

1. Project Data

Summary project data			
GEF project ID		3624	
GEF Agency project ID		PMIS 4158	
GEF Replenishment Phase		GEF-4	
Lead GEF Agency (include all for joint projects)		UNDP	
Project name		Promoting Energy Efficiency in Public Buildings in Uzbekistan	
Country/Countries		Uzbekistan	
Region		Europe and Central Asia	
Focal area		Climate Change	
Operational Program or Strategic Priorities/Objectives		Strategic Objective CC – 1 “To promote energy-efficient technologies and practices in the appliances and buildings (TE, p.19)	
Executing agencies involved		Gosarchitectstroy - State Committee for Architecture and Construction of the Republic of Uzbekistan	
NGOs/CBOs involvement		No involvement	
Private sector involvement		through consultations (Construction companies, TE, p.17)	
CEO Endorsement (FSP) /Approval date (MSP)		08/06/2009	
Effectiveness date / project start		10/28/2009 (TE, p.6)	
Expected date of project completion (at start)		12/31/2014	
Actual date of project completion		06/30/2015	
Project Financing			
		At Endorsement (US \$M) (TE, p.1)	At Completion (US \$M) (TE, p.1)
Project Preparation Grant	GEF funding		
	Co-financing		
GEF Project Grant		2.91	2.91
Co-financing	IA own	0.27	0.72
	Government	10.2	77.21
	Other multi- /bi-laterals		0.25
	Private sector		
	NGOs/CSOs		
Total GEF funding		2.91	2.91
Total Co-financing		10.47	78.18
Total project funding (GEF grant(s) + co-financing)		13.38 (TE, p.1, the figure reported by TE has mathematical mistake)	81.10
Terminal evaluation/review information			
TE completion date		09/2015 (TE, p.1)	
Author of TE		Dr. Adil Lari, Natalya Shulgina	
TER completion date		03/11/2016	
TER prepared by		Chenhao Liu	
TER peer review by (if GEF EO review)		Molly Watts	

2. Summary of Project Ratings

Criteria	Final PIR	IA Terminal Evaluation	IA Evaluation Office Review	GEF EO Review
Project Outcomes	HS	HS	NR	S
Sustainability of Outcomes		L	NR	ML
M&E Design		S	NR	MS
M&E Implementation		HS	NR	S
Quality of Implementation		HS	NR	S
Quality of Execution		HS	NR	S
Quality of the Terminal Evaluation Report		-	-	S

3. Project Objectives

- 3.1 Global Environmental Objectives of the project:

“The project aims at reducing 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 promoting 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 approaches through two demonstration projects.” (PD, p.1)

- 3.2 Development Objectives of the project:

The Project Development Objective (PDO) is “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 (IBD) approach through demonstration projects.” (TE, p.13)

The project immediate objective is to reduce energy consumption and associated GHG emissions of new and existing buildings in the education and healthcare sectors. (TE, p.29) The project has five expected outcomes: (TE, p.13)

Outcome 1: to strengthen norms and regulations applicable to both new and reconstructed buildings, “building in” efficiency into design;

Outcome 2: to establish a highly-visible energy audit, management and certification schemes in public sector buildings;

Outcome 3: to 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: to demonstrate the concept of integrated building design in two new and six re-constructed buildings;

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

- 3.3 Were there any **changes** in the Global Environmental Objectives, Development Objectives, or other activities during implementation?

There were no changes in global environmental objectives, development objectives, and project outcome components. But following the MTR in 2012 there has been some minor adjustments to project indicators to reflect the ongoing change of project context and need. For example, indicator “80 audits are carried out annually (40 in schools and 40 in hospitals) by the end of the project” under project component 2 “Government is aware of performance in existing healthcare and educational facilities and can prioritize investments in efficiency” was updated to “National program on energy performance certification, including energy audit for public buildings drafted, accepted by Gosarchitectstroy, and submitted to the Cabinet of Ministers of Uzbekistan for adoption as an official Resolution”(PIR 2012, DO/ PIR 2013, p.7)

4. GEF EO assessment of Outcomes and Sustainability

Please refer to the GEF Terminal Evaluation Review Guidelines for detail on the criteria for ratings.

- Relevance can receive either a Satisfactory or Unsatisfactory rating. For Effectiveness and Cost efficiency, a six point rating scale is used (Highly Satisfactory to Highly Unsatisfactory), or Unable to Assess. Sustainability ratings are assessed on a four-point scale: Likely=no or negligible risk; Moderately Likely=low risk; Moderately Unlikely=substantial risks; Unlikely=high risk. In assessing a Sustainability rating please note if, and to what degree, sustainability of project outcomes is threatened by financial, sociopolitical, institutional/governance, or environmental factors.

Please justify ratings in the space below each box.

4.1 Relevance	Rating: Satisfactory
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In a binary scale (relevant/irrelevant), The TE rated the project’s relevance as “Relevant”. In a binary scale (Unsatisfactory/Satisfactory), this TER will rate the project’s outcome relevance as “Satisfactory”. The project is consistent with relevant strategic priorities for development at the national and international level.

The project belongs to GEF’s climate change focal area and was consistent with GEF Strategic Objective CC – 1 “To promote energy-efficient technologies and practices in the appliances and buildings” (TE, p.19) The project was also consistent with the Uzbekistan’s relevant policy priorities for development. For example, the Law on Rational Use of Energy from 1997 outlined key priorities and instruments of national energy efficiency policy, including the development of energy efficiency norms and standards and mandatory energy audit. The project also contributed to the Anti-recession (anti-crisis) programs to support the economy and increase of export (President’s Decree No. UP-4058 as of 28.11.2008). (TE, p.21) The project is also related to several sector-specific energy efficiency programs focusing on the public sector currently undergoing development at the Uzbekistani government. (TE, p.20)

4.2 Effectiveness

Rating: Satisfactory

The TE rated the project's outcome effectiveness as "Highly Satisfactory". In the same rating scale, this TER will rate the project's outcome as "Satisfactory". Based on the evidence presented by the TE, a significant portion of project targets were fully achieved, with the rest on the track for full achievement or at least partly achieved. A comparison of the project's achievements against the targets of its indicators is presented below: (TE, p.29-36)

Project immediate objective: Reduce energy consumption and associated GHG emissions of new and existing buildings in the education and healthcare sectors. Target 1 of "thermal energy demand reduced to an average of 140 and 150 kWh/m² (by 25%) for new and retrofitted buildings respectively" was achieved. As the result of the legislation developed by the project and enacted in 2011, all publicly funded buildings and renovations are required to achieve the 2nd level of thermal performance which realizes heat energy consumptions 25-50% lower than compatible buildings built before the project. Target 2 of "by the EOP (in 2014), the project would lead to 35,000 tons CO₂ annual savings (i.e. 20-year lifecycle direct project savings of 700,000 tons CO₂)" was also achieved. By the end of the project the direct Emission Reduction calculated according to the GEF methodology (2013) was 705,000 tCO₂ annually or 15.9 million tCO₂ over the lifetime of energy efficiency measures realized during the project implementation, which exceeds the original project target by 20 times.

Outcome Component 1 was to strengthen norms and regulations applicable to both new and reconstructed buildings, "building in" efficiency into design. Target 1 of "by the end of Year 3 all healthcare and educational facilities will be constructed or reconstructed based on the updated 5 building codes using designs that ensure a minimum 25% reduction in energy consumption from the baseline year" was fully achieved. By the end of the project, 10 mandatory building codes were revised and officially adopted in 2011. All buildings and renovations using public funds were required to achieve the second level of thermal performance which realizes 25-50% (or more) energy savings. Target 2 of "approximately 20 relevant government staffs were trained in energy efficient building codes and were able to oversee implementation and provide guidance by the end of Year 2" was partly achieved. By the EOP at least 1000 architects, construction specialists, teachers and students of architecture and construction institutes have participated in master classes on code compliance and energy efficient building design, but concrete statistics were not available for the number of government staffs trained.

Outcome Component 2 was to establish a highly-visible energy audit, management and certification schemes in public sector buildings. Target 1 of "national program on energy performance certification, including energy audit for public buildings drafted, accepted by Gosarchitectstroy, and submitted to the Cabinet of Ministers of Uzbekistan for adoption as an official Resolution" was on the track of full achievement at the end of the project. 17 new state standards defining the energy performance certification systems for buildings were developed and adopted by Gosarchitectstroy covering energy audit methodologies, credentials for service providers and building energy performance labelling. Target 2 of "energy performance certificate scheme introduced in at least two pilot regions by the EOP; data

collected during certification process is available through the information system” was partly achieved. A plan for the nationwide introduction of building audit, certification and labelling schemes was being developed, and the information system to collect, store and analyze data on energy consumption of buildings has been accepted by the government and is being steadily introduced within education and healthcare facilities. Target 3 of “by Year 3, job duties of building maintenance personnel in pilot regions include energy management tasks”, was fully achieved as energy management was introduced in a few demonstration facilities with responsible personnel trained.

Outcome Component 3 was to build capacities of the building sector to meet more stringent energy performance requirements for all buildings, both in terms of design and construction technologies. Target 1 of “submitted building designs meet and exceed the requirement of more efficient codes by the end of the project (due to the project’s capacity building)” was achieved, as energy audits conducted at 10 selected new building projects has confirmed energy savings and the conformity with the new energy efficient building codes. Target 2 of “at least 300 architects trained by EOP” was achieved. By the end of the project at least 1000 architects, construction specialists, teachers and students of architecture/construction institutes and colleges were trained. Target 3 of “the country’s bachelors and master’s program in energy management expanded to cover a specialization in buildings; integrated building design introduced as a subject for architecture students” was achieved. New bachelor’s and master’s degree programs on energy efficiency in buildings were established at three universities with a sizable enrollment. Target 4 of “100% of the designs of the new and newly reconstructed public buildings meet at least second level of the revised building code KMK 2.01.04-97 by the EOP” was at least partly achieved. Energy audits conducted in 2013-2014 for 10 selected building projects confirmed conformity with the second level of revised energy efficient building codes.

Outcome Component 4 is to demonstrate the concept of integrated building design in two new and six re-constructed buildings. Target 1 of “6 energy efficient buildings were reconstructed and 2 new energy efficient buildings constructed by the end of 2012, with their energy performance documented by the end of the project and the first draft was developed by the end of 2013” was achieved (not necessarily in time). The project realized 9 demonstration buildings which showcase energy efficient building measures, designs and construction with their energy audits prepared and distributed showing achievement of 40-65% energy savings. Target 2 of “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.” was partly achieved. According to information available at the end of the project, energy audits for pilot buildings were prepared and updated regularly, and their results were made available to the public via internet and media. Target 3 of “designs and performance information of pilot buildings will be available nationally and internationally by the end of Year 4” was at least partly achieved. The TE only reported the spillover of good practices piloted to other national projects (such as the rural house design). Target 4 of “at least one new building design (public school/ rural family house) is developed fully based on IBD (Integrated Building Design, fully based means reaching the Energy Efficient level 2) submitted to the government for approval as a new typical building design to be constructed and replicated within one of the national investment programs” was fully achieved. For the national investment program ‘Housing for

Comprehensive Rural Development”, the rural family houses built were confirmed meeting energy efficiency level 2, and the designs of all 3 house types have been adopted by the government for replication.

Outcome Component 5 was to integrate the project results into standard practice in the public sector and share results with the residential and commercial sectors. The target was that guidance manuals on building codes were published and disseminated, information on energy efficiency performance of pilot projects were disseminated to potential investors in public/other sectors, and energy efficiency policies adopted by public sector administration. The target was fully achieved. The project has prepared and published 5 guidance manuals on energy efficient building design in compliance with the revised building codes and were used as educational materials in universities. The project adopted active and successful advocacy/outreach strategies, and project results were promoted and published via website, mass media, national/international exhibitions, which bring significant national and international impacts.

Overall, based on the comparison above it would be reasonable to reach the conclusion that achievement of expected project results was at a “satisfactory” level.

4.3 Efficiency	Rating: Moderately Satisfactory
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The TE rated the project’s outcome efficiency as “Highly Satisfactory”. This TER will rate the project’s outcome efficiency as “Moderately Satisfactory”. Evidence presented by relevant project documents confirmed the project’s cost-effectiveness at a satisfied level, but they also reported some evidence of inefficiency.

The TE presented certain information which depicts a picture of efficient financial management of the project. “The financial implementation of the project was professionally managed and administered (by the UNDP country office). A random review of financial records shows orderly and well-administered records.” (TE, p.26) But official financial audit was not available yet at the time of TE. The project GEF cash contribution for re/construction of pilot projects was USD 668,016, i.e. on average 17%, ranging from 14% to 23%. (TE, p.26) Project outcomes were significantly supported by co-financing from the government, which has exceeded the original plan by 650%, and there is evidence of an effective utilization of government co-financing. For example, a selection of 10 buildings built in 2013 and 2014 using government funds totaling US \$73.663 million were audited by the project and shown to comply with the level 2 of the new building codes and have energy savings between 30 and 76%. (TE, p.26-27) Overall, considering both the positive evidence of the effectively managed project finance, and a satisfied project outcome effectiveness, the project’s cost-efficiency is at a satisfactory level in general. At the same time, the TE also pointed out some shortcomings in cost-effectiveness during project implementation, such as the lack of international involvement which led to loss of opportunities for low-cost, no-cost measures which could provide substantial additional energy savings (20-35%) during the design and realization of demo buildings (under outcome component 4), (TE, p.35)

The project has undergone some minor delays at the inception phase due to initial problems with staffing, (TE, p.23) and project completion was extended for 6 months to mid-2015.

Overall, combining both the positive and unoptimistic evidence on the project's outcome efficiency a rating of "Moderately Satisfactory" for the project's efficiency is justified.

4.4 Sustainability	Rating: Moderately Likely
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The TE rated the project's overall sustainability as "Likely" based on its assessment of four sub-categories of sustainability in a 4-point scale: Financial resource sustainability (Likely); Socio-political sustainability (Moderately Likely); Institutional sustainability (Likely); Environmental sustainability (Likely). This TER will rate the project's sustainability as "Moderately Likely" after assessing the four sub-categories of sustainability below. Based on the evidence presented by the TE, the project has successfully secured its long-term impact through legislative change, capacity building and awareness raising, but the project lacks financial support both in short-term and long-term to sustain its impact.

Financial Resource Sustainability- Unlikely

The TE rated the project's financial sustainability as "Likely". This TER will rate the project's financial sustainability as "Unlikely". Relevant project documents did not identify any immediate project scale-up or replication, or proven financial commitment from any sources with the aim of sustaining the project impact. Also, the TE mentioned the lack of strong long-term financial support for the project's sustainability. (TE, p.39)

Socio-political Sustainability- Likely

The TE rated the project's socio-political sustainability as "Likely", and this TER will adopt the same rating. The TE clearly pointed out people's increasing awareness on energy efficiency in the building sector due to the project. The energy efficient and resource efficient equipment market has grown (sensors, energy efficient boilers, solar thermal systems.) and consumers have taken up the initiative. (TE, p.39)

Institutional Sustainability- Likely

The TE rated the project's institutional sustainability as "Likely", and this TER will rate the project's institutional sustainability as "Likely". The project revised building codes which secure energy saving and GHG reductions in the country's building sector. The impact of institutional change is evident in the building sector and the energy efficient technology market. Local practitioners are required to comply with these new codes in new building projects. National experts have been trained and new university programs on building energy efficiency have been implemented. (TE, p.39) Also, the government has decided to continue the institutional reform through "reviewing and updating its building codes every 5 years with the goal of further increasing energy efficiency according to market potential." (TE, p.38)

Environmental Sustainability- Likely

The TE rated the project's environmental sustainability as "Likely". This TER will adopt the same rating. The project has successfully updated the country's building codes which are the legal standards for construction obligatory to be followed in new building projects. At the same time, the project successfully raised awareness among the public on the importance of energy efficiency in the construction of buildings. These marked institutional and social change led by the project will have an irreversible and long-term impact, which are determinative to the project's long-term environmental impact especially in reducing greenhouse gas emission.

Overall, this TER's rating of "Moderately Likely" for the project's sustainability is justified.

5. Processes and factors affecting attainment of project outcomes

5.1 Co-financing. To what extent was the reported co-financing essential to the achievement of GEF objectives? If there was a difference in the level of expected co-financing and actual co-financing, then what were the reasons for it? Did the extent of materialization of co-financing affect project's outcomes and/or sustainability? If so, in what ways and through what causal linkages?

The project's initial planned level of co-financing was USD 10,470,880, but the actual level of co-financing was USD 78,186,765, indicating a materialization rate of 747%. The high percentage of co-financing within the project total cost came from the government. The government's investment in energy efficient building counts for a significant portion of the project in terms of both the project finance and outcome, and it will be sustainable after project closure. (TE, p.37-38)

5.2 Project extensions and/or delays. If there were delays in project implementation and completion, then what were the reasons for it? Did the delay affect the project's outcomes and/or sustainability? If so, in what ways and through what causal linkages?]

The project formally started in October 2009 and its original planned duration was 5 years and 2 months. The project was completed on June 30, 2015 after a 6-month extension. (TE, p.12) The project has also undergone delays at its inception phase due to minor staffing problems (TE, p.22). Relevant project document didn't identify any linkage between project delays and the projects' outcome and sustainability, nor had it specified the reasons for the 6-month extension.

5.3 Country ownership. Assess the extent to which country ownership has affected project outcomes and sustainability? Describe the ways in which it affected outcomes and sustainability, highlighting the causal link

The project's country ownership was at a high level. This is a nationally-owned project executed by a direct branch of government, and the "desire to implement mechanisms which reduce the energy consumption in buildings", which gave birth to this project, originated from the country's government itself. (TE, p.38) The TE also noted the high-level country-drivenness, as "the speed and thoroughness with which the legislative changes were developed, enacted and implemented" speaks volumes of the national commitment and enthusiasm for the changes brought about by the project, which provided a solid foundation for the project's success (TE, p.38). The project's high-level country ownership also had positive spillover to the project's sustainability. Following the project's success, in 2014 the Uzbekistani

government “resolved to review and update its building codes every 5 years with the goal of further increasing energy efficiency according to market potential.” (TE, p.38)

6. Assessment of project’s Monitoring and Evaluation system

Ratings are assessed on a six point scale: Highly Satisfactory=no shortcomings in this M&E component; Satisfactory=minor shortcomings in this M&E component; Moderately Satisfactory=moderate shortcomings in this M&E component; Moderately Unsatisfactory=significant shortcomings in this M&E component; Unsatisfactory=major shortcomings in this M&E component; Highly Unsatisfactory=there were no project M&E systems.

Please justify ratings in the space below each box.

6.1 M&E Design at entry	Rating: Moderately Satisfactory
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The TE rated the M&E design at entry as “Satisfactory” This TER will rate this area as “Moderately Satisfactory”. The project has a sound and comprehensive M&E design at entry, and its indicators are SMART, but they are less as indicators per se rather than results.

The project’s logic framework rolled out at the project start in the project documents (including the project immediate objective and the five project outcome components) was constantly observed throughout the project process for project monitoring with no significant change. Each outcome was measured by a number of indicators consistent with the SMART principle. For example, “no. of audits carried out annually” and “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” were identified as indicators for the outcome component 2 “Government is aware of performance in existing healthcare and educational facilities and can prioritize investments in efficiency”. For these indicators, their targets, indicative activities and financial inputs were all specified. However, a shortcoming of these indicators are that the majority of them are statements of results rather than real indicators, even though they are specific and effective in monitoring the project’s progress toward project targets. Also, it would be recommended if the project document could specify their source of verification.

The project documents also provided a detailed implementation plan for the project’s M&E activities, quarterly/annual reporting, Mid-Term/Terminal Evaluation, and key M&E events. Finally, the USD 106,250 was planned as the M&E budget.

Overall, considering both the strength and weakness of the project’s M&E design at entry, a rating of “Moderately Satisfactory” is justified.

6.2 M&E Implementation	Rating: Satisfactory
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The TE rated the M&E implementation as “Highly Satisfactory”. This TER will rate the M&E implementation as “Satisfactory”. Evidence presented by relevant project documents is drawing a picture of a strong and successful M&E implementation.

The most significant success of M&E implementation is the consistency project logic framework in measuring the project progress toward achieving expected outputs as compared to other similar GEF projects. All project PIRs since the project start have observed the same project logic framework in tracking the project’s process toward its targets by comparing the current status of each indicator against the its status in previous years, baseline level and the target level. The indicators under each outcome component have been also consistent over the project years, with minor adjustments made following the MTR. The PIRs have also followed standard UNDP/GEF formats by including periodic assessment of the project’s outcome achievement, project implementation, and the project finance.

The MTR was conducted in 2012, and its recommendations were adopted in the project implementation afterwards. For example, based on recommendations in the MTE, further demonstration building, a new rural house, was constructed applying Integrated Building Design and complying to level 2 of the new energy efficient building code. The house has been successfully completed and audited to verify compliance and savings. (TE, p.26) The Terminal Evaluation is comprehensive, evidence convincing with the most of its ratings well-substantiated.

Overall, a rating of “Satisfactory” for the project M&E implementation is justified.

7. Assessment of project implementation and execution

Quality of Implementation includes the quality of project design, as well as the quality of supervision and assistance provided by implementing agency(s) to execution agencies throughout project implementation. Quality of Execution covers the effectiveness of the executing agency(s) in performing its roles and responsibilities. In both instances, the focus is upon factors that are largely within the control of the respective implementing and executing agency(s). A six point rating scale is used (Highly Satisfactory to Highly Unsatisfactory), or Unable to Assess.

Please justify ratings in the space below each box.

7.1 Quality of Project Implementation	Rating: Satisfactory
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The project’s implementing agency is UNDP (UNDP Uzbekistan Country Office). The TE rated the “Quality of UNDP Implementation” as “Highly Satisfactory”. This TER will adopt the same rating. Based on the evidence presented by the TE, UNDP has successfully fulfilled its role as the project’s implementing agency.

The project builds on UNDP’s strong experience in Uzbekistan and in Central Asia in promoting sustainable energy and environmental protection while strengthening the capacity of government institutions.” (TE, p.21) The project built on the results of a number of earlier and on-going UNDP-supported projects on sustainable energy in the country, including the UNDP/Danish Government pilot project promoting the

use of solar water heating devices in public and residential buildings, and the UNDP project on the solar PV use for sustainable energy supply in remote rural communities. (TE, p.22) Relevant staffs from UNDP Uzbekistan Country office also provided important design, oversight and management support throughout the project period. (TE, p.28). The UNDP Country Office has also assumed a major role in financial management, and according to the TE “The financial implementation of the project was professionally managed and administered. A random review of financial records shows orderly and well-administered records. (TE, p.26)

The UNDP also undertook major responsibility in project monitoring. All the PIRs issued followings the standard format of UNDP and GEF, in which progress towards project development objectives, progress in project implementation, and the project’s financial status were assessed with detail information provided.

Overall, the “Satisfactory” rating of quality of project implementation was justified.

7.2 Quality of Project Execution	Rating: Satisfactory
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The project’s executing agency is Gosarchitectstroy (State Committee for Architecture and Construction) of the government of Uzbekistan. The TE rated the quality of Gosarchitectstroy’s execution as “Highly Satisfactory. Considering the evidence presented by the TE regarding the project’s overall execution process, this TER will rate the project’s overall quality of execution as “Satisfactory”. The project’s overall execution has been successful based on existing evidence presented by relevant project documents.

“Gosarchitectstroy has the authority and responsibility in developing and implementing energy efficiency codes, licensing of construction specialists, approving building designs, and supervision of building constructions. Further, Gosarchitectstroy is responsible for the implementation of the national construction and rehabilitation programs.” (TE, p.27) The Gosarchitectstroy chairs the project steering committee, and it provided office space for the project operation. (TE, p.25/28) The mandate, technical expertise, effectiveness and commitment of Gosarchitectstroy demonstrated during the project execution were given significant credit in the TE. “Gosarchitectstroy maintained active leadership and commitment throughout the project implementation, sharing responsibility with the UNDP project team in strategic planning and management of the project.” (TE, p.24) “The government of Uzbekistan and, in particular, Gosarchitectstroy, have proceeded with a resolve and commitment in implementing this project which should not be taken for granted in planning similar projects in other countries. The speed and thoroughness with which the legislative changes were developed, enacted and implemented speaks volumes for the national commitment and enthusiasm for the developments brought about by the project. “(TE, p.8) “Without the clear mandate of Gosarchitectstroy and the support of UNDP, the building codes and other project components would not have been implemented so quickly” (TE,p.28)

Overall, considering the demonstrated success of project execution, a rating of “Satisfactory” in this area is justified.

8. Assessment of Project Impacts

Note - In instances where information on any impact related topic is not provided in the terminal evaluations, the reviewer should indicate in the relevant sections below that this is indeed the case and identify the information gaps. When providing information on topics related to impact, please cite the page number of the terminal evaluation from where the information is sourced.

8.1 Environmental Change. Describe the changes in environmental stress and environmental status that occurred by the end of the project. Include both quantitative and qualitative changes documented, sources of information for these changes, and how project activities contributed to or hindered these changes. Also include how contextual factors have contributed to or hindered these changes.

The TE reported following environment change led by the project: (TE, p.39)

Energy audits conducted on 8 demonstration buildings (total of 10,500 m² heated floor area) verified emission reductions of 380 ton CO₂ per year. Energy audits conducted on 10 selected public buildings (total of 49,100 m² heated floor area) built in 2013 and 2014 (without GEF financing) verified emission reductions of 1132 tCO₂ per year. Over the lifetime of measures (20 years), these 18 buildings will save 30.4 ktCO₂. In 2014 alone, state building investment programs realized over 4 million m² of new or renovated building area. According to legislation developed, enacted and enforced under the project, this building activity is compliant to level 2 of the new codes which will lead to sizable reduction of CO₂ emission.

The project has delivered significant and sustainable impact, well above the original targets. Energy efficiency improvements implemented during the project are expected to deliver 15.9 million tCO₂ direct emission reductions over their lifetimes, exceeding the original project target by 20 times. Over 35 million tCO₂ are expected as post-project emission reductions based on the continued enforcement and incremental improvements to the codes.

8.2 Socioeconomic change. Describe any changes in human well-being (income, education, health, community relationships, etc.) that occurred by the end of the project. Include both quantitative and qualitative changes documented, sources of information for these changes, and how project activities contributed to or hindered these changes. Also include how contextual factors have contributed to or hindered these changes.

The TE clearly pointed out the increasing awareness among the public on the energy efficiency in building industry due to the project. The energy efficient and resource efficient equipment market in the country has grown (sensors, energy efficient boilers, solar thermal systems.) and consumers have taken up the initiative. (TE, p.39)

8.3 Capacity and governance changes. Describe notable changes in capacities and governance that can lead to large-scale action (both mass and legislative) bringing about positive environmental change. "Capacities" include awareness, knowledge, skills, infrastructure, and environmental monitoring

systems, among others. “Governance” refers to decision-making processes, structures and systems, including access to and use of information, and thus would include laws, administrative bodies, trust-building and conflict resolution processes, information-sharing systems, etc. Indicate how project activities contributed to/ hindered these changes, as well as how contextual factors have influenced these changes.

a) Capacities

The TE reported the following change in capacities: (TE, p.29-36)

In 2014, more than 4 million m2 new building and renovation conforming to the new code requirements was commissioned under government investment programs. (TE, p.29-30)

The project team prepared and published 5 manuals on energy efficient building design compliant to the revised building codes. (TE, p.30)

The energy audit concept has been introduced to national practitioners through demo buildings and training. The information system to collect, store and analyze data on energy consumption of buildings has been accepted by the Ministries of Health and Public Education and is being steadily introduced within education and healthcare facilities. (TE, p.31)

The Project has developed new tools and procedures for energy management within public facilities including an energy information management system. (TE, p.31) Energy management has been introduced in a few demonstration facilities and responsible people trained. (TE, p.31)

At least 1000 architects, construction specialists, teachers and students of architecture and construction institutes have participated in master classes across the country on code compliance and energy efficient building design. (TE, p.30) New bachelor’s and master’s degree programs on energy efficiency in buildings are now offered at Tashkent State University (TSTU) and the Tashkent Architecture and Construction Institute (TACI), the nation’s 2 leading institutes of higher education in building design, construction and maintenance. Approximately 200 students per year are enrolled in bachelor program and further 12 in the master program. TSTU programs have been extended to other technical universities, with approximately 400 undergraduate and 32 graduate students in new programs on energy efficiency in buildings. (TE, p.32)

9 demonstration buildings (2 new schools, 4 renovated schools, 2 renovated health clinics and a new rural house) have been constructed which showcase energy efficient building measures, designs and construction. Energy audits (before and after renovation work and following completion of new buildings) were prepared and distributed. The results of energy audits were made available in brochures which could be downloaded on the project web-site. The pilot projects were also featured in newspapers, television, seminars, conferences, trade fairs and study trips. (TE, p.33)

The project has enhanced the energy performance of 3 typical rural house designs included in the State Program ‘Housing for Comprehensive Rural Development.’ Integrated Building Design (IBD) was applied to enhance the energy efficiency of the rural house designs which included enhanced insulation, efficient

heating devices, heat recovery and solar PV and water heating. Construction was completed in 2014. The houses meet and exceed requirements of Energy Efficiency level 2. The design plans of all 3 house types have been adopted by the government for replication (TE, p.33-34)

The project has prepared and published 5 guidance manuals on energy efficient building design in compliance with the revised building codes. These guidebooks are practical instructions for building professionals and students on the new regulations and the means by which to fulfil their requirements. They were used in the education and training programs in universities. (TE, p.35)

The project has been promoted via a wide range of outreach activities including frequent appearances on television, radio, print media and internet. The project has participated in exhibitions and other events throughout the country and abroad. Posters, brochures and project promotions have been prepared with a high level of professionalism and are well-directed to target audiences. (TE, p.35)

The project has taken the lead in developing and maintaining the website www.beeca.net which is the clearinghouse for information of ongoing and completed UNDP/GEF projects on energy efficiency in buildings in the CIS region (Uzbekistan, Kyrgyzstan, Turkmenistan, and Kazakhstan) and Armenia (TE, p.35)

The project team also publicized and provided advice on energy efficiency in local media. (TE, p.35-36)

b) Governance

The TE reported following change in governance: (TE, p.29-31)

10 mandatory buildings codes have been revised under the project and officially passed and adopted in 2011. All buildings and renovations using public funds (public buildings but also subsidized residential) are required to achieve the second level of thermal performance which realizes 25-50% (or more) energy savings. (TE, p.29)

Based on project recommendations, Gosarchitectstroy has adopted and is implementing a comprehensive strategy for capacity buildings within the Department of Monitoring of Activity of Design Organizations (UMDPO). (TE, p.30)

Seventeen new state standards defining the energy performance certification systems for buildings were developed and adopted by Gosarchitectstroy. (TE, p.31)

In January 2015, President Islam Karimov issued an order for Gosarchitectstroy and the National Standards Agency (UzStandard) to develop a plan for the phased nationwide introduction of building audit, certification and labelling schemes. The work is ongoing. (TE, p.31)

8.4 Unintended impacts. Describe any impacts not targeted by the project, whether positive or negative, affecting either ecological or social aspects. Indicate the factors that contributed to these unintended impacts occurring.

Relevant project documents didn't identify any unintended impacts of this project.

8.5 Adoption of GEF initiatives at scale. Identify any initiatives (e.g. technologies, approaches, financing instruments, implementing bodies, legal frameworks, information systems) that have been mainstreamed, replicated and/or scaled up by government and other stakeholders by project end. Include the extent to which this broader adoption has taken place, e.g. if plans and resources have been established but no actual adoption has taken place, or if market change and large-scale environmental benefits have begun to occur. Indicate how project activities and other contextual factors contributed to these taking place. If broader adoption has not taken place as expected, indicate which factors (both project-related and contextual) have hindered this from happening.

The project didn't have any immediate scale-up or replication, nor has been any financial support dedicated to this area. However, the TE did mention that the implementation of new energy efficient building codes and embedding of energy efficiency in government building programs premised the long-term replication of project results. Training for professionals, new energy efficient building design curricula for University students and pilot demonstrations constructed in diverse regions "support smooth uptake and replication even outside of public building programs". (TE, p.21)

9. Lessons and recommendations

9.1 Briefly describe the key lessons, good practices, or approaches mentioned in the terminal evaluation report that could have application for other GEF projects.

The TE didn't summarize any lessons learned, but list the following good practices obtained from this project (TE, p.42-43):"

- Improving building codes is an excellent means to affect the large volume of buildings necessary to achieve substantial impact. The immense and sustainable success of the project is attributable to the endorsement and implementation of these codes with the supporting compliance and capacity building mechanisms.
- The success of the project was highly dependent on the timely implementation of expected legislation and national building programs. Delays in the common in these types of projects and represent a significant risk. The government of Uzbekistan and, in particular, Gosarchitectstroy, have proceeded with a resolve and commitment in implementing this project which should not be taken for granted in planning similar projects in other countries. The speed and thoroughness with which the legislative changes were developed, enacted and implemented speaks volumes for the national commitment and enthusiasm for the developments brought about by the project. The project management should also be commended for their role in facilitating a smooth implementation of legislation. The project management recognized the necessity that the revisions to the codes be developed within Gosarchitectstroy itself and adjusted the project activities accordingly. Essentially, the expert mandated by the project to develop the revisions was a Gosarchitectstroy employee and code expert; by allotting this expert the time and international support necessary to develop the codes within Gosarchitectstroy, the subsequent approvals and endorsement processes were simplified considerably.

- The project originated on the government side when an opportunity to embed energy savings in government building programmes was recognized. The project idea was raised by the Ministry of Economy during a meeting with UNDP in December 2007. Within two years the project was developed, approved and operational. The efficient development of the project and the quick approval by GEF helped ensure that the project activities, goals and objectives remained relevant at the national level and the dynamic and momentum was maintained.
- The 5 guidance manuals for building professionals explaining the revised standards and describing solutions and practices conforming to the new codes are useful tools supporting market uptake. These can be updated based on new code developments but also as new materials, procedures and equipment become available on the market.
- This project had a full time PR team member responsible for components 3 and 5 (revision of educational materials, creation of 5 guidance manuals for practitioners, dissemination activities including television, internet and presentations at trade shows and international conferences.) The professional and enthusiastic implementation of these activities created further dynamic and uptake of project results among government, building sector professionals, investors and the general public in Uzbekistan and in the region.
- Demonstration buildings need to strike a careful balance between showcasing new technologies and using traditional construction methods and practices. For the most part building materials and practices used in the public demonstration buildings were local – this ensured a good cost balance and a high replication potential.”

9.2 Briefly describe the recommendations given in the terminal evaluation.

The TE provided the following recommendations (TE, p.40-42):

“Recommendations for Government

- Regular update of building energy performance code requirements. The compulsory minimum building energy performance requirements need to be tightened regularly (at least every 5 years). The revised regulations are a good basis, but compared with international practice (even in other countries in the region) there is substantial potential to further reduce energy consumption from public buildings with proven cost-efficient measures. Further, the codes developed by the project are still largely based on prescriptive measures (minimum u-values of external walls, windows, floor and roof.) The transition to performance based codes (based on maximum kWh/m² per year including heating and cooling loads) needs further support and development. Performance based codes support the uptake of no-cost/low-cost energy efficiency measures such as compact building form and building orientation.

- International best practice, design methodologies and tools. Local experts need further contact with international expertise and best practice tools. If the local experts and practitioners are given adequate access to the state-of-the-art procedures, methodologies and tools, they will apply them. The procedures, calculation programs and methodologies currently being applied are outdated with little common basis for improving EE based on low-cost/no-cost measures. A spreadsheet application for building energy performance calculation (kWh/m².a) and certification which incorporates national climate data, calculation methodologies and code requirements should be developed and made widely available as a tool for students, building professionals and designers.
- Implementation of building energy management, energy audit and certification schemes. Component 2 - the implementation of building energy management, auditing, certification and labelling - required the development of a service industry which did not exist before the project. At the end of the project, the legislative base for the component was created, and the training of energy auditors and energy managers had taken place on a limited scale but the creation of the new service industry - even within a limited area as foreseen by the project document – was not realized. During project implementation it became evident that this component lacked a clear understanding of its cost-efficiency and usefulness within the national context (low energy tariffs, limited turnover of real estate) and the vision of the new market niche it intended to create. The realization of these schemes remains a gap at the end of the project. The project created the base but did not fully reach the targets foreseen in the Project Document. The post-project development of energy management, auditing, certification and labelling schemes and markets needs further monitoring and support. Up-scaling of these systems throughout the country requires additional efforts in the field of capacity building of local specialists, improvement of infrastructure, new software products, etc. This work requires additional time and effort.
- Update standard designs for schools and other public buildings using IBD. The use of standard building layouts developed prior to project implementation meant many opportunities to achieve and showcase the benefits of some proven no-cost, low-cost measures (compact building form, orientation to benefit from solar gains, etc) were not identified and implemented in the public building demonstration projects. The development and implementation of new designs for the demonstration buildings was recognized as a complex undertaking involving additional government approvals, costing exercises, potential budget shifts and delays.
- The government should apply Integrated Building Design and best-practice low-cost/nocost measures considering heating and cooling loads in the 4 climate regions of the country to prepare new standard designs for public buildings (schools and hospitals) with the potential for strong replication within governmental funded programs. Focusing on the optimal relation of investment costs to energy performance and operating costs, the target should be to implement best practice no-cost/low-cost measures within the budgets foreseen in building programs. This should be done by Gosarchitectstroy in close cooperation with international experience and best practice to enable the subsequent adoption of the new standard designs and large-scale rollout in government investment programs.

The selection process for any international experts for the EE building designs should be specific in seeking strong experience with the design, implementation and verification of low-cost/no-cost measures for energy savings in similar climate conditions.

Recommendations for UNDP

- Maintenance of project website. The project has closed efficiently. Project equipment/vehicle has been transferred for use in a national follow-up project. The operation and management of the project website which covers similar projects in 5 neighbor countries has been transferred (according to the agreement with the RTA) to the Armenian 'Improving Energy Efficiency in Buildings' Project due to be completed in 2016. This regional web-site with comprehensive information on similar building sector EE projects in the region should be maintained by integrating it into future projects in Uzbekistan and the region."

10. Quality of the Terminal Evaluation Report

A six point rating scale is used for each sub-criteria and overall rating of the terminal evaluation report (Highly Satisfactory to Highly Unsatisfactory)

Criteria	GEF EO comments	Rating
To what extent does the report contain an assessment of relevant outcomes and impacts of the project and the achievement of the objectives?	The TE compared in detail the project's targeted outcomes and the project's actual outcome achievements. It also assessed the project's impacts.	Satisfactory
To what extent is the report internally consistent, the evidence presented complete and convincing, and ratings well substantiated?	The TE report is internally consistent, evidence presented complete and convincing, with its ratings well-substantiated.	Satisfactory
To what extent does the report properly assess project sustainability and/or project exit strategy?	The TE assessed the project's sustainability, however, more detailed in this area will be preferred. The TE mentioned the projects exit strategy without further evaluating it.	Moderately Satisfactory
To what extent are the lessons learned supported by the evidence presented and are they comprehensive?	The "Lessons Learned" section was thorough and comprehensive.	Satisfactory
Does the report include the actual project costs (total and per activity) and actual co-financing used?	The TE specified the project's total costs and actual level of co-financing, but it didn't present the breakdown by activities	Moderately Satisfactory
Assess the quality of the report's evaluation of project M&E systems:	The TE evaluation of the project's M&E system was relevant, but more detailed information will be preferred.	Moderately Satisfactory
		Satisfactory

11. Note any additional sources of information used in the preparation of the terminal evaluation report (excluding PIRs, TEs, and PADs).

In the preparation of this TER, no additional documents were referred to as the source of information apart from PIRs, TE, and PD.