy inspection of public buildings (Approved by Deputy Chairperson of Gosarchitectstroy on 09.09.2011); Temporary methodology on "Energy audit of the pilot medical and school facilities in the Republic of Karakalpakstan, Kashkadarya, Navoi, Ferghana and Tashkent regions" (Approved on 14.12.2010); and Reports on results of annual energy inspection (audit) of 6 project pilot buildings and recommendations on promoting their energy efficiency with developing experimental energy passports of above buildings;
- Verification of compliance of the following eight project pilot designs for:
    - Retrofitting of the secondary school #2 for 360 seats in Rishtan district of Fergana region;
    - Retrofitting of the secondary school #35 for 260 seats and construction of an additional building for 120 seats in Khatyrchi district of Navoi region;
    - Retrofitting of the secondary school #5 for 260 seats and construction of an additional building for 40 seats in Kanlykul district of the Republic of

Karakalpakstan;
- Retrofitting of the secondary school #20 for 320 seats in Karshi district of Kashkadarya region;
- Retrofitting of the rural health clinic “Oktepa” for 50 visitors per shift in Pskent district of Tashkent region;
- Retrofitting of the rural health clinic “Dekhibaland” for 50 visitors per shift in Nurata district of Navoi region;
- Design of construction of the secondary school for 315 seats in Kurgantepa district of Andijan region;
- Design of construction of the secondary school for 216 seats in Nurata district of Navoi region

with the revised building codes indicated above;

- Adequacy and effectiveness of the six State Educational Standards on Energy Efficiency in Buildings for the following groups:
  - Bachelor level education;
  - Master level education;

  and nine Educational programmes on Energy Efficiency in Buildings for the following groups:
  - Bachelor level education;
  - Master level education;
  - Secondary-special and professional education;
  - Mid-career education;

  and ten Training modules on Energy Efficiency in Buildings for mid-career education.

- Adequacy and appropriateness of the Report on inefficiency of current construction and tendering policies in Uzbekistan;
- Adequacy and effectiveness of the developed project awareness raising and outreach products on energy efficiency in public buildings:
  - Web-site of regional EE projects www.beeca.net;
  - Social Video clip on energy efficiency in public buildings
  - Promo-materials: city-format mupies, calendars, t-shirts, energy saving tips for home and office, folders, pens, note-pads, bags, fliers, etc.

To determine the level of achievement of project outcomes and objectives following three criteria should be assessed:

- *Relevance*: Are the project’s outcomes consistent with the GEF focal areas/operational program strategies and country priorities?
- *Effectiveness*: Are the actual project outcomes 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 Uzbekistan within approximately **2 weeks** (will be agreed upon in the beginning of the consultancy assignment) of the in-country mission for subsequent circulation to the key project stakeholders for comments. Any discrepancies between the interpretations and findings of the evaluator and the key project stakeholders will be explained in an annex to the final report.

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 Board meetings, GEF quarterly project updates;
- Interviews with Project Management Unit and key project stakeholders, including UNDP Country Office in Uzbekistan, State Committee for Architecture and Construction of the Republic of Uzbekistan, Ministry of Health, Ministry of Primary Education and Ministry of Higher Education, municipal and regional governments of Fergana, Kashkadarya province; Navoi, Tashkent, and Andijan provinces and the Republic of Karakalpakstan, National Technical University, Tashkent Institute for Architectures and Building Constructors, State Committee for Nature Protection, National Centre for Hydrometeorological Services (Uzhydromet), building companies, design institutes, NGOs, and other stakeholders, as necessary;
- In-country field visits, if necessary.

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

project.

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 Uzbekistan 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.

IV. Deliverables and timeframe

The principal responsibility for managing this evaluation lies with UNDP Country Office in Uzbekistan. 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 Uzbekistan and the State Committee for Architecture and Construction of the Republic of Uzbekistan as well as the national Operational Focal Point to the GEF. These four parties will receive a draft of the final evaluation report and provide comments on it prior to its completion.

The evaluation mission in Uzbekistan will take place in March-April 2012. The total duration of the assignment will be 25 working days during the calendar period of 1.5 months (1 March – 15 April 2012). The following tentative timetable is recommended for the evaluation, however, the final schedule will be agreed upon in the beginning of the consultancy assignment:

Desk review, development of methodology	4 days (tentatively during 1-6 March, 2012)
In-country field visits, interviews	10 days (tentatively during 7-20 March, 2012)
Drafting report	3 days (tentatively during 21-27 March, 2012)
Draft report circulation	5 days (tentatively during 28 March – 5 April, 2012)
Finalization of report	3 days (tentatively during 6-15 April, 2012)

Prior to approval of the final report, a draft version shall be circulated for comments to government counterparts and project management. UNDP and the stakeholders will submit comments and suggestions within 5 working days (within the calendar period agreed) after receiving the draft. All comments and suggestions (if any) shall be addressed and the report will be considered as the final deliverable as soon it is accepted by UNDP.

The final version of the evaluation report should be submitted in electronic format (MS Word) to UNDP Country Office in Uzbekistan (Mr. Abduvakkos Abdurahmanov, address: Uzbekistan, 100029, Tashkent, Taras Schevchenko Str., 4, tel. +998 71 1203450, 1206167; fax +998 71 1203485, e-mail: abduvakkos.abdurahmanov@undp.org) no later than **April 15, 2012**.

Deliverable	Timeframe
1. Desk review, development of methodology	4 days
2. Mission to Uzbekistan, including briefings for evaluators by PM and UNDP, in-country field visits, interviews, de-briefings for UNDP CO	10 days
3. Drafting of the evaluation report	3 days
4. Draft report circulation for comments and other types of feedback mechanisms	5 days
5. Finalization of the evaluation report (incorporating comments received on first draft)	3 days

V. Payment Conditions

This is a lump sum contract that should include costs of consultancy and international travel costs (in-country travel cost will be covered by the project), accommodation and meal (DSA or per diems in Tashkent and provinces) and visas costs required to produce the above deliverables. Payment will be released in 2 installments:

- First installment (40% of total contract amount) to be made upon achievement of Deliverables 1, 2, 3.
- Second installment (60% of total contract amount) to be made upon achievement of Deliverables 4, 5.

upon timely submission of respective deliverables and their acceptance by the Supervisor and UNDP CO:

VI. Recruitment Qualifications

Education:	Advanced university degree in economics, energy, or related area
Experience:	• 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

Language Requirements:	Excellent English communication and writing skills, knowledge of Russian would be an asset
Others:	Demonstrable analytical skills

UNDP is an equal opportunity employer. Qualified female candidates, people with disabilities, and minorities are highly encouraged to apply. UNDP Gender Balance in Management Policy promotes achievement of gender balance among its staff at all levels.

VII. Signatures - Post Description Certification		
Incumbent *(if applicable)* Name	Signature	Date
Climate Change Specialist, EEU **Rano Baykhanova** Name / Title	Signature	Date
Head of Programme Unit **Mr. Abduvakkos Abdurahmanov, EEU** Name / Title	Signature	Date

8. 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 consists 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:

Information dissemination

- Implementation of appropriate outreach/public awareness campaigns

Consultation and stakeholder participation

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

Stakeholder participation

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

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

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

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

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

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

Effective financial plans include:

- Identification of potential sources of co-financing as well as leveraged and associated financing[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 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.

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.

[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.

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

- KMK 2.01.04-97* "Thermal Building Engineering";
- KMK 2.04.05-97* "Heating, Ventilation, and Air Conditioning";
- KMK 2.01.18-2000* "Standards of Energy Consumption for Heating, Ventilation and Air Conditioning of Buildings and Structures";
- KMK 2.03.10 – 95* "Roofs";
- ShNK 2.08.02-09* "Public Buildings and Structures";
- KMK 2.08.04-04* "Administrative Buildings";
- KMK 2.08.05-97* "Hospitals and Hospitals and Health-Care Facilities" (recommended format of an Energy Passport enclosed);
- Amendment #1 to KMK 1.01.04-98 "Architecture and construction terminology";
- Amendment #1 to KMK 1.03.09-97 "Provisions of Chief Project Engineer (Chief Project Architect)";
- Reports on results of annual energy inspection (audit) of 6 project pilot buildings and recommendations on promoting their energy efficiency with developing experimental energy passports of above buildings;
- Strategy on introduction of mandatory energy audit, certification of energy consumption of buildings under the UNDP project on "Promoting energy efficiency in public buildings in Uzbekistan";
- Temporary methodology on "Energy audit of the pilot medical and school facilities in the Republic of Karakalpakstan, Kashkadarya, Navoi, Ferghana and Tashkent regions" (Approved on 14.12.2010);
- Standard methodology for energy inspection of public buildings (Approved by Deputy Chairperson of Gosarchitectstroy on 09.09.2011);
- Database of EE construction materials, technologies and equipment;
- Design of retrofitting of the secondary school #2 for 360 seats in Rishtan district of Ferghana region;
- Design of retrofitting of the secondary school #35 for 260 seats and construction of an additional building for 120 seats in Khatyrchi district of Navoi region;
- Design of retrofitting of the secondary school #5 for 260 seats and construction of an additional building for 40 seats in Kanlykul district of the Republic of Karakalpakstan;
- Design of retrofitting of the secondary school #20 for 320 seats in Karshi district of Kashkadarya region;

- Design of retrofitting of the rural health clinic “Oktepa” for 50 visitors per shift in Pskent district of Tashkent region;
- Design of retrofitting of the rural health clinic “Dekhibaland” for 50 visitors per shift in Nurata district of Navoi region;
- Design of construction of the secondary school for 315 seats in Kurgantepa district of Andijan region;
- Design of construction of the secondary school for 216 seats in Nurata district of Navoi region;
- Six State Educational Standards on Energy Efficiency for the following groups:
    - Bachelor level education;
    - Master level education
- Nine Educational programmes on Energy Efficiency for the following groups:
    - Bachelor level education;
    - Master level education;
    - Secondary-special and professional education;
    - Mid-career education
- Ten training modules on Energy Efficiency for mid-career education;
- Reports, including analysis of stakeholders’ feedback on the delivered seminars/workshops;
- Report on study tour on energy efficiency in buildings issues of government employees and project staff to Denmark;
- Report on inefficiency of current construction and tendering policies in Uzbekistan;
- Web-site of regional EE projects www.beeca.net;
- Social Video clip on energy efficiency in public buildings

Other relevant documentation

- The Law of the Republic of Uzbekistan on “Rational use of energy resources”, #412-I of 25.04.1997
- Anti-recession (anti-crisis) program to support economy and increase of export (President’s Decree No. UP-4058 as of 28.11.2008)

ANNEX 3 REVISED LOGICAL FRAMEWORK

Project strategy	Objectively Verifiable Indicators				
Goal	Reduce greenhouse gas emissions in Uzbekistan by improving energy efficiency in the buildings sector				
	Indicators	**Baseline**	**Target**	**Means of Verification**	**Important assumptions**
Project objective: Reduce energy consumption and associated GHG emissions new and existing buildings in the education and healthcare sectors	Average thermal energy and power consumption in new/renovated public buildings	Thermal energy demand of new and existing building on average: 185 and 200 kWh/m^2 respectively	Thermal energy demand reduced to an average of 140 and 150 kWh/m² (by 25%) for new and retrofitted buildings respectively	National statistics augmented by data from the energy and GHG monitoring system to be established by the project	Government continues to construct and retrofit facilities at the planned rates
	CO_2 emissions of new and reconstructed education and healthcare buildings in 2014 (cca 840 new and reconstructed buildings using different space heating systems over 2010-2014, replication calculated in a similar way as in the bottom-up indirect method)	141,000 tons CO_2 in 2014 (lifecycle emissions are 2.8 millions tons CO_2) and 352,500 tons CO_2 in 2020 (lifecycle emissions are 7.05 million tons CO_2)	By the end of the project (2014): 106 thousand tons CO_2 (lifecycle emissions are 2.1 million tons CO_2) or 35,000 tons CO_2 less than the baseline (lifecycle savings = 700,000 tons CO_2). By the end of 10-year project influence period: 265,000 tons CO_2, in 2020 (lifecycle emissions = 2.2 million tons CO_2), or 87,500 tons CO_2 less than the baseline		Monitoring established by the project is accurate and indicative
Outcome 1. New energy efficient standards and regulations are applied to more than 2 million m^2 of public space in the educational and healthcare sectors	Approval of updated versions of the seven building codes relevant to energy consumption in public buildings	Codes for public buildings are outdated and allow energy consumption that is significantly higher than international standards	Updated codes for public buildings reduce allowable consumption by at least 25%. By the end of Year 3, all healthcare and educational facilities will be constructed or reconstructed (approx. 2 million m^2) using designs that ensure a minimum 25% reduction in energy consumption from the baseline	Published regulations. Comparison with other codes in the region and international best practice (through international databases).	Government will approve the revised codes.

commissioned annually.			year assuming constant conditions.		
	Capacity of Gosarchitectstroy to implement energy efficiency codes	No government organization works specifically on improving energy efficiency in buildings codes; staff lack training in efficient codes	Approximately 20 staff trained in efficient codes and able to oversee implementation and provide guidance to design organizations by the end of Year 2.	Annual report of Gosarchitectstroy. Institutional analysis. Structured interviews with staff and clients.	Government will support capacity building of the department on create the Department and dedicate staff to training. Trained staff will remain with the agency.
Outcome 2. Government is aware of performance in existing healthcare and educational facilities and can prioritize investments in efficiency	Implementation of mandatory energy audits	Energy audits are not carried out in the public buildings sector	80 audits are carried out annually (40 in schools and 40 in hospitals) by the end of the project	Project documentation, legislative record, interviews and documentation from implementing agency	Government provides and enacts necessary regulations to mandate the audits Auditing equipment for public buildings is available and accessible to auditors
	Capacity to monitor performance of existing buildings	No certification of energy performance in existing buildings, no consolidated energy information system to allow for benchmarking	Energy performance certificate scheme introduced in at least two pilot regions by the end of the project. Data collected during certification process is available through the information system.	Project documentation; data from certification system. Review of information system and cross-check with certificates issued.	Governments in two pilot regions support the certification process Implementing agency staff are tasked with system administration
	Functioning system of energy managers in at least one region for two ministries: Ministry of Health and Ministry of	Building maintenance personnel do not take energy savings into account in	By Year 3, Job duties of building maintenance personnel in pilot regions include energy management tasks.	Project documentation on training courses. Record of certificates issued. Interviews with energy managers and	Ministries will enrol pilot facilities.

	Public Education	operations and maintenance work		ministry personnel.	School and hospital directors will designate energy managers and allocate time for training and EE-focused tasks.
Outcome 3. Uzbek design and construction professionals have the capacity to design efficient buildings and manage their performance	Ability of practicing architects to 1) comply with more efficient codes; and 2) integrate more efficient design into their buildings	Designs do not emphasize energy efficiency and are above international standards for energy consumption	Submitted designs meet and exceed the requirements of more efficient codes by the end of the project. At least 300 architects trained by the end of the project.	Review of prototype efficient designs. Survey of first-time acceptance rate for plans and statistics on building commissioning. Independent review of energy performance of a sample of designs submitted. Structured interviews. Documentation on use of advisory services.	Architects and engineers will be interested in participating in training. Design institutes will be willing to allocate staff for training.
	Ability of students in engineering and architecture to understand energy management in buildings and use efficient techniques and technologies in their work	No option for studying energy management in buildings; architecture students not exposed to efficient design concepts	Bachelors and masters program in energy management expanded to cover a specialization in buildings. Integrated building design introduced as a subject for architecture students.	Review of model curriculum; structured interviews	Proposed curricula will be approved by the Ministry of Higher Education.
	Awareness of building sector professionals of the efficient construction materials and technologies market and awareness of suppliers about potential sales.	Low awareness of available materials that can save energy. Efficient materials market is almost non-existent.	Increased sales for materials that promote energy efficiency in buildings by Year 4 of the project.	Sales records, number of companies and products on the market and company performance, number of new products certified, trade show documentation structured survey of	Overall market conditions will be favourable to manufacturers and distributors.

				builders assessing awareness.	
Outcome 4. Energy- and cost-saving potential of integrated building design demonstrated in two new buildings and six re-constructed buildings	Construction and commissioning completed for buildings that used the concept of Integrated Building Design	Buildings not currently designed to emphasize efficient use of energy.	Six buildings retrofitted or reconstructed by the end of Year 2 of the project. Two buildings using integrated design principles constructed by the end of Year 3 of the project. Energy performance documented by the end of the project.	Public records, analysis of designs, audit records (including baseline audits for reconstructed facilities and audits for current prototype schools and hospitals; i.e., a control group).	Government will construct and reconstruct public buildings as planned.
	Project facilitates the replication of results	Design institutes currently lack prototype plans on efficient buildings.	Plans and prototype information circulated to 36 leading design institutes and other design organizations by the end of Year 2 of the project.	Project documentation. Review of designs submitted under construction tenders for public buildings. Selected review of buildings funded by budgetary and extra-budgetary construction funds for schools, hospitals and athletic facilities.	Efficient designs will be replicable and incorporated by architects.
	Awareness of the findings and application among key stakeholders in Uzbekistan and abroad	Results from a limited number of pilot projects in EE/RE in public buildings (10 identified over the past 2 decades) are not widely available.	Designs and performance information for pilot buildings will be available nationally and internationally by end of Year 4.	Project documentation; media review; records from international meetings, databases.	Pilot buildings will be operational and provide performance data according to schedule.
Outcome 5. Project findings influence	Good practice related to Energy Efficient Buildings integrated into at least one	Tendering, construction programs,	By the end of the project, there is a change in practice in at least one of the areas described in the	Review of project documentation and structured interviews.	Ministries will be motivated to reduce the operating

construction practices and public administration practices in Uzbekistan	component of public administration.	procurement regulations, and budgetary allocations do not provide incentives for using energy more efficiently. Buildings codes for the residential sector are also relatively inefficient.	"Baseline" column.	Review of government regulations as appropriate.	costs of their facilities.

ANNEX 4.

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

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

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

Annex 4: Itinerary

Program
of Mission to Uzbekistan by Mr. Jiří Zeman, International Consultant and Mr. Fayzulla Salakhuddinov, Local Consultant for conduction of mid-term evaluation of UNDP/GEF project «Promoting Energy Efficiency in Public Buildings in Uzbekistan".
26 March – 4 April, 2012.
Tashkent, Uzbekistan

Time	Activity	Venue
26 March 2012		
11/00 – 14.40	Meetings with Mr. Kakhramon Usmanov, Project manager, Mr. Fayzulla Salakhuddinov, Local Consultant on Mid-Term Evaluation of UNDP/GEF Project Promoting Energy Efficiency in Public Buildings (EEPB) Discussion of Project implementation and achievements	Gosarchitechtstroy, Project office
15.00 – 16.20	Meeting with the project team: Mr. Rustam Kuchkarov, Team Leader on Buildings codes and Standards, Mr. Petr Pozychayuk, Team Leader on Energy audits and monitoring, implementation and achievements of each individual project component	Gosarchitechtstroy, Project office
16.20 – 17.00	Meeting with Mr. Aziz Rozikulov, UNDSS Local Security Assistant for Uzbekistan	4 Taras Shevchenko st, UNDP CO in Uzbekistan,
27 March 2012		
9.00 - 10.50	Meeting with the project team (cont.): Mr. Alisher Temirov, Team Leader on Demonstration buildings, Mr. Elyor Abbosov, Team Leader on Training, Education and Outreach, implementation and achievements of each individual project component	Gosarchitechtstroy, Project office
11.00 - 11.30	Meeting with Mr. Sergey Myagkov, GEF Operational Focal point in Uzbekistan, Ms. Rano Baykhonova, Climate Change Specialist, Mr. Drakhon Abutalipov, Program Associate, Energy and Environment Unit, UNDP CO in Uzbekistan	4 Taras Shevchenko st, UNDP CO in Uzbekistan,
12.00 - 16.00	Meetings with the Project Board members and key project stakeholders: Mr. Muhammadshokir Halkhodjaev, Head of Department for Monitoring the Activities of Design Organizations, National Project Coordinator, Mr. Kadir Akilov, Chief Controller, Department for Resource management and Capital Construction with the Ministry of Public Education of Uzbekistan, Mr. Bakhodir Ergashev, Head of Department for Complex Exploitation of Medical Entities with the Ministry of Heath of Uzbekistan, Project Board member	Gosarchitechtstroy, Ministry of Health, Project office
16.00 – 18.00	Meeting with the project team (cont.): Ms. Alyona Kim, Administrative and Finance Assistant, review of project financial planning, including budgets and actual expenditures, project reporting and etc.	Gosarchitechtstroy, Project office
28 March 2012r.		
09.00 - 13.00	Meeting of Mr. Jiri Zeman l, Mr. F. Salakhuddinov, with project partners: Mr. Saidaslam Khodjaev, Derector of the Center of Certification and Standardization in Construction Industry, Mr. Timur Salikhov, Director of the Institute of Energy and Automation under the Academy of Sciences, Mr. Alisher Shoislamov, Professor Associate from the Tashkent State Technical University to evaluate interaction and cooperation of UNDP/GEF project in the course of implementation of project goals and objectives.	Gosarchitechtstroy, Project office
14.00 – 15.00	Meetings with representatives of the Tashkent Architectural and Construction Institute involved into the development of Educational and training programs on EE in buildings (Mr. Mukhammad Akhmedov, Dean of the Faculty, Architecture, Mr. Rakhmatulla Pirmatov, Dean of the Faculty, Civil Engineering, Ms. Dildora Mirbabaeva, Director of the	Tashkent Architectural and Construction Institute

	Center for retraining the specialists of construction industry Mr. Shukhrat Reimbaev, Head of Department, TACI)	
15.30 – 17.30	Meeting of the evaluation team with the project partners involved into revision of Building codes: (Mr. Yevgeniy Nasonov, Head of Department and Mr. Rishat Kadirov, Senior expert of "ToshuyjoyLITI"), Mr. Vladimir Rogojin, Chief Engineer of the "UzTibLoyiha", Mr. Saidaglam Khodjaev, Center for Certification and Standardization	Gosarchitechtstroy, Project office
29 March 2012		
9.00 - 14.00	Site visit to Rural Health Clinic (RHC) "Oktepa", Meetings with partners and beneficiaries: (Mr. Usman Usarov, Engineering company, Mr. Erkin Ibragimov, "Madalim Kuruvchi" Construction company, Ms. Gulchekhra Karimova, Head of Rural Medical Clinic, Representatives of Local community)	Pskent district, Tashkent region
14-00 – 18-00	Work with the project team on the optimization of the implementation of project tasks.	Gosarchitechtstroy, Project office
30 March 2012		
9.00 - 18.00	Meeting of the evaluation team (Mr. Jiri Zeman, Mr. Fayzulla Salakhuddinov) with the project team to analyze and evaluate information obtained during meetings with the stakeholders and partners.	Gosarchitechtstroy, Project office
2 April 2012		
9.00 - 18.00	Site visit to RHC "Dehibaland" and a new school in Navoi region, Meetings with partners and beneficiaries: (Mr. Bakhodir Mansurov, Director of the Engineering company, Mr. Shavkat Khamraev, "Khamroh" construction company, Mr. Yunus Mustafaev, "Pakhtakor XXI" construction company, Mr. Khamdam Ibragomov, "Pakhtaobod talim plus", construction company, Mr. Zoyodullo Khudayberdiev, «Navoi shaharsozlik loyihalash» design organization, Mr. Abdukayum Lukmonov, "Bukhoro Loyiha" design organization, Mr. Kudrat Ochilov, Head of Rural Health clinic)	Nurata district, Navoi region
3 April 2012		
09.00-18.00	Site visit to School # 20 in Kashkadarya region, Meetings with partners and beneficiaries: (Mr. Validjon Baymirzaev, Engineering company, Mr. Shukhrat Buriev, "Bekhruz Shukhratovish" construction company, Mr. Sirojiddin Nasirov, «Qishloq Qurilish Lyuks» design organization, Mr. Djalil Olimov, «Qishloq Qurilish Lyuks» design organization, Mr. Djavonkhir Sharipov, Director of the School # 20)	Kashkadarya region
4 April 2012		
9.00 - 16.00	Clarification of remaining issues with project team and Project Manager. Wrap up meeting with the project team	Gosarchitechtstroy, Project office
16:30 – 17:30	Meeting with UNDP CO Management for debriefing on MTE Mission (Mr. Stefan Liller, Assistant UNDP Resident Representative in Uzbekistan, Ms. Rano Baykhonova, Climate Change Specialist, Mr. Drakhon Abutalipov, Program Associate, Energy and Environment Unit, UNDP CO in Uzbekistan	4 Taras Shevchenko st, UNDP CO in Uzbekistan,

Annex 5: List of persons interviewed

Project Implementation Unit

Mr. Kakhramon Usmanov, Project Manager
Ms. Alyona Kim, Administrative and Finance Assistant
Mr. Rustam Kuchkarov, Team Leader on Building Codes and Standards (Component 1)
Mr. Petr Pozychanyuk, Team Leader on Energy Audit and Monitoring (Component 2)
Mr. Alisher Timirov, Team Leader on Demonstration Buildings (Component 4)
Mr. Elyor Abbosov, Team Leader on Training, Education and Outreach (Component 3 and 5)

UNDP

Mr. Stefan Liller, Assistant UNDP Resident Representative
Mr. Darkhon Abutalipov, Programme Associate
Ms. Rano Baykhanova, Climate Change Specialist

GEF Operational Focal Point

Mr. Sergey Myagkov, Deputy Director NIGMI of Uzhydromet, The Center of Hydrometeorological Service, Cabinet of Ministers of Republic of Uzbekistan

Project Board Members

State Committee for Architecture and Construction (Gosarchitectstroy)

Mr. Muhammadshokir Halkhodjaev, Head of Department for Monitoring the Activities of Design Organizations, National Project Coordinator

Ministry of Public Education

Mr. Kadir Akilov – Chief Controller, Department for Resource management and Capital Construction with the Ministry of Public Education of Uzbekistan,

Ministry of Heath

Mr. Bakhodir Ergashev –Head of Department for Complex Exploitation of Medical Entities with the Ministry of Heath of Uzbekistan, Member of the Project Board.

Other stakeholders

The Republican Center of Certification and Standardization in Construction Industry under Gosarchitectstroy

Mr. Saidaslam Khodjaev, Head of the Center

Institute of Energy and Automation under the Academy of Sciences of Uzbekistan

Prof. Timur Salikhov, Director

Tashkent State Technical University (TSTU)

Mr. Alisher Shoislamov, Professor Associate

Tashkent Architecture and Construction Institute (TACI)

Mr. Mukhammad Akhmedov, Dean of the Faculty, Architecture,
Mr. Rakhmatulla Pirmatov, Dean of the Faculty, Civil Construction
Ms. Dildora Mirbabaeva, Director of the Center for retraining the specialists of construction industry
Mr. Shukhrat Reimbaev, Head of Department, TACI

"ToshUyjoyLITI" Design Institution

Mr. Yevgeniy Nasonov, Head of Department
Mr. Rishat Kadirov, Senior expert

"UzTibLoyiha", Design Institution for Medical buildings,

Mr. Vladimir Rogojin, Chief Engineer

Rural Health clinic "Oktepa" in Tashkent region (site visit)

Mr. Usman Usarov, Engineering company
Mr. Erkin Ibragimov, "Madalim Kuruvchi" Construction company
Ms. Gulchekhra Karimova, Head of Rural Medical Clinic
Representatives of Local community

Rural Health clinic "Dehibaland" and construction site of a new school in Navoi region (site visit)

Mr. Bakhodir Mansurov, Director of the Engineering company,
Mr. Muzaffar Khaitov, Chief Engineer,
Mr. Shavkat Khamraev, "Khamroh" construction company,
Mr. Yunus Mustafaev, "Pakhtakor XX" construction company,
Mr. Khamdam Ibragomov, "Pakhtaobod talim plus", construction company
Mr. Zoyodullo Khudayberdiev, «Navoi shaharsozlik loyihalash» design organization
Mr. Abdukayum Lukmonov, "Bukhoro Loyiha" design organization
Mr. Kudrat Ochilov, Head of Rural Health clinic

School # 20 in Kashkadarya region (site visit)

Mr. Validjon Baymirzaev, Engineering company,
Mr. Shukhrat Buriev, "Bekhruz Shukhratovish" construction company,
Mr. Sirojiddin Nasirov, «Qishloq Qurilish Lyuks» design organization
Mr. Djalil Olimov, «Qishloq Qurilish Lyuks» design organization
Mr. Djavonkhir Sharipov, Director of the School # 20

Annex 6: Questionnaire used and summary of interviews

Questionnaire:

The following areas of questions have been asked during the interviews with project stakeholders:

- What was your/your organization role in the project? How did you participate?
- How would you evaluate the project results achieved so far?
- Are there any problems with non-compliance with newly revised Building Codes?
- How would you evaluate in general the cooperation with EEPB project?
- Do you have any recommendations for EEPB project implementation?
- Is it possible to change the typical project design?
- I heard the public buildings were under heated this year? What was the lowest temperature inside the building? Was it a problem of local authorities or state supplies of gas?
- Will the Government continue to allocate funds for retrofitting of public buildings from the state budget in future?
- How many Rural Health clinics are being reconstructed annually? What is the tendency?
- After reconstruction/construction of pilot buildings whether it is possible to get information on energy consumption and make it publicly accessible?
- System of energy certification is a relatively new in many countries. How it will work in Uzbekistan? What type of buildings (objects) will be the subject for certification? How costly it will be for the owners and how experts for energy certification will be trained and prepared?
- Do you focus more on space heating and space cooling or both of them since Uzbekistan has cold winters and hot summers?
- Whether revised Building codes are mostly descriptive or performance based like in EU and other countries?
- What is the typical insulation material used in Uzbekistan and what is the standard insulation for standard brick wall?
- How reduction of energy consumption in buildings by 25% has been reached?

Summary of Interviews

Mr. Mukhammadshokir Khalkhodjaev, National Project Coordinator, Head of the Department for Monitoring the Activities of Design Organizations under the State Committee for Architecture and Construction

The role of National Project Coordinator and cooperation with the Project:

Mr. Mukhammadshokir Khalkhodjaev is a National Project Coordinator, Chairman of the Project Board. He is responsible for overall project guidance and coordination. He performs the role of a Senior Executive to ensure that project is focused on achieving its objectives, deliverables and outputs. Since its commencement in November 2009 the EEPB project has succeeded in achieving its planned targets and objectives. 7 selected building codes (SNiPs) were revised in terms of energy efficiency

and came into force since August 2011. Amendments to 2 additional building codes were made to incorporate new 53 energy efficiency terms and approved by Gosarchitectstroy. All design organizations and construction companies should strictly comply with revised SNiPs. Corresponding Reference Manuals/Guidelines for revised codes are in process of development. Retrofitting and construction works at all pilot buildings have been started. Standard Methodology of Energy Audit of public buildings developed and approved by Gosarchitectstroy. System of mandatory energy certification, information database on energy performance in public buildings as well as system of energy managers within the Ministries of Health and Public Education is in process of development.
The project has also conducted several training activities. Strategy paper on Capacity Building of the Department for Monitoring the Activities of Design Organizations was approved. It is recommended to focus more on organization of study tours to learn international best practices and to promote sharing of practical experience among experts and practitioners.

Mr. Sergey Myagkov, GEF Operational Focal Point, Deputy Director of the Institute for Hydro meteorological Research

The role of GEF Operational Focal point and cooperation with the Project:

Mr. Sergey Myagkov being a member of Interagency Working group on identification and formulation of a national GEF funded projects portfolio is responsible for providing assistance to relevant state agencies on all operational and technical issues related to preparation and submission of project proposals to the GEF Secretariat as well as communication with relevant GEF bodies.
The EEPB project is of a particular importance since it corresponds to adaptation measures to Climate Change undertaken by the Government of Uzbekistan. In addition to national projects the Government of Uzbekistan participates in several multi-national as well as global projects. Alongside with UNDP other GEF Implementing agencies including UNEP, WB, ADB and etc. are involved into joint projects implementation. He communicates and gets feedback from ongoing GEF projects including the EEPB project though organization of regular meetings, exchange of views and etc. He recommends to EEPB project to pay more attention on Climate Change issues.

Mr. Kadir Akilov – Chief Controller, Department of Resource Management and Capital Construction with the Ministry of Public Education of Uzbekistan,

Involvement of the Ministry of Education in the Project

Ministry of Public Education (MoPE) is one of the key project stakeholders. Mr. Kadir Akilov several times represented the Ministry at the Project Board. We are pleased with cooperation and participation in the project. 6 pilot buildings have been selected as demonstration sites of EE approaches including 4 schools for retrofitting and 2 schools for new construction. Those pilot sites have been included into the relevant Governmental Decree with specification of co-financing arrangements. The construction works have been already started and would be completed by the end of August 2012. Although it is not easy to change the typical design, it seems that typical building designs for 216 and 315 pupils are optimal for Uzbekistan. Annually the Government allocates funds for retrofitting and construction of more than 350 public schools. Currently the total number of public schools is around 9,779.Hopefully after successful demonstration of pilot sites the MoPE will have a strong argumentation to submit proposals to the Government on replication of this experience.

Mr. Bakhodir Ergashev – Head of Department for Complex Exploitation of Medical Entities Buildings with the Ministry of Health of Uzbekistan, Member of the Project Board.

Involvement of the Ministry of Health in the Project

Ministry of Health (MoH) is one of the key project stakeholders. Mr. Bakhodir Ergashev represents the Ministry at the Project Board. The MoH has been successfully cooperating with UNDP since 2006 through implementation of joint projects including EEPB project. Two pilot sites, including Rural Health clinics (RMC) in Tashkent and Novoi regions respectively have been selected for retrofitting. The establishment and reconstruction of Rural Health clinics have been started in 1997. Currently 3,195 RMCs are in operation. The reconstruction and retrofitting works at the project pilot sites have been started as well. In addition to construction standards Medical buildings should comply with sanitary norms and standards which require keeping temperature at certain levels (ex. 22^0C -25^0C) and needs for more energy supplies. After the completion of works post retrofitting energy monitoring would be conducted and based on its results relevant recommendations on further actions would be provided.

Mr. Saidaslam Khodjaev – Head of the Republican Center for Certification and Standardization in Construction Industry.

Involvement in revision of a Building Code KMK 2.03.10 – 95 "Roofs" and development of a mandatory system of energy performance certificates - "Energy passports"*

The Center revised the Building Code "Roofs" and currently involved into the development of a mandatory energy performance certification system. Having sufficient institutional and human resource capacities (experts, laboratories and etc.) the Center is responsible for coordination of certification system in construction industry since 1994. In general it is planned to develop new energy certification system based on good international practices (Denmark, Spain) and harmonize it into the existing system of certification in Uzbekistan making changes into relevant legislative and normative documents. Both public and residential buildings will be the subject for certification. Probably certificates will be provided for 10-20 years with energy audits every 3 years. For new buildings the certification process will start at the designing stage with undergoing relevant expertise and further provision of certificate and energy passport after the construction. Probably the owners of the building will pay for certificate. It is planned that proposed system will be developed and ready for implementation by the end of 2013 subject to Government's approval. The required experts on energy certification could be trained and prepared in cooperation with existing Universities and Institutions.

Prof. Timur Salikhov – Director of the Institute of Energy and Automation (IoEA) under the Academy of Sciences of Uzbekistan.

Involvement in accomplishment of pre-retrofitting energy monitoring and auditing in 6 pilot buildings and development of Information system on energy performance in public schools and health clinics

The EEPB project is very important since it focused on EE in buildings which account for significant energy consumption in Uzbekistan. The IoEA is a leading institution in the country to perform energy auditing and monitoring of industrial entities in various sectors (compulsory for big industrial enterprises since 2006). Our Institute was contracted by UNDP/GEF to analyze energy consumption and performance in 6 pilot buildings. Since it was a new area for us we faced some difficulties in applying relevant methodology. Although during winter time buildings were under heated we didn't have serious problems in obtaining information and data. Alongside with recommendations on 6 pilot sites we developed temporary methodology and further standard methodology for performing energy audits and monitoring in public buildings which was approved by Gosarchitectstroy. Currently the Institute is involved into the development of Information system (software) on collecting, analyzing

and storing data on energy performance in buildings of the MoPB and MoH. After the development of the software relevant trainings will be provided to experts from both ministries.

Mr. Alisher Shoislamov, Prof. Associate, TSTU

Involvement in development of educational and training programs (courses) in EE and development of energy management system (system of "Energy managers") in public schools and medical clinics

In close cooperation with the project team TSTU staff developed educational and training programs on energy efficiency, energy auditing and etc. for university Master and Bachelor levels as well as college students. Relevant educational standards and programs have been approved by the Ministry of Higher Education and starting from September 2011 training in the field of EE and energy auditing is regular for about 250 students. In addition the project procured laboratory display equipment for TSTU students to carry out research and practical works.
The second contract on development of energy management system is closely related to Information system to be developed by the Institute of Energy and Automation. The proposed energy management system will be based on good international practices and during its implementation relevant training modules for training/retraining of experts in the field of EE will be developed and provided.

Mr. Mukhammad Akhmedov, Dean of the Faculty of Architecture,
Mr. Rakhmatulla Pirmatov, Dean of the Faculty of Civil Engineering,
Ms. Dildora Mirbabaeva, Director of the Center for retraining the specialists of construction industry,
Mr. Shukhrat Reimbaev, Head of Department, TACI
Involvement in development of the training programs (courses) in EE and in the process of training

The TACI is a key institution in Uzbekistan to provide education and training/retraining in the field of architecture, construction and designing. In close cooperation with the project team TACI staff developed educational programs on energy efficiency in buildings for university Master and Bachelor levels, college students as well as training/retraining module for the specialists of design organizations and construction industry. Relevant educational standards and programs have been approved by the Ministry of Higher Education and being provided since September 2011. Short-term courses for training/retraining of architects/designers and experts from construction industry are provided by the Center on retraining specialists and include lectures on EE in buildings.

Mr. Yevgeniy Nasonov, Mr. Rishat Kadirov, "ToshUyjoyLITI" Design Institution
Mr. Vladimir Rogojin, "UzTibLoyiha"
Mr. Saidaglam Khodjaev, Republican Center for Certification and Standardization in Construction
Involvement in revision of relevant Building Codes and development of respective Reference Manuals/Guidelines

5 Building Codes have been revised by "ToshUyjoyLITI", 1 by "UzTibLoyiha" and 1 by the Center for Certification and Standardization respectively. All revised documents following discussions at the Scientific-Technical Council were approved by Gosarchitechtstroy and came into force since August 2011. The revised Building codes have descriptive character and envisage 3 levels of thermal protection. It is easier to control the compliance with code requirements. But one Building code on "Standards of Energy Consumption for Heating, Ventilation and Air Conditioning of Buildings and Structures" uses performance based approach. Reduction of energy consumption in buildings by 25% has been reached due to insulation of exterior walls. The typical insulation to be used is a mineral

wool (rock wool) and according to revised SNiPs recommended thickness of insulation is 5-10 sm. In addition specific recommendations on heating and ventilation are provided.
Currently, abovementioned design organizations are involved into development of Reference Manuals/Guidelines for respective revised Building codes.

Annex 7: 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

- Building Code KMK 2.01.04-97* "Thermal Building Engineering";
- Building Code KMK 2.04.05-97* "Heating, Ventilation, and Air Conditioning";
- Building Code KMK 2.01.18-2000* "Standards of Energy Consumption for Heating, Ventilation and Air Conditioning of Buildings and Structures";
- Building Code KMK 2.03.10 – 95* "Roofs";
- Building Code ShNK 2.08.02-09* "Public Buildings and Structures;
- Building Code KMK 2.08.04-04* "Administrative Buildings";
- Building Code KMK 2.08.05-97* "Hospitals and Hospitals and Health-Care Facilities" (recommended format of an Energy Passport enclosed)
- Amendment #1 to Building Code KMK 1.01.04-98 "Architecture and construction terminology;
- Amendment #1 to Building Code KMK 1.03.09-97 "Provisions of Chief Project Engineer (Chief Project Architect)"
- Report on results of analysis and comparison of recommended amendments to revised normative documents (KMK, IIIMK) for increased energy efficiency in public buildings;
- Training material on energy efficiency in buildings based on best international practice (Master Class);
- Advanced project of Energy passport for the system of certification of public buildings in the Republic of Uzbekistan;
- Capacity development Strategy of the Department for monitoring design organizations (UMDPO) under Gosarchitectstroy;
- Analytical paper on the Strategy for introduction of mandatory energy audit, certification of energy consumption of buildings (updated version based on the results of energy auditing of 6 pilot sites);
- Temporary methodology on "Energy audit of the pilot medical and school facilities in the Republic of Karakalpakstan, Kashkadarya, Navoi, Ferghana and Tashkent regions";
- Standard methodology for energy inspection (audit) of public buildings (Approved by Deputy Chairperson of Gosarchitectstroy on 09.09.2011);

- Combined Report on the results of energy monitoring of 6 pilot sites in the Republic of Karakalpakstan, Kashkadarya, Navoi, Ferghana and Tashkent regions;
- Overview of International best practice on Energy Management:
- Introduction of Energy management system; Information system on EE for public buildings. Regular collecting, storing and analyzing data.
- Six (6) State Educational Standards on Energy Efficiency in buildings for the following group of students:
    - Bachelor level Education;
    - Master level Education;
- Nine (9) Educational Programs on Energy Efficiency in buildings for the following groups:
    - Bachelor level Education;
    - Master level Education;
    - Secondary-Special and professional Education;
    - Mid-career Education (retraining);
- Ten (10) training modules on Energy Efficiency for mid-career education (retraining programs);
- Design and estimate documentation on pilot energy efficient school # 2 building in Rishtan district of Fergana region with a capacity of 360 occupants;
- Design and estimate documentation for retrofitting of the secondary school #35 with the capacity of 260 occupants and construction of an additional building for 120 seats in Khatyrchi district of Navoi region;
- Design and estimate documentation for retrofitting of the secondary school #5 with the capacity of 260 occupants and construction of an additional building for 40 seats in Kanlykul district of the Republic of Karakalpakstan;
- Design and estimate documentation for retrofitting of the secondary school #20 with the capacity of 320 seats in Karshi district of Kashkadarya region;
- Design and estimate documentation for retrofitting of the rural health clinic “Oktepa” for 50 visitors per shift in Pskent district of Tashkent region;
- Design and estimate documentation for retrofitting of the rural health clinic “Dekhibaland” for 50 visitors per shift in Nurata district of Navoi region;
- Design and estimation documentation for construction of the new secondary school building in Kurgantepa district of Andijan region with the capacity of 315 occupants;
- Design and estimation documentation for construction of the new secondary school in Nurata district of Navoi region with the capacity of 216 occupants;
- Analytical paper with recommendations, developed for 8 (eight) Pilot buildings;
- Report on inefficiency of current construction and tendering policies in Uzbekistan;
- Concept paper on Integrated EE Building Design approach;
- 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

- President’s Decree # ПП-1620 dated 22.09.2011 on implementation of the “Programme for Construction, reconstruction and capital renovation of Academic lyceums, professional colleges and secondary schools for the year 2012;
- President’s Decree on “Investment Programme for the year 2012”
- Antirecession (anti-crisis) program to support economy and export promotion (President’s Decree No. УП-4058 as of 28.11.2008);
- Law of the Republic of Uzbekistan on “Rational use of energy resources”, #412-I of 25.04.1997

Annex 8: Comments by stakeholders (only in case of discrepancies with evaluation findings and conclusions)