1

2

3

Terminal Evaluation of UNDP/GEF 'Uzbekistan - Market Transformation for Sustainable Rural Housing in Uzbekistan (PIMS 5392).

Final Report

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Project title: Terminal Evaluation of UNDP/GEF 'Uzbekistan - Market Transformation for Sustainable Rural Housing in Uzbekistan (PIMS 5392). **Country**: Uzbekistan	**UNDP PIMS ID number:** 5392 **GEF ID number**: 6913
Evaluation timeframe: June-July 2024	GEF focal area: Climate Change – CCM 2
GEF executing agency: United Nations Development Programme (UNDP) Uzbekistan.	**Implementing partner**: Ministry of Construction
GEF funding: $6 mil, UNDP $300K, co-finance $130 mil	Project start date: 11 April 2017, End date: Extended to October 2024 .

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Disclaimer

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Table of Contents

List of tables

List of Figures

120 ## Acronyms and Abbreviations

Acronym	Meaning
ADB	Asian Development Bank
CDM	Clean Development Mechanism
CER	GEF CEO Endorsement Request
CO	[UNDP] Country Office
EE	Energy Efficiency
EEPB	Energy Efficiency in Public Buildings (UNDP-GEF project)
GCF	Green Climate Fund
GEF	Global Environmental Facility
Gosarchitectstroy	State Committee for Architecture and Construction of the Republic of Uzbekistan GWh
IsDB	Islamic Development Bank
LED	light emitting diode
LIBOR	London Inter-Bank Offered Rate
MEPS	minimum energy performance standards
MRV	monitoring, reporting, and verification
NBU	National Bank of Uzbekistan
NPC	National Project Coordinator (also known as National Project Director)
NIM	National Implementation Modality
PAC	Project Appraisal Committee
PB	Project Board
PIF	GEF Project Identification Form
PIU	Project Implementation Unit
POPP	[UNDP] Programme and Operational Policies and Procedures
ProDoc	UNDP Project Document
QQB	Qishloq Qurillish Bank (transliterated in some sources as Kishlok Kurilish Bank) ((state-mandated mortgage bank for rural housing)
QQI	Qishloq Qurillish Invest (state-mandated project developer for rural housing)
QQL	Qishloq Qurillish Loyiha (state building design agency)
RE	Renewable Energy
RHP	Rural Housing Programme
SBAA	Standard Basic Assistance Agreement
SLD	Sustainable Local Development
tCO2e	tonnes of carbon dioxide equivalent
TNA	Technology Needs Assessment
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
Uzhydromet	Centre of Hydro-meteorological Service under the Cabinet of Ministers

121

122

123 ## Project information table

Project Title:	Market Transformation for Sustainable Rural Housing in Uzbekistan		
UNDP Project ID:	5392	PIF approval date	4th June 2015
GEF Project ID:	6913	CEO endorsement date:	28th November 2016
Atlas Business Unit, Award # project ID	UZB 00080813 00090382	Project document signature date (date project began):	11 April 2017
Country:	Uzbekistan	Date project manager hired:	1st: Jun 2017 – Sept 2017 2nd: Apr 2018 – Mar 2019 3rd: Mar 2019 4th: 19 Aug 2022
Region:		Inception workshop date:	24 - 25th August 2017
Focal Area:	Climate Change – CCM 2	Midterm review completion date:	15th October 2020
FA Objectives, (OP/SP):	SP2 – Promote market transformation for energy efficiency in industry and the building sector	Planned project closing date:	10 April 2023
Trust Fund:	GEF Trust Fund	If revised, proposed operational closing date:	10th October 2024
Executing Agency:	UNDP Uzbekistan		
Other Partners involved:	Ministry of Construction (formerly: State Committee for Architecture and Construction)		
Project financing	*at endorsement (Million US$)*	*at Terminal Evaluation (Million US$)*	
[1] GEF Financing	6.0	6.00	
[2] UNDP Contribution	0.3	0.45	
[3] Government	32.8	00	
[4] Other partners	97.5	282.3	
[5] Total co-financing	130.6	282.77	
Project total cost	136.6	288.77	

124

125

Executive summary

Project Description

The UNDP-supported GEF-financed Full-sized Project "Market Transformation for Sustainable Rural Housing in Uzbekistan" started in April 2017 and is currently in its final year of implementation due to be completed in October 2024. The project is funded by the GEF (USD 6 million) with co-financing from the Government of Uzbekistan, UNDP and private sector partners. The project is implemented by Ministry of Construction (formerly: State Committee for Architecture and Construction) using National Implementation Modality (NIM).

The project seeks to transform the rapidly growing rural housing sector in Uzbekistan towards a more sustainable and low-carbon development pathway by designing, piloting and scaling-up a green mortgage market mechanism, which will boost the demand for low-carbon housing among the Uzbek rural population. Rural housing provides an entry point into low-carbon and climate resilient rural development, since well-constructed rural housing that provides a comfortable indoor climate for residents and affordable heating and cooling options directly reduces exposure to these climate threats.

The objective of the project is to improve rural livelihoods in Uzbekistan by promoting the real estate market transformation towards affordable, sustainable and low-carbon rural housing. The project design builds directly on previous experience with sustainable, low-carbon and climate-resilient local development in Uzbekistan.

The project is implemented based on UNDP's NIM modality. It started in April 2017 and was originally planned to close on 10 April 2023, it was extended until Oct 10, 2024. The project was funded by the GEF (USD 6 million) with co-financing from the Government of Uzbekistan, UNDP and private sector partners planned at USD $130,665,099.

Evaluation scope

The Terminal Evaluation (TE) of the project assessed the achievement of expected project results, including both the accomplishments and the areas for improvement to enhance the sustainability of benefits and contribute to better future programming. The evaluation adhered to the UNDP/GEF Evaluation Guidelines. The TE aimed to foster accountability, transparency, and provide evidence-based insights to gauge the project's success in addressing the identified needs during its design phase. Conducted with a blend of face-to-face and online engagements, specifically in Uzbekistan in June 2024, the evaluation utilized mixed methods to gather a robust combination of qualitative and quantitative data, enhancing the reliability and credibility of its findings.

The methodology of the TE encompassed a comprehensive desk review of project documentation, semi-structured interviews with key stakeholders, and field visits to significant project sites like the rural housing supported with RE/EE by the project to collect firsthand evidence. This mixed-method approach allowed for data triangulation, increasing accuracy and informing the reliability of the evaluation results. Throughout the process, purposive sampling aimed to capture a diverse range of stakeholder perspectives, ensuring gender responsiveness and inclusivity in data collection and analysis. Analytical techniques included descriptive analysis, content analysis, thematic analysis, and quantitative analysis, all aimed at identifying common trends, themes, and quantifiable project impacts.

Evaluation Ratings Table

Table 1: Evaluation rating table

Monitoring & Evaluation (M&E)	Rating
M&E design at entry	Moderately Satisfactory (MS)
M&E Plan Implementation	Moderately Unsatisfactory (MU)
Overall Quality of M&E	Moderately Satisfactory (MS)
Implementation & Execution	**Rating**
Quality of UNDP Implementation/Oversight	Moderately Satisfactory (MS)
Quality of Implementing Partner Execution	Satisfactory (S)
Overall quality of Implementation/Execution	Satisfactory (S)
Assessment of Outcomes	**Rating**
Progress towards objective, expected outcomes and impacts	Moderately Satisfactory (S) - Progress towards objective, outcome 2, 3 and 4. Unsatisfactory (U) for outcome 1
Relevance	Highly Satisfactory (HS).
Effectiveness	Moderately Satisfactory (MS)
Efficiency	Moderately Unsatisfactory (MU)
Overall Project Outcome Rating	Moderately Satisfactory (MS) for outcome 2,3 and 4 and Unsatisfactory for outcome 1
Sustainability	**Rating**
Financial	Likely (L) for outcomes 2,3 and 4. Unlikely for outcome 1.
Institutional Framework and governance	Likely (L) for outcomes 2,3 and 4. Unlikely for outcome 1.
Socio-political	Likely (L)
Environmental	Likely (L)
Overall Likelihood of Sustainability	Likely (L) for outcomes 2,3 and 4. Unlikely for outcome 1.

Key conclusions & rating justification

The project's objective of promoting energy efficiency (EE) and renewable energy (RE) in housing has largely been achieved through the successful adoption of EE prototype housing designs, the implementation of EE building codes, and extensive capacity-building and awareness efforts. Key successes include the development of 24 EE/low-carbon house designs, completion of a Nearly-Zero Energy House, and the creation of seven new building codes with 100% compliance. However, the project failed to establish sustainable financial mechanisms for EE and RE technologies, relying heavily on grants and subsidies without a clear plan for future funding.

The project met its GHG emissions reduction targets by the project's end (63,812 t CO2 eq – 120% of the EOP target) and it partially met its 20-year GHG emissions reduction goal (64.5%). The project also achieved and outperformed its energy savings targets, achieving only 304% during the project and 169% over 20 years. This represents energy savings from the buildings construed based on the 24 prototype designs for EE and low-carbon houses that have been developed by the project, and where the GEF funding was used to cover the cost of developing these designs. The project directly benefited 6,770 individuals through the green mortgage mechanism and 26 households through the Green Loan Financial Mechanism (GLFM). It also conducted 180 energy audits, demonstrating the superior efficiency of EE/low-carbon houses. Despite these achievements, challenges remain, including a lack of regulatory and certification frameworks for energy audits and insufficient qualified energy auditors in Uzbekistan.

The project successfully reviewed four building codes and developed four new 'code compliance manuals' related to floors, roofing, thermal engineering, solar water heater, norms of energy consumption for HVAC, natural and artificial lightning and green construction to introduce stricter Minimum Energy Performance Standards for buildings. Additionally, as the government was transitioning to the green energy sources and promoting passive construction techniques two new codes on PV and passive house design were developed.

Awareness initiatives reached 5,753 individuals (37% female), although significant gaps in public knowledge about EE and RE benefits and financing opportunities persist. The project also faced critical issues with the GLFM, including no plans for post-project funding and a limited impact on the EE market due to its urban focus and lack of balanced support between RE and EE.

Adaptive management of the project has shown mixed results. While some recommendations from the Mid-Term Review (MTR) were positively addressed, others were only partially implemented. Notably, the MTR suggested reassessing component 1 by shifting focus from "green mortgages" to other project components. In response, UNDP commissioned consultants who proposed rebates for EE investments. However, the project then deviated from the proposed solution and adopted GLFM that offered partial loan principal compensation for RE and EE investments, The PMU justified shifting from the mortgage financing into the green loan support by the Government policy change, which resulted in discontinuing financing the rural construction (mortgages), however, the TE found significant concerns with the newly introduced mechanism including deviating its focus from rural to more broadly urban as a target group, limited focus on EE by allowing RE and EE technologies on equal basis, the limited contribution to EE market and most importantly that the GLFM, in the way it is designed, is not financially and institutionally sustainable option. These highlight concerns about the project's adaptive management and decision-making effectiveness.

Relevance: The project is aligned with, and embarks on, the Rural Housing Programme (RHP) to deliver sustainable rural housing, where the Government of Uzbekistan is making significant investments in new rural and peri-urban settlements through its RHP. Launched in 2009, the RHP was accompanied by a Presidential Decree, "On Additional Measures for Scaling-Up Housing Construction in Rural Areas.

Effectiveness: The project faced significant challenges that impacted implementation, including low energy prices due to subsidies, limited consumer awareness of EE and RE benefits, the restricted capacity of local EE/RE

suppliers, the COVID-19 pandemic disrupted field activities and investment engagements, high staff turnover and lengthy procurement processes further hindered progress. Despite these obstacles, the project adapted as much as possible, leveraging inclusive stakeholder engagement and the Rural Housing Programme (RHP) to align with government policies and secure co-financing.

Efficiency: Partnerships with financial institutions and the new fund under the Ministry of Energy were also crucial, mobilizing over $223 million in co-financing to cover the incremental costs of EE/RE measures. However, the $3 million spent on component 1 did not result in a sustainable non-grant mechanism as intended. The approach of providing free solar systems and subsidizing RE loans under the green mortgage and GLFM proved not cost-effective and lacked replication potential.

The project faced significant delays, largely due to high staff turnover and a nearly vacant PMU for six months, extending the project timeline from an initial six years to 7.5 years, ending in October 2024. These delays increased administrative costs for the $6 million project. Assuming full consumption of the 2024's budget, the project is expected to consume 100% of the GEF funding, with UNDP making additional cash co-funding reaching $450K (originally planned $300K). No audits have taken place over the last seven years despite the MTR comments on the financial management of the project.

Financial sustainability: The project's financial sustainability is at risk due to the lack of clear plans or allocated funds to continue the Green Loan Financial Mechanism (GLFM) and green mortgage beyond GEF resources, with no international agencies likely to support these grant-based mechanisms. While standard loans for EE/RE remain available, their uptake is limited due to subsidized energy tariffs and long payback periods. The government initiated a process of lifting subsidies which is expected to enhance the overall implementation of EE/RE policies including the uptake of EE/RE loans. However, the project's embedding of EE building codes and EE/RE prototype designs into government policies and frameworks, with integrated financing in the Rural Housing Programme (RHP) and mandatory enforcement, ensures high potential for replication and sustained impact through government channels.

Institutional sustainability: The project's sustainability is jeopardized by the lack of plans or funds for continuing the GLFM subsidies beyond the project's end in October 2024. Conversely, the strong institutional framework for EE building codes and EE/RE prototype designs, led by the Ministry of Construction and QQL, ensures these components' durability. Significant investment in capacity building, including training in energy audits and energy management, further supports the project's long-term success.

Socio-political sustainability: While awareness and adoption trends have improved, more efforts are needed to motivate consumer behaviours towards EE/RE technologies. The TE engagement with beneficiaries revealed a lack of knowledge and skills in managing installed solar systems, compounded by a scarcity of qualified suppliers and professional maintenance services in rural areas.

Environmental sustainability: The project is explicitly designed to mainstream environmental sustainability by promoting more efficient and less resource-intensive housing throughout rural Uzbekistan. The primary environmental risk involves community health and safety due to improper transport, storage, use, and disposal of

waste or hazardous materials. Although the project does not fund construction directly (funded by ADB), it has addressed this risk by including exclusionary criteria related to hazardous materials in the Green Loan Financial Mechanism Manual.

Replications through RHP and similar programmes are very likely as a result of the EE building codes and EE designs prototypes, however, at the individual level, replication is quite limited because of the large capital investment needed upfront without financial incentives, especially in light of the heavily subsidized tariffs.

Gender mainstreaming: The project successfully incorporates a gender perspective throughout all phases, ensuring equitable access and benefits for both women and men to EE/RE solutions. By prioritizing gender strategies and analysis from the outset, the project developed gender-sensitive plans and activities that address gender-related issues, disparities, and dynamics. The Rural Housing Programme (RHP) already closely monitors gender considerations, with the ADB establishing a 30% quota for loans to women. The new Green Loan Financial Mechanism (GLFM) offers more opportunities for females by increasing the subsidy level by 2.5% for women. The project mainstreamed gender into its activities, and women were appropriately represented within project management and actively participated in events, promoting gender equality across all project activities and platforms.

Co-finance: The project has significantly exceeded its co-financing targets, securing a total of USD 282,771,537 by the TE stage, bringing the total project cost to USD 286,771,537. The UNDP cash co-financing target was surpassed, increasing from $300K to $450K.

M&E: The M&E Framework includes standard UNDP-GEF items supported by sufficient resources (US$ 248,000) and clearly defined roles and responsibilities. The project board, activated in 2017 and has met 12 times in total, providing strategic guidance and oversight, including approving a project extension. However, no board meeting occurred in 2020 mainly due to COVID. Several shortcomings in the M&E systems were identified including: annual audits were not conducted over the past seven years; core indicators and tracking tools were not updated at mid-term, as noted by the MTR; the reported energy savings included inaccurate calculations from solar systems; PIRs included indirect energy savings from EE code implementation, although targets were set for direct savings only; lifetime GHG and energy savings calculations used a 25-year technology lifespan instead of the 20 years assumed in the project document; and the satisfaction survey did not include a control group, making it difficult to measure the sixth objective-level indicator as expected.

Project design: The TE team found the project design to be a mix of strengths and weaknesses, resulting in a moderately satisfactory rating. Positively, the design effectively identified and aimed to address both market and non-market barriers to incorporating energy and climate considerations in housing investments, particularly acknowledging affordability as a major obstacle. However, the project design lacked a robust feasibility analysis of the green mortgage scheme, failing to justify its impact on the market. and whether 0.3% annual reduction in the already heavily subsidised interest rate would indeed make any difference at all in the level of uptake of low-carbon housing particularly in light of the heavily subsidized electricity tariff. The project's ToC did not provide a clear pathway for market transformation, particularly through component 1. The lack of a comprehensive market

transformation framework led to significant delivery challenges and required numerous adaptive measures during implementation.

Recommendations summary table

Below recommendations take into account the timeframe available to implement recommendation. The project is so close to be operationally closed at the time of drafting this TE evaluation report (i.e until October 2024). Accordingly, the following are a mix of recommendations for corrective actions and forward-looking recommendations/ lesson learned focussed on future programming: **more details on the recommendations available in section 4.2**.

Table 2: recommendations table

#	TE Recommendation	Entity Responsible	Timeframe
1	Develop an exit plan with focus on documenting future arrangements for EE building codes, EE/RE prototype designs, land use plan recommendations, future housing loans, etc. Th	PMU	Aug-Oct 24
2	Follow up with the Ministry of Construction, Housing and Commercial Services, to ensure full endorsement of the recommendations on inclusion of energy efficiency requirements and climate considerations into existing land-use codes ShNK 1.03.02-04 related to instructions on the preparation and approval of urban planning documentation in the field of urban planning.	PMU	Aug-Oct 24
3	Develop and implement a capacity building programme focused on the participated communities (homeowners, local technicians, and community leaders)	PMU	Aug-Oct 24

1. Introduction

1.1 Purpose & scope

The Terminal Evaluation (TE) assessed the achievement of project results against what was expected to be achieved and drew lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of future UNDP programming. It measures the extent to which the Project has contributed to solve the needs identified in the design phase and degree to which implementation, efficiency and quality delivered on expected results (outputs) and specific objectives (outcomes), against what was originally planned or officially revised, thus, the TE report promotes accountability and transparency and assesses the extent of project accomplishments.

The TE assessed project performance against expectations set out in the project's Logical Framework/Results Framework and results according to the criteria outlined in the Guidance for Conducting Terminal Evaluations of UNDP-Supported, GEF-Financed Projects'[1]

The TE provides evidence-based information that is credible, reliable and useful and comply with the UNDP/GEF Evaluation Guidelines. The TE was undertaken in line with UNEG principles concerning independence, credibility, utility, impartiality, transparency, disclosure, ethical, participation, competencies and capacities. The evaluation process has been independent of UNDP and project partners. The opinions and recommendations in the evaluation are those of the Evaluator and do not necessarily reflect the position of any stakeholders.

The TE was carried out between June-July 2024 with a mix of face-to-face engagement in Uzbekistan and online engagement where needed.

1.2 TE Approach

The primary phases of the TE Implementation included the development and presentation of the TE Inception Report, TE mission for primary data collection, presentation of initial TE findings to key stakeholders and reporting.

TE inception phase

The purpose of the inception report was to define the overall approach and set out the conceptual framework to be applied in the evaluation. The inception report included the understanding of the evaluation objectives, evaluation questions and possible evidence to be generated, defined the methodology, and provides information on data sources and collection, sampling, and key indicators.

This phase included a review of project documentation, review of evaluation questions, and the establishment of criteria for assessing project outcomes. Stakeholder analysis have also been conducted to identify all parties relevant to the evaluation. The inception report has been crucial for ensuring that all parties have a clear understanding of the evaluation scope, methods, and expected deliverables.

[1] UNDP-Supported, GEF-Financed Guidance for conducting terminal evaluations, 2020. Available here.

TE mission for collecting primary data

The objective of this phase was to gather first-hand data from project sites, beneficiaries, and other stakeholders. The TE evaluation team conducted a filed visit to key project sites like the rural housing supported with RE/EE by the project to observe work done on the ground and engage directly with the project beneficiaries.

The data collected during this mission forms the backbone of the evaluation, providing essential insights into the project's implementation and effectiveness.

Presentation of initial TE findings to key stakeholders

This phase aimed to share preliminary findings with stakeholders to validate the information and gather additional feedback. A Mission wrap-up meeting & presentation of initial findings was conducted at the end of the TE mission to share preliminary findings, assessments, conclusions and emerging recommendations. The session was attended by UNDP senior management and aimed to obtain their feedback to be incorporated in the early drafts of the report. Feedback from stakeholders during this phase was used to refine and finalize the evaluation report, ensuring it accurately reflects the project's outcomes and the perspectives of those involved.

Drafting evaluation report

The final phase involved compiling this comprehensive evaluation report which includes detailed findings, conclusions, and recommendations. The report integrates all data and analyses from the evaluation process and is crafted to provide clear evidence-based conclusions about the project's effectiveness and impact. The final report is essential for accountability and learning. It is used to inform future projects, improve ongoing strategies, and fulfill reporting obligations to donors or other key entities.

Mixed methods[2] were used for the TE to generate mix of qualitative and quantitative data. The use of mixed methods has the advantage of supporting data triangulation across multiple sources, which creates the potential for increased data accuracy and credibility to inform the reliability of the evaluation results. Methods are explained in more detail below.

1.3 Methods

Data collection methods

To strengthen the robustness of the evaluation evidence, a mix method was used to generate qualitative and quantitative data to best describe project results based on the on the results framework as outlined in the project document. The evaluation used methods of document review and interviews for data collection to obtain answer all of the evaluation questions outlined in the TOR. The evaluation had three levels of data collection and validation of information:

- A desk review of project documentation where both qualitative and quantitative data have been collected.
- Semi-structured interviews with key stakeholders for qualitative data collection (Annex7 list of persons interviewed).
- Filed visit to key project sites including the rural housing projects.

[2] Mixed methods involve desk review and semi-structured interviews for data collection, and also descriptive analysis, content analysis, thematic analysis and simple quantitative data analysis in excel for quantitative indicators for data analysis.

An evaluation matrix was developed as a base for gathering of qualitative inputs for analysis. The evaluation matrix defined the objective for gathering non-biased, valid, reliable, precise, and useful data with integrity to answer the evaluation questions.

Desk review*:* The initial stage involved the review of project documentation and associated documents. An information package was provided by the project management team to the TE team. The evaluators reviewed all relevant sources of information, such as the project document, project reports – including annual reports, progress reports, project files, previous evaluations, national strategic and policy documents, and any other materials that the evaluator considers useful for an evidence-based evaluation assessment. See annex 2 for list of documents reviewed.

The key output of the desktop review was to collect data and information as potential evidence that underpin evaluation and also help the evaluator to familiarize with the work context in details. Annex 2 includes full list of documents to be reviewed.

Semi-structured interviews*:* Engaging stakeholders has been critical for the success of the evaluation. The project involved multi-stakeholders and teams in different capacities and the TE engaged with various stakeholders to cover different perspectives taking into account the principle of gender responsiveness. The TE team has taken into account the geographical coverage, representative diversity, gender balance etc. and inclusivity of key stakeholders and beneficiaries in designing the interview schedule and locations that were visited. Engaging stakeholders was done mainly based on face-to-face interviews in Uzbekistan, and where face-to-face engagement was not possible, an online engagement has been organised. See list of people consulted in Annex 4.

The main purpose of the engagement was to collect evidence that support TE process and findings and gain sufficient understanding of their perspectives on the program successes and challenges. All interviews were undertaken in full confidentiality.

Field visit: The TE evaluation team conducted a filed visit to key project sites including the rural housing projects supported with EE/RE to observe work done on the ground and engage directly with the project beneficiaries.

Sampling: Purposive sampling was used to achieve the level of rigor that is required for a robust evaluation. The evaluation responded to the existing diversity across the project stakeholder groups. In essence, the purposive approach to sampling was used to identify the key informants who are best suited to provide detailed responses to the evaluation questions, to accurately reflect given elements of the work experience. This also allowed for additional data generation at any stage of the evaluation, to facilitate results reliability and completeness.

Gender responsiveness has been integrated throughout the evaluation process including gender balance during the engagement with stakeholders by ensuring both genders are engaged, and assessing the gender integration in the project design and delivery, and ensuring that data collection and analysis are gender sensitive. The evaluation used gender-disaggregated data of personnel engaged by the project to identify barriers and differentiate roles that may be more suited to each gender. The evaluation also checked whether all "people count" indicators are gender segregated and if the project had reported women ratio in related indicators.

Data analysis methods

Data analysis was based on observed facts, evidence, and data. Findings are specific, concise, and supported by quantitative and/or qualitative information that is reliable, valid and generalizable.

Information was analysed and consulted with project team or commissioning unit., and then an evaluation report draft was developed. All analysis must be based on observed facts, evidence and data. Findings should be specific, concise and supported by quantitative and/or qualitative information that is reliable, valid and generalizable. The broad range of data provides strong opportunities for triangulation. This process is essential to ensure a comprehensive and coherent understanding of the data sets, which was generated by the evaluation.

The data analysis method involved:

Descriptive analysis: A descriptive analysis of the PROJECT was used to understand and describe its main components, including related activities; partnerships; modalities of delivery; etc. Descriptive analysis preceded more interpretative approaches during the evaluation.

Content analysis: A content analysis of relevant documents and the literature was conducted to identify common trends and themes, and patterns for each of the key evaluation issues (as the main units of analysis). Content analysis was used to flag diverging views and opposite trends and determine whether there was need for additional data generation.

Thematic analysis: Responses collected from semi-structured interviews and field visit observations were analyzed through thematic analysis, this is a method of analyzing qualitative data. The evaluator has closely examined the data to identify common themes – topics, ideas and patterns of meaning that come up repeatedly from interviews and other sources.

Quantitative analysis: A simplified analysis was conducted on all quantitative measures (for example energy savings and GHGs) by reviewing and validating project datasets on quantitative indicators. The generated statistics were used to develop emergent findings and inform the triangulation process.

Triangulation: In this evaluation, triangulation involved validation of data through cross verification from at least two sources, and evaluation findings and conclusions were synthesized based on triangulated evidence from the desktop review and interviews. This process was essential to ensure a comprehensive and coherent understanding of the data sets, which will be generated by the evaluation.

Evaluation criteria and ratings: The different scales for rating various criteria are shown in the table below in accordance with GEF-financed, UNDP Implemented Terminal Evaluation Guidelines. Detailed tables in Annex 6.

1.4 Ethical Considerations

The TE consultant was held to the highest ethical standards and was required to sign a code of conduct upon acceptance of the assignment. This evaluation was conducted in accordance with the principles outlined in the UNEG 'Ethical Guidelines for Evaluation'[3]. The evaluator ensured to safeguard the rights and confidentiality of information providers, interviewees, and stakeholders through measures to ensure compliance with legal and

[3] UNEG Ethical Guidelines for Evaluation, 2020, available here.

other relevant codes governing collection of data and reporting on data. The evaluator also ensured security of collected information before and after the evaluation and protocols to ensure anonymity and confidentiality of sources of information where that is expected. The information knowledge and data gathered in the evaluation process has been solely used for the evaluation and not be used for other purposes without the express authorization of UNDP and partners.

1.5 Limitations

The main limitations faced during the evaluation were related to the geographical distribution of the project activities and stakeholders over across Uzbekistan, this meant that the evaluators were not able to travel to all local areas in person and undertake filed visits. Alternatively, the evaluator conducted the visits for some sites, and engaged with the rest of the stakeholders in other cities virtually where appropriate. Also, some of the project materials (deliverables, minutes of meetings, others) have been made available only in Uzbek language with no translation available, this has been limiting factor to access detailed information on project written outputs.

1.6 Structure of the Report

The TE draft report follows the format suggested by the UNDP-GEF TE guidelines, with a description of the methodology, a description of the project and findings organized around: i) Project Design/Formulation; ii) Project Implementation; iii) Project Results and Impact. Conclusions, Recommendations and Lessons Learnt complete the report. Consistently with requirements, certain aspects of the Project are rated, according to the rating scale of the Guidelines. Co-financing information is presented in the chapter under financial management; and the updated Scorecard and core indicators are included in Annex 11. Comments addressed have been documented in an Audit Trail, prepared as a separate annex 12 to the TE Report.

2. Project Description

2.1 Development context

Uzbekistan is the most populous country in Central Asia, with one third of the region's population, amounting to over 36.9 million people in 2024.[4] Two thirds of this population is younger than age 30. Despite steady economic growth in the last decade, the impact of economic growth on improving livelihoods has been inadequate. Poverty rates are higher in rural areas, and while differences in the rates between rural and urban areas decreased from 8% in 2001 to 6.7% in 2013, they still exist.[5] Disparities in economic and social development remain not only between rural and urban areas but also between regions of the country. Poverty in Uzbekistan has distinct rural and regional dimensions: 49.2% of people live in rural areas[6]; 47% of the southern provinces are classified as poor, and 27% as extremely poor. This "development gap" can be

[4] STATISTICS AGENCY of the Republic of Uzbekistan, see at https://www.stat.uz/en/

[5] World Bank blogs- available here.

[6] Ministry of Economy of Uzbekistan (2011).

explained by the fact that economic growth since 2001 has occurred mainly in regions with strong manufacturing sectors, extractive industries, and modern services.

Uzbekistan's Third National Communication to the UNFCCC identifies the residential building sector among the largest energy consumer in the country; with almost half of all primary energy of the country used every year for electric and thermal supply to various building including residential. Meanwhile, specific energy consumption in buildings exceed significantly similar indices in the developed countries[7].

The development of the Rural Housing Programme is underpinned by positive economic indicators for the country as a whole: overall GDP growth was 8% in 2015, economic growth in the agricultural sector was 6.8%, and economic growth in the construction sector was 17.8% for the year. Participating banks have been consulted regarding projected mortgage demand during the development of the concept and the project documentation, and they have all stated that they forecast continued, strong demand for RHP mortgages during the project lifetime.

The overall number of new housing units in rural Uzbekistan is significantly outpacing rural housing construction in other CIS countries; construction rates of new housing per 1,000 persons in rural areas are five times higher than Kyrgyzstan, twice as high as in Kazakhstan, and 1.3 times higher than in Russia.[8]

The UNDP/GEF and the Ministry of Construction, Housing and Communal Services of the Republic of Uzbekistan project on "Market Transformation for Sustainable Rural Housing in Uzbekistan" (Project) seeks to transform the rapidly growing rural housing sector in Uzbekistan towards a more sustainable and low-carbon development pathway by designing, piloting, and scaling-up a green financial mechanism, which will boost the demand for use of energy-efficient and low-carbon technologies in residential and housing sector among the Uzbek rural population thus reducing GHG emission.

The Project objective is to provide Uzbekistan's rural population with improved, affordable, and environmentally friendly living conditions. The Project consists of four interlinked components. The first and principal component is the establishment of the green financial mechanism to incentivize and eventually scale-up the demand for low-carbon housing (Component 1). This component is supported and enabled by three complementary components related to strengthening domestic supply chain and capacities for construction of low-carbon housing (Component 2), introducing policies and regulations for low-carbon housing and settlements (Component 3), and raising public awareness about benefits and advantages of low-carbon housing (Component 4).

At an advanced stage, the green mortgage mechanism was replaced with the Green Loan Financial Mechanism (GLFM), in the form of partial subsidy of loan principal and direct partial subsidies, to shift focus from financing construction (involving many costs that are not directly related to energy saving) to 5 types of more tailored investments in energy efficiency of personal dwellings: small-scale solar PV devices, solar water heaters, walls thermal insulation, tight windows and heat pumps.

[7] Uzbekistan. National Communication (NC). NC 3. 2016. Available here.

[8] S.N. Isakulov. Roundtable presentation, Tashkent (16 June 2014).

The project is expected to leverage GHG emission reductions in a highly cost-effective manner. By covering only a portion of the relatively low additional cost of EE and Low-Carbon house construction (3-6%), it will reduce energy requirements and GHG emissions in a building by approximately 25%. Furthermore, the project will leverage more than USD 130 million in co-financing; representing a co-financing ratio of more than 20:1.

2.2 Problems that Project Seeks to Address

Energy shortages in rural areas have been increasing. Power and gas supply in the winter, in particular, is unreliable and intermittent, causing poor living conditions, health and social problems. A secondary effect of these shortages has been to force some rural populations to switch to coal (which increases rural GHG emissions); energy reliability issues also hinder long-term economic and social development. The low energy efficiency of rural residential buildings, especially individual/private homes, combined with a lack of compliance with minimum energy performance standards, have only exacerbated the need for fuel and increasing GHG emissions from the housing sector.

These residential energy issues are closely intertwined with other local development challenges in rural settlements. There is an urgent need to improve other community infrastructure as well, such as water supply and treatment (currently, more households have a natural gas connection than have a tap water connection) and waste disposal. Improving the efficiency of technologies in the rural water sector is also a priority: energy intensive water pumps create excess costs and waste scarce water both in the buildings sector and in agriculture, where there has been little change in water-intensive irrigation systems (losses are estimated at 35-45%). Problems with housing quality and comfort combined with incomplete and/or inefficient infrastructure have had a negative effect on socio-economic development in rural areas, which in turn has created pressure to migrate to urban areas.

While the rural housing market is rapidly developing, several barriers prevent the spread of low-carbon rural housing and settlements. The following table summarizes these barriers and the proposed project responses.

Table 3: Barriers to a Low-Carbon Rural Housing Market in Uzbekistan

Type of Barrier	Description of Barrier
Policy/ Regulatory	Land-use policies and regulations do not take into account low-carbon requirements. Current residential codes for rural housing are weak due to the relatively low priority of the sector in previous years, and construction practices are largely *ad hoc.*
Market-related	Domestic manufacturers may not be aware of opportunities in low-carbon construction materials and technologies due to a lack of experience in that sector (in which there was previously no real demand). Lack of experience with low-carbon technologies and approaches, as those technologies are primarily imports and may not be known to potential customers.
Financial	Higher up-front cost of low-carbon housing units compared to previous designs without insulation, efficient windows, efficient appliances, renewable energy applications. High interest rates for mortgages due to competition for investment funds with other sectors in a period of economic growth. Tariffs for fuel and power are below market rate, so when consumers save energy, they do not realize the full economic savings resulting from their

	actions. Therefore, they have less motivation to reduce fuel and power consumption (and invest in energy-saving measures and renewable resources).
Awareness	Low awareness of potential benefits (and savings in operating costs) of more efficient houses among nearly all stakeholders (government, private sector, and rural residents) stemming from the prevalent practice of *ad hoc* rural housing construction in previous years using unfired clay brick. Low-carbon technologies unfamiliar to potential manufacturers, distributers, and customers in the construction sector due to the lack of a market among this group in previous years. Low awareness of climate-related issues in rural land use planning and zoning as plans have focused primarily on urban heat supply in the past.
Capacity	Lack of capacity and knowledge to identify, plan and implement low-carbon solutions for rural settlements (e.g. how to plan and build a village with low carbon footprint, which technology to use, how to build and operate such buildings and technologies, etc.). Lack of capacity to incorporate climate change considerations into local development in rural areas due to lack of experience and the relative recent emergence of these techniques. Lack of capacity to conduct design and site checks and to enforce the newer, stricter residential building codes that will come into force during the project implementation period.

2.3 Project Description and Strategy

The objective of the proposed project is to provide Uzbekistan's rural population with improved, affordable and environmentally friendly living conditions. The total project size is estimated at approximately USD 136.7 million, with a proposed GEF/CCM contribution of USD 6 million. The project design builds directly on previous and on-going experience with sustainable, low-carbon and climate-resilient local development in Uzbekistan. Specifically, the project is designed to lower the energy intensity trajectory of Uzbekistan by building in lower energy demand in new rural homes.

The project consists of four inter-linked outcomes. They relate to introducing a green mortgage scheme for rural housing (Outcome 1), strengthening domestic supply chain and the capacity to design and construct efficient and low-carbon housing (Outcome 2), strengthening policies and regulations, particularly building codes for rural housing and rural settlements (Outcome 3), and raising public awareness about benefits and advantages of energy-efficient and low-carbon housing (Outcome 4).

By achieving these outcomes, the project is envisaged to create a favourable market environment and scalable business model for investment in both energy-efficient and low-carbon rural. The implementation of this model will lead to sizable energy savings and accompanying GHG emissions: it will reduce energy consumption directly by 8,266,185 GJ and corresponding emissions by approximately 463,894 tCO2e over a 20-year investment lifetime. In addition, the project will result in an estimated indirect reduction of GHG emissions of 891,925 tCO2e - 4.7 million tCO2e over a 20-year investment lifetime. At the same time, the project brings social benefits in the form of increased comfort to rural residents and improved air quality. Finally, the project will catalyse more than US$ 123 million in additional private and public sector financing.

The Project Document presents four interlinked components:

Component 1: Green mortgage market mechanism to scale-up demand for low-carbon housing

Under this component, the project works with national financial institutions, primarily Qishlok Qurilish Bank (Rural Construction Bank), to design, capitalise, and operationalise a green mortgage financial mechanism to incentivize the demand for more energy efficient (EE) and low-carbon houses.

The green mortgage scheme builds on and complements the existing and highly popular mortgage programme for rural housing implemented by the Rural Construction Bank. The Rural Construction Bank provides mortgages to the families wishing to buy a house under the State Investment Program "Housing for Comprehensive Rural Development" at 7% for 15 years. The demand for mortgages has been steadily increasing since 2009 and the Bank plans to further expand its mortgage operations in the next decade.

Component 2: Construction and domestic supply chain for low-carbon housing and settlements

Component 2 is designed to facilitate the implementation of the financial market scheme in component 1 by preparing and testing prototype designs for EE and low-carbon houses, strengthening the domestic supply chain and manufacturing capacities for design and construction of low carbon housing and settlements, and, more broadly, promoting application of a wide range of low-carbon technologies and approaches in the planning and construction of new rural settlements.

The project also supports the identification and promotion of materials, technologies, and techniques for low carbon housing through the Rural Technology Needs Assessment. A technology needs assessment has only once been conducted in Uzbekistan, in 2001, and is now much outdated. The TNA under this output will identify a series of environmentally and economically feasible technological solutions for energy/water/sanitation systems in rural housing and infrastructure.

Component 3: Policy and regulatory reform to enable the scale-up of low-carbon housing and settlements.

This component facilitates implementation, as well as help ensure sustainability and scaling-up of the financial mechanism introduced in component 1 by supporting the appraisal of EE and Low-carbon standard designs and introducing mandatory standards for EE and low-carbon construction, thus effectively creating sustained demand and client bases for green mortgages.

This will support the Government of Uzbekistan and, in particular, the State Committee for Architecture and Construction (Gosarchitectstroy), in developing and enforcing dedicated policies and regulations to promote and eventually mandate application of energy efficient and other "green" standards in new rural settlements. This work shall involve the following activities: revising and updating existing energy performance standards; developing more stringent building codes for new residential buildings; and proposing requirements for RE systems in these buildings.

Note that the State Committee for Architecture and Construction Gosarchitectstroy has since been absorbed in the Ministry of Construction.

Component 4: Marketing and promotion of low-carbon rural housing and settlements

Finally, component 4 helps boost public demand for green mortgages and confidence in energy efficient and low carbon housing via a series of PR and awareness raising activities both at national and local level.

Awareness-raising and outreach are provided to end-users (in particular, rural populations.). Activities under this output are designed to increase the awareness of these groups to the potential benefits (and potential savings in operating costs) of low-carbon houses and settlements. Outreach activities are designed to raise awareness of the financial mechanism developed by the project to support low-carbon houses and efficient appliances and lighting and thus generate demand for those products and services. They may also include training and education for rural residents on how to use/apply/build affordable low-carbon solutions for their homes and for sustainable solutions in the water supply and treatment and waste sectors (and possibly in the agricultural sector).

2.4 Theory of change

The project addresses the finical barriers (high upfront cost and high interest rate) by working with financial institutions under component 1 involved in existing mortgage programs to create a non-grant mechanism that will incentivise purchases of low-carbon houses and leverage the money currently spent by the government for housing construction.

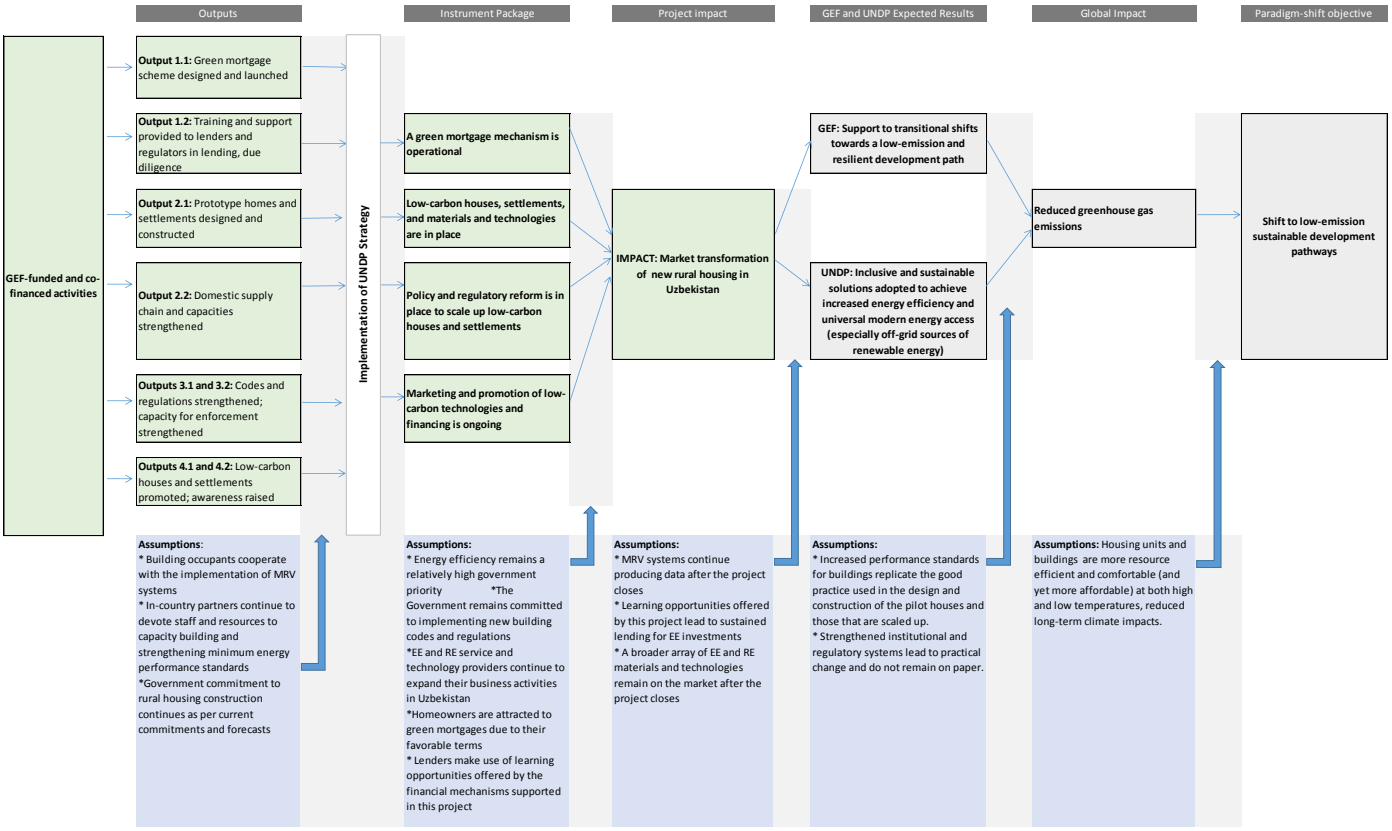
It also addresses the market-related barriers (lack of expertise in EE/RE and limited awareness of domestic manufacturers) by providing technology needs assessment, market studies, supply chain support, and demonstrating technologies in the low carbon rural houses by real life examples on the ground.

The project addresses the lack of policies and regulations enabling low-carbon land-use planning by introducing new, more stringent MEPS for rural housing and strengthen enforcement capacities of relevant bodies and new policies and regulations promoting low-carbon land-use planning.

The project consists of four inter-linked outcomes. They relate to introducing a green mortgage scheme for rural housing (Outcome 1), strengthening domestic supply chain and the capacity to design and construct efficient and low-carbon housing (Outcome 2), strengthening policies and regulations, particularly building codes for rural housing and rural settlements (Outcome 3), and raising public awareness about benefits and advantages of energy-efficient and low-carbon housing (Outcome 4).

By achieving these outcomes, the project will create a favourable market environment and scalable business model for investment in both energy-efficient and low-carbon rural. The implementation of this model will lead to sizable energy savings and accompanying GHG emissions: it will reduce energy consumption directly by 8,266,185 GJ and corresponding emissions by approximately 463,894 tCO_2e over a 20-year investment lifetime. In addition, the project will result in an estimated indirect reduction of GHG emissions of 891,925 tCO_2e - 4.7 million tCO_2e over a 20-year investment lifetime. At the same time, the project will bring social benefits in the form of increased comfort to rural residents and improved air quality. Finally, the project will catalyse more than US$ 123 million in additional private and public sector financing.

Figure 1: Project theory of change diagram.



2.5 Main stakeholders

There is a wide range of stakeholders involved with the rural housing market and the growth in the supply and demand of energy efficient and low-carbon housing in Uzbekistan. Key stakeholders in the project are listed in the table below.

Table 4: Key stakeholders of the project

Stakeholders	Roles in the project
Government Stakeholders	
Gosarchitectstroy	Gosarchitectstroy serves as the national implementing partner
Ministry of Economy	The Ministry defines the exact geographical and financial scope of the National Rural Housing Program implementation.
Ministry of Finance	The Ministry of Finance provides the annual allocation in the state budget for the National Rural Housing Program

National Bank of Uzbekistan (NBU)	The NBU will work with the project to develop and implement the green mortgage mechanism
Uzhydromet	The mandate of this State Agency includes climate change, and it oversees the preparation of National Communications and Biennial Update Reports to the UNFCCC.
The State Committee of the Republic of Uzbekistan on Land Resources, Geodesy, Cartography and State Cadastre	The State Committee oversees land-use planning issues in Uzbekistan.
State Committee for Nature Protection	The Committee develops and implements the unified nature protection and natural resources saving policy, state control over environment protection.
Regional and district municipal authorities	This group will be consulted on their capacity strengthening needs in the area of land use planning and zone, integration of climate change considerations into local decision-making.
Local self-governance units; i.e., Makhallas and Village Citizen Assemblies	The groups are consulted on their training needs in land use planning, integration of climate change considerations into local decision-making.
Employees in rural health and educational facilities	UNDP has standing relationships with rural health and educational facilities due to previous projects, and experiences from those projects have been incorporated into the design of this project.
Private sector	
Commercial Banks such as Qishloq Qurilish Bank and Ipoteka Bank	Banks are responsible for providing financing for the most feasible type of financing mechanisms to support low-carbon rural housing.
Qishloq Qurilish Loyiha (QQL)	QQL serves as the project partner for the design and construction of the pilot Nearly-Zero Energy house constructed under the project.
Manufacturers and distributors of construction materials and technologies	Representatives of the construction industry were consulted during project preparation.
Other organisations	
Organizations supporting the dissemination of efficient technologies	These organizations, such as Energy Centre Uzbekistan, the Association of Producers of Renewable Energy (APRE), and the Chamber of Commerce and Industry of Uzbekistan have all been consulted regarding their experiences in technologies for rural housing, rural infrastructure, and the construction sector.

Research organizations	The Institute of Energy and Automation has been consulted on technologies and current R&D efforts.
Academic Institutions	Tashkent State Technical University educates architects and engineers as part of its programs of study.
NGOs	The Khorezm Rural Advisory Support Service (KRASS) provided key inputs to the preparation of the project design.
Rural homebuyers and homeowners	Individual homebuyers are important stakeholders in the project, because they are both beneficiaries and investors.
Multilateral organisations	
Asian Development Bank	ADB will be consulted regularly regarding lessons learned to date under the rural housing loan and its ongoing activities in Uzbekistan.
Islamic Development Bank	The Islamic Development Bank has provided USD 100 million to support the construction of rural housing and infrastructure.
UNECE	The project team will consult with UNECE regarding its support for the Country Profile on Housing and Land Management for Uzbekistan.
World Bank	The project team will consult with the Country Office regarding the findings from its on-going projects in climate change mitigation through sustainable agriculture and in metering and energy data management.
WHO/GEF-SCCF	WHO recently concluded a 5-year, $550,000 project, "Climate Change Adaptation to Protect Human Health," in partnership with Uzhydromet.

2.6 Project timeframe and funding

The UNDP-supported GEF-financed Full-sized Project "Market Transformation for Sustainable Rural Housing in Uzbekistan" started in April 2017 and was originally planned to close on 10 April 2023, it was extended until Oct 10, 2024. The project was funded by the GEF (USD 6 million) with co-financing from the Government of Uzbekistan, UNDP and private sector partners planned at USD $130,665,099.

3. Findings

3.1 Project Design/Formulation

The TE team found that the project design comprises a mix of strengths and weaknesses making the design moderately satisfactory. At the positive side, the project design has successfully captured both market and non-market barriers towards considering energy and climate concerns in housing investments with acknowledging that affordability as the principal barrier hindering demand for energy-efficient and low-carbon housing. The project is designed to comprehensively address these barriers via a combination of policy and financial de-risking instruments and targeted financial incentives to key market players, such as homeowners.

A notable feature of the project design is that it embarks on the Rural Housing Programme (RHP) as a strong 'vehicle' to achieve its objective, where the government of Uzbekistan intended to deliver, by 2020, 2,500 new settlements, 87,000 new houses, 1,400 new social facilities (such as schools) and various infrastructure developments to rural parts of the country. The RHP has been a strong foundation acting as a 'vehicle' to drive project delivery, increase its relevance to the government policies, and ensure government ownership and contribution to the project (including co-financing).

On the other side, the project design didn't include robust feasibility analysis of the green mortgage scheme, for instance, it doesn't justify the green mortgage scheme in terms of its impact on the market, and whether 0.3% annual reduction in the already heavily subsidised interest rate[9] would indeed make any difference at all in the level of uptake of low-carbon housing particularly in light of the heavily subsidized electricity tariff. Had this sort of feasibility assessment been done during the design stage, it would have been evident at the time if the scheme was appropriate and impactful. The lack of clarity of the scheme and its role in the market have been critical elements/reason for misleading the delivery of component 1 of the project including triggering changing the strategy of this component multiple times during the implementation.

Overall, the project design and its Theory of Change (ToC) didn't provide a clear pathway for the market transformation based on all components of the project, particularly, and most importantly, through component 1. The project design is very much focused on the demand side for EE/RE solutions and little attention was paid to the supply side. The project design offers limited engagement of the suppliers and energy services companies from the private sector side. despite having a critical role in the advancing the supply side of the market and not addressing the need for increasing its maturity. The lack of market transformation framework from the design has clearly led to significant delivery issues and needed lots of adaptive measures to be taken.

Results Framework Analysis: project logic and strategy, indicators

This section provides a critical assessment of the Project Results Framework (PRF) in terms of clarity, feasibility and logical sequence of the project outcomes/outputs and their links to the project objective. It also examines the specific indicators and their target values in terms of the SMART[10] criteria.

[9] Rural Housing Programme benefit from a heavily subsidised annual interest rate of 7% (compared to an around 20% annual interest rate for non-subsidised mortgages in rural areas).

[10] SMART stands for Specific, Measurable, Attainable, Relevant, Time-bound.

Generally, Indicators and targets are found to meet the "SMART" criteria (Specific, Measurable, Achievable, Relevant, Time-bound) with minor shortcomings, the objective- level targets are appropriate and give a good sense of the scope and all that the Project intends to achieve from the outset. The PRF is found to be fit for purpose, and indicators provide a clear description of the intended target with an economy of words, and targets are largely broken down by MTR/EOP timeframe. The simplicity of the indicators provides clarity to the PMU in terms of the activities to be monitored and targets to be reached.

The indicators integrated gender disaggregation requirements where possible to open the door for gender disaggregated data collection, allowing for more effective policies and strategies that respond to the entire population.

The minor shortcomings in the PRF includes:

- Way too many indicators (22 in total of which 6 at the objective level).
- Lack of RE indicator in terms of RE capacity installed. Having this indicator with specific target would have given further clarity and guidance on the RE:EE split in terms of resources.
- The wording of some indicators could have been more consistent with the targets to avoid confusions, for example, the indicator of "*Capacity of financial institutions to design and operate dedicated financial products that are accessible to both men and women for low-carbon housing is present*" is basically around # of households accessing financial products. Simplicity of the indicators wording is critically important to guide proper monitoring processes.
- Indicator 3 under outcome 2 assesses the outcome of developing rural technology needs assessment (TNA) by measuring the number of focus groups of women is convened during the rural TNA stakeholder consultations. Organising a focus group is not at all suitable target for a needs assessment.
- There is no indicator to measure the most important impact under outcome 2 which is the rollover/application of the new designs in rural housing projects. Something like number of rural housing projects that implement the adopted designs, that would be meaningful impact to measure for this outcome.

Assumptions and Risks

Risks were articulated in project planning documents, and they generally were logical and robust at the time with some shortcomings. The prodoc defines 6 key risks that are labelled with a rating but no assessment based on impacts and likelihood. In some case, the risks, however, are backed with relevant mitigation measures. The prodoc anticipated the key risks that the project may encounter during the implementation, including, the low residential energy tariffs and the subsidized domestic price of natural gas and their impact on the demand side, however, the mitigation strategy relied on the assumption that rural communities will demand low-carbon solutions to offset the energy shortages and unstable supply of energy, and though this might be the case, the project mitigation strategy for this risk should have been around creating economically feasible case for communities.

The risk log didn't identify the market risk related to the limited capacity of private sector to play the role of suppliers and ability to provide related energy services (supply and maintenance for example). The sustainability of the provided technologies (particularly RE) will be dependent on the ability to maintain these technologies through qualified and specialised energy service companies and that is a significant risk in Uzbekistan that has not been recognised by the project design nor during the implementation stage.

Assumptions are clearly articulated in the PRF and ToC, they capture key assumptions underpinning the achievement of the outcomes, except the assumption that rural communities are going to uptake the financial solutions provided by the project. The absence of this assumption originates from the absence of comprehensive market transformation assessment as part of the design.

Also, there is no mention as to how the defined assumptions will be monitored and tested during the project implementation. This is not unique to this project, in fact the GEF-UNDP project document template allows for the assumptions to be captured in the PRF and ToC, but it doesn't include information as to how these assumptions, at least the key ones, are going to be tested and/or monitored.

Lessons from other relevant projects

The project design builds directly on previous and on-going experience with sustainable, low-carbon and climate-resilient local development in Uzbekistan. Specifically, the project is designed to lower the energy intensity trajectory of Uzbekistan by building in lower energy demand in new rural homes. The prodoc references number of relevant projects identified at the time of PPG with information as to how the project is going to build on and complement the scope of other related projects. Annex 3 of the prodoc list 6 aid-funded projects with a high level analysis of complementarities with this project.

More importantly, the RHP is the most directly relevant initiative by the Uzbekistan Government where the project embark on to reach rural communities. Also, the design builds on the UNDP-GEF project, "Promoting Energy Efficiency in Public Buildings in Uzbekistan (EEPB)," which was launched with the aim of strengthening the energy performance of public buildings and piloting more efficient construction, through which the opportunities to shift to energy-efficient and low-carbon rural housing was initially identified. The project design also established a link with the Green Climate Fund (GCF) Readiness programme at the time including strengthening the institutional capacity of national entities in Uzbekistan, with a focus on enabling direct access to climate funds.

Planned stakeholder participation

The project document outlines a long list of stakeholders and maps out their contributions and relevant to the project activities/outputs. The list identifies the stakeholders, their relevance to Project, Role in Preparation, and Role in Implementation. The prodoc identified stakeholders including partners from the national and sub-national governments.

The project strategy in engaging private sector was mainly by including the financial institutions that would play a role in facilitating the green mortgage component, but little engagement planned with private sector from the technology suppliers' side and related energy services such as maintenance and energy audits, especially that it was evident that their level maturity is limited – requiring technical support to be able to fulfill their role appropriately.

Gender responsiveness of project design

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During the project design, a Gender Analysis and Action Planning were conducted aiming to provide an overview of the gender situation in Uzbekistan, identify gender issues that may be relevant to the project, and to examine potential gender mainstreaming opportunities. The analysis was based on available data from studies conducted

by the Government of Uzbekistan, donor agencies, and multilateral development banks. It also includes targeted research supported under the Project Preparation Grant.

In addition to being GEF and UNDP requirements and standards, gender considerations are also already closely monitored under the Rural Housing Programme (RHP) that is under implementation. In the framework of its lending to the Rural Housing Programme, the international lending partner, ADB, has established a 30% quota for loans to women. Data on the gender of the applicant is collected when applications for mortgages are registered, and ADB maintains a database jointly with participating commercial banks of borrowers and co-borrowers with gender-disaggregated data.

The gender action plan focused on ensuring gender-balanced participation in the green mortgage mechanism, supporting active women's participation in the rural technology needs assessment and in supply chain strengthening activities and ensuring that user outreach, information campaign, and development of communication and dissemination strategy includes women. The action plan defined specific actions to achieve these objectives with appropriate indicators and assigned responsible institution for each action.

As far as monitoring is concerned, the project design involved monitoring the share of women and men who are direct project beneficiaries, and it will also monitor the nature of these benefits. Also, project targets and activities were set to be monitored in project reporting, both in annual reports and in the mid-term evaluation and the terminal evaluation.

The project was rated as GEN1 at the beginning, which was later reviewed and escalated, which implies that 'gender equality' is not the main objective of the expected output, but the output promotes gender equality in a significant and consistent way.

Social and Environmental Safeguards

UNDP Environmental and Social Impact Assessment (ESIA) has been delivered during the PPG stage. The ESIA of the project provides a clear definition of how the project incorporates overarching principles to enhance Social and Environmental Sustainability. It outlines the integration of a human-rights based approach and gender equality through awareness campaigns, empowering women to participate to ensure equality of opportunity and contributing to more stable job opportunities for the communities.

According to the ESIA, although the project will not directly handle rural housing and infrastructure construction (except for a single Nearly-Zero Energy pilot house), it will finance the installation of materials and equipment in rural houses and support community planning for housing and infrastructure design. The project is meant to include small-scale investments in new rural housing construction, focusing on energy efficiency and climate resilience with minimal social and environmental impacts.

Good practices in pollution prevention, abatement, and gender-sensitive participation are mandated through bilateral agreements under the Rural Housing Programme between the Government and ADB. The project plans to monitor all pilot house construction activities in addition to ongoing RHP monitoring.

Management arrangements

The Project was implemented following UNDP's National Implementation Modality (NIM), according to the Standard Basic Assistance Agreement (SBAA) between UNDP and the Government of Uzbekistan, the UNDP

Country Programme Document for 2016-2020 and the Uzbekistan – United Nations Development Assistance Framework for 2016-2020, and as per policies and procedures outlined in the UNDP Programme and Operations Policies and Procedures (POPP).

In reality, the implementation modality is considered to be 'supported NIM', which means UNDP takes lead on providing procurement and recruitment services whereas the national executing entity - also referred to as the national "Implementing Partner" in UNDP terminology - is required to implement the project in compliance with UNDP rules and regulations, policies and procedures (including the NIM Guidelines).

At the national level, the project will be executed by the State Committee for Architecture and Construction of the Republic of Uzbekistan (Gosarchitectstroy) as the National Implementing Partner. This organization was absorbed in the Ministry of Construction, and since then the ministry has been playing the role of the national Implementing Partner.

The Implementing Partner is responsible for executing this project including project planning, coordination, management, monitoring, evaluation and reporting, and designating a high-ranking official as the National Project Director who will assume responsibility for the Project on behalf of the National Government.

UNDP serves as the GEF Implementing Agency for this project. UNDP has been providing service to the Implementing Partner in support of achieving project Outcomes/Outputs. UNDP is responsible for administering financial resources in accordance with the specific objectives defined in the Project Document, and in keeping with its key principles of transparency, competitiveness, efficiency, and economy.

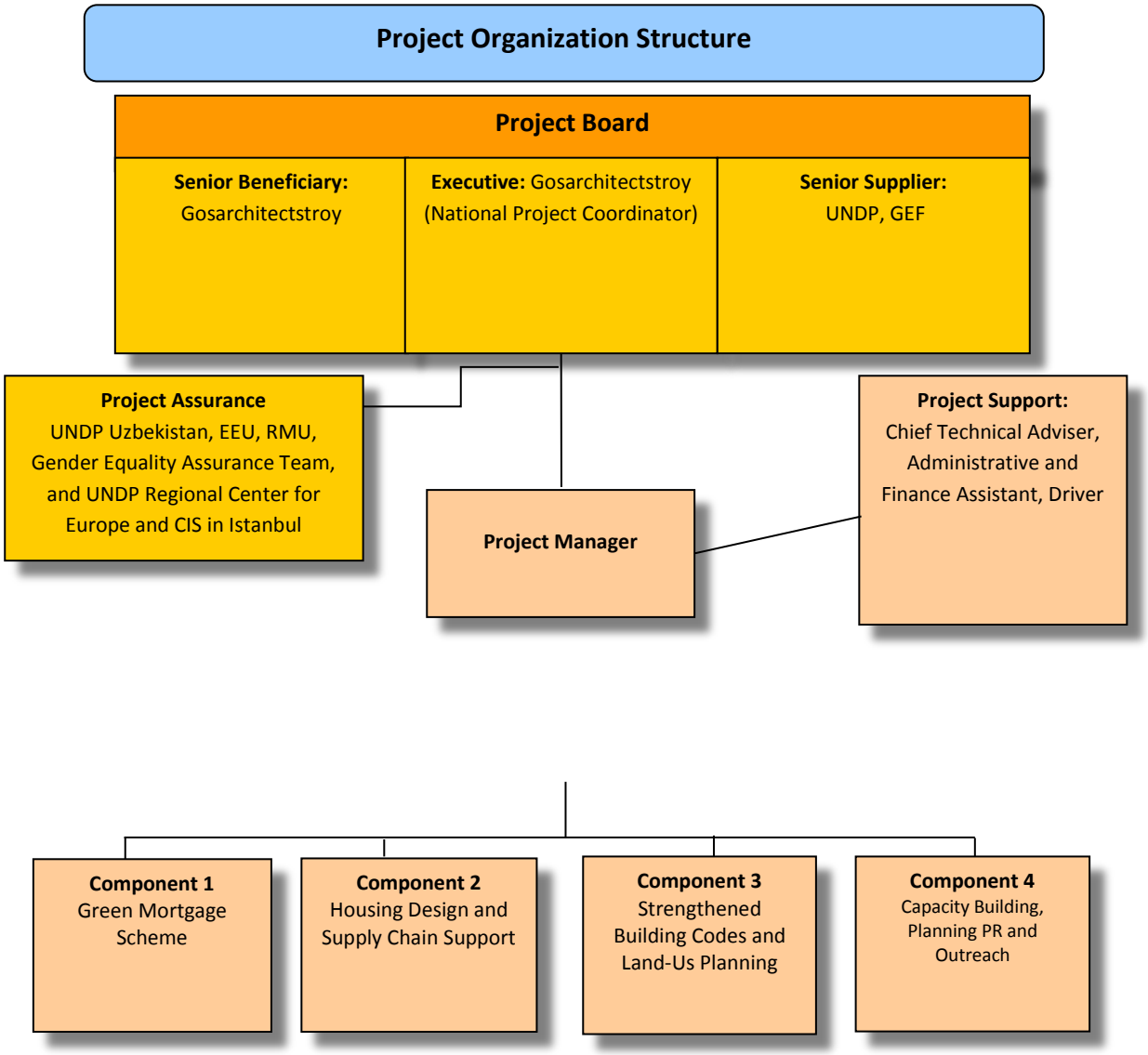
UNDP is accountable to the GEF for the implementation of this project. This includes oversight of project execution to ensure that the project is being carried out in accordance with agreed standards and provisions. UNDP is responsible for delivering GEF project cycle management services comprising project approval and start-up, project supervision and oversight, and project completion and evaluation.

The Project Board (often referred to as the Project Steering Committee) (PB) provides oversight of the Project Management Unit (PMU). The PB consists of a Chairperson (Gosarchitectstroy – now Ministry of Construction) and PSC members from various Government departments and agencies (see below). The primary function of the PB is to provide sufficient direction for the project to function and achieve its policy and technical objectives and to approve annual project plans and M&E reports.

Members of the Project Board

- Gosarchitectstroy (now Ministry of Construction) Chairman
- The Ministry of Economy Member
- The Ministry of Finance Member
- National Bank of Uzbekistan Member
- Uzhydromet Member
- The State Committee on Land Resources, Geodesy, Cartography and State Cadastre Member
- State Committee for Nature Protection Member
- Qishloq Qurilish Bank Member
- Qishloq Qulilish Loyiha Member

806 **Figure 2: Project organizational structure**[11]



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[11] Source: Project document

3.2 Project Implementation

Assessment element	Rating
Monitoring & Evaluation (M&E) Design	Moderately Satisfactory (MS)
Monitoring and Evaluation (M&E) implementation	Moderately Unsatisfactory (MU)
The overall assessment of the M&E	Moderately Satisfactory (MS)
Quality of UNDP Implementation /Oversight	Moderately Satisfactory (MS)
Quality of Implementing Partner Execution	Satisfactory (S)
Overall project implementation/execution	Satisfactory (S)

Adaptive management

GEF evaluations assess adaptive management in terms of the ability to direct the project design and implementation to adapt to changing political, regulatory, environmental, and other conditions outside of the control of the project implementing teams. The adaptive approach involves exploring alternative ways to navigate the projects towards meeting the planned objectives using one or more of these alternatives.

In case of this project, the key element of the adaptive management to be assessed is the project response strategy to the MTR recommendations. The project MTR took place early 2020 and it identified significant issues, particularly as related to component 1, that needed to be addressed with corrective actions. Given the scale of these issues, the project was placed in the enhanced oversight modality.

The MTR has provided important recommendations aiming at enhancing the project adaptive management. Overall, the project management and UNDP responded positively to the MTR recommendation by either accepting or partially accepting the 14 recommendations stipulated in the MTR report. However, the question remains regarding the quality of the management responses and whether they have resulted in an improved outcomes for the project.

The most significant recommendation (#5) was related to re-assessing the effectiveness of the entire component 1 of the project, the recommendation also involved freezing activities for "green mortgages" and focus attention on the other components of the project. In response, the project engaged a team of two consultants aiming at refining general strategy for establishing Green Loan Financial Mechanism (GLFM) and GLFM design and implementation plan. Based on which, the Project no longer develops a green mortgage scheme (as originally targeted by Component 1), but rather support focused green measures for broader eligible housing (not limited to rural areas).

The team of consultants outlined a total of 6 options that have been identified and assessed, and based on pros and cons analysis, the option of providing rebates for "Level 3" energy efficiency investments by households (option 6) was selected and recommended. The selected option was deemed to be fully consistent with the energy efficiency goals of the project. However, things took a new turn afterwards, the new Green Loan Financial Mechanism (GLFM) was developed in a significantly different direction without clear justification. The new GLFM is primarily providing partial compensation of the loan principal as a support instrument for renewable energy and energy efficiency household investments in 5 technologies. This is totally different from the recommendation made by the consultant, and poses concern over the adaptive management of the project.

The PMU justified shifting from the mortgage financing into the green loan support by the Government policy change, which resulted in discontinuing financing the rural construction (mortgages) and shift to support the

private construction sector, where the project was unable to find an entry point to deal with the private sector alone, without any partner. Thus, from PMU perspective, there was no opportunity to link energy efficiency support to any mortgage program.

There are number of concerns with the new GLFM developed, mainly:

- It shifts the focus from the rural areas into more broadly all areas including urban areas, and this is a major deviation from the project core objectives.
- It allows for RE and EE technologies on equal basis without limits on allocation for each category which has led to 100% RE outcomes based on customers preferences
- And most importantly, the GLFM, in the way it is designed, is not financially sustainable beyond the GEF funding, and there is no funding arrangements beyond the project. See section 3.3.1 of this report for more information.

In conclusion, as far as adaptive management is concerned, and despite the positive reaction to the MTR on this recommendation, the new GLFM doesn't necessarily achieve the core objective of the recommendation and key concerns remains valid on component 1 and the feasibility of the financial mechanisms.

Other recommendations of the MTR have also been responded to positively by taking immediate actions as an adaptive measures including:

- Placing the project in the enhanced oversight modality, establishing a Task Team who performed a review of selected consultancy contracts entered into by the Project. This resulted in OIA intervening and posing two action plans (Phase 1 (23 October 2020; Phase 2, 18 December 2020) with special oversight arrangements for the Project were implemented. All actions specified under the two action plans have been completed. Given the actions that UNDP has taken to mitigate risks and that the OAI has completed the investigation with the case found unsubstantiated, it was decided to return the project to regular oversight arrangements. As far as anti-corruption investigation, the TE team was informed that there is no results of this investigation is publicly available.
- Including tendering procedures in the review of the financial support mechanism for UNDP GEF low-carbon rural housing project in Uzbekistan, and UNDP prepared note to file explain the high staff turnover,
- Reviewing entry points for introducing higher energy efficiency levels to all constructions, reallocating of funding between the project components (within limitations of GEF regulations). UNDP commissioned a study that provides a comprehensive analysis and evaluation of the design and implementation of a five-story, 20-apartment residential building with 2- and 3-room units, using both brick and monolithic constructions. The project aimed to enhance thermal protection by achieving the third level of thermal insulation. Key tasks included verifying the accuracy of thermal calculations, compliance with construction standards (KMK 2.01.04-2018), and providing recommendations to address identified issues.
- Conducting Energy Audit of four types of individual single-story family houses and multi-apartment buildings.
- Raising public awareness about benefits and advantages of low-carbon housing;
- Extending the Project Board will be advised to include the following entities into the Project Board: Ministry of Energy, ADB, Mortgage Refinancing company of Uzbekistan under ADB, IsDB.

Additionally, the project had to adapt to the COVID 19 circumstances with restrictions on mobility, this meant that engagement activities had to be done virtually including the MTR.

Actual stakeholder participation and partnership arrangements

As established in the Project Document, a broad framework for stakeholder analysis was carried out at design. The main partnership arrangements with relevant stakeholders to be involved was established. The perspectives of those who would be affected by project decisions, those who could affect the outcomes, and those who could contribute information or other resources to the process were amply supported to be included in design process. The Project Documents contains evidence that captures the broad levels of participation that took place at PPG stage.

During the implementation stage, the project has been actively cooperating with stakeholders such as the Ministry of Construction, Housing, and Communal Services, the Research Institute of Technical Rationing and Standardization in Construction, the Intersectoral Extra-budgetary Energy Saving Fund under the Ministry of Energy of Uzbekistan, LLC "Qishloq Qurilish Loyiha", JSCB "Qishloq Qurilish Bank", the National Research Institute of Renewable Energy Sources under the Ministry of Energy. Recently, the Intersectoral Extra-budgetary Energy Saving Fund under the Ministry of Energy of Uzbekistan is actively cooperating with the project and signed the Responsible Party Agreement (RPA) within activities of the 1st Component. In addition, the project is closely collaborating with the Nurafshon City Administration on the pilot operation of the NZEB. Also, the association "Enterprises of Alternative Fuels and Energy" is closed.

Stakeholders' engagement was critical in the project given that the project has been working across wide spectrum of agencies to cover the policies, legislation, manufacturing, and financing agencies. From design onward the project had a healthy inclusion of some stakeholders and beneficiaries and was able to establish partnerships with emerging organizations such as the ministry of energy and the fund after government restructuring.

From private sector side, the project engaged effectively with the financing agencies bit there has been limited engagement of the suppliers and energy services companies from the private sector side.

Project Finance and Co-finance

The Project had a total planned project cost of USD $136,665,099. Planned GEF financing was to be USD 6,000,000, UNDP TRAC $300,000 and planned co-financing of USD $ 130,665,099.

The project reported that co-financing targets have been exceeded by far, with a total of USD 282,771,537 of secured co-finance by the TE stage, this brings the total project cost to USD $286,771,537 (assuming full consumption of GEF resources). The UNDP cash co-financing target has been exceeded from $300K to $450K.

Co-financing has largely come from QQB, QQL and homebuyers, as follows:

- $ 223,200,000 from Participating Banks (Qishloq Qurilish Bank, JSCB and Ipoteka Bank, JSCB) covering the Mortgages to finance the 1,588 pilot EE and Low-Carbon houses
- $ 23,420,439 from Qishloq Qurilish Loyiha, LLC (QQL) representing the design revision, site preparation, construction oversight
- $35,700,000 Homebuyers Equity - Cash down payments to finance the 1,588 pilot EE and Low-Carbon houses

These numbers have been confirmed by officials letters from QQB and QQL.

The project has not been able to obtain formal official letter about the co-financing from the Ministry of Construction and Housing and Communal Services (Gosarchitectstroy), Tashkent State Technical University and Chamber of Commerce and Industry of Uzbekistan. Also, the project reports show that Institute of Energy and Automation and Association "Enterprises of alternative fuels and energy have been closed off and no co-financing has been received from them accordingly.

Table 5: Finance and co-finance table

Co-financing (type/source)	UNDP own financing (mill. US$)		Government (Mill. US$)		Partner Agency (NGOs partners) (Mill. US$)		Private sector (Mill. US$)		Total (Mill. US$)	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Grants	0.3[12]	0.45					97.5	282.32	97.8	282.77
Loans/Concessions										
• In-kind support			32.8	00[13]					32.8	00
• Other										
Total	0.3	0.45	32.8	00			97.5	282.32	**130.36**	**282.77**

Assuming full consumption of the 2024's budget, the project is expected to consume 100% of the GEF funding, with UNDP making additional cash co-funding reaching $450K (originally planned $300K). The full spending of 2024 budget is largely dependent on the Fund's ability to spend around $800K on the green loan financing mechanism,

Monitoring & Evaluation: design at entry, implementation, and overall assessment of M&E

Assessment element	Rating
Monitoring & Evaluation (M&E) Design	Moderately Satisfactory (MS)
Monitoring and Evaluation (M&E) implementation	Moderately Unsatisfactory (MU)
The overall assessment of the M&E	Moderately Satisfactory (MS)

The M&E Framework was described in detail in Section 4 of the Project Document. It comprises standard M&E items for UNDP-GEF project such as the Inception Workshop (IW), meetings of the project board, annual Project Implementation Reviews (PIRs), audit, Mid-Term Review (MTR), Terminal Evaluation (TE), UNDP / GEF Tracking Tools and periodic Monitoring through site visits. However, the prodoc does not include a detailed Monitoring

[12] UNDP contribution

[13] Zero reported though some co-financing must have occurred

Plan that defines data collection process for the defined indicators in the PRF including data collection methods, frequency, means of verification, assumptions and responsibility for data collection.

The M&E makes no mention of the exit strategy, although it is not a standard UNDP-GEF requirement, it is however, greatly needed to demonstrate continuity between projects ending and the post project period, especially to formally confirm post project arrangements with the fund to continue delivering on the finance mechanism. The project is now in the process of recruiting a consultant for development of the exit plan.

Nonetheless, the overall design of M&E framework meets the standard M&E template for projects of this size and complexity. Overall, the evaluator found the M&E design adequate for monitoring the project results and tracking the progress toward achieving the objectives. The M&E design is backed with adequate resources (a total of US$ 248,000 including USD$ 198,000 allocated for monitoring and $ 50,000 for evaluations), the evaluation budget seems to be a bit underestimated for a project at this scale. Roles and responsibilities are clearly defined.

T**he M&E design is rated Moderately Satisfactory (MS).**

Monitoring and Evaluation (M&E) implementation: The project board was activated in 2017, it met for the first time in September 2017, and since then, it has been regularly held twice per year on average except for 2020 where there was no boar meeting held, posing a question on the approval status of the work plan and budget of 2022. In total, the board met 12 times since the launch of the project and has been providing strategic guidance on oversight based on the progress made, and the board approved endorsed the project extension as suggested by the project. These meetings address critical operational aspects such as financial sustainability, measuring project impacts, and enhancing stakeholder engagement. The decision to extend the project and prepare an annual work plan highlights the commitment to overcoming these challenges and maximizing the project's success.

The project submitted 6 PIRs in total, the first one was in 2018. The PIRs were generally fairly detailed to monitor the performance of the project and included sufficient information on the project progress. The project also responded to the MTR request and included details related to changes in project staff and turnover.

The project has also undertaken energy audits to understand the project impact including houses at various levels, to allow for meaningful comparisons and including houses that have not applied EE/RE measures.

The inception phase of any project is critical for ensuring the successful future implementation, and usually involves a). an assessment of whether any factors have changed since project development, b). finalization/review of indicators, baseline / target data in PRF if such is needed and the updating / refinement of the original multi-year workplan (plus initial AWP). In the case of this project, an Inception Workshop took place at the end of August 2017. Its goals were to refamiliarize stakeholders with the objectives, outcomes, and performance metrics of the Project; and summarize the findings, recommendations, revisions, and confirmed plans emerging from the Inception Period, including the Inception Workshop.

There are number of shortcomings identified in the implementation of the project M&E systems, including:

- The project was planned to be audited annually, however, the TE team was informed that no audits have taken place over the last seven years despite the MTR comments on the financial management of the

project. The annual audit requirement was not met by the project though it was significantly important in light of the MTR findings.

- project monitoring systems don't cover the gender action plan. The GAP is not monitored regularly, and it is hard to know the status of these activities from the provided information. However, the country office conducted gender portfolio reviews for its programme including this project. The review aims to understand gender equality programming interventions from a systems perspective, but also doesn't provide status update on the each activity defined in the gender action plan, simply because it is meant to be at a higher level not at a project level. Also, by the decision of the 6th PB Meeting and because of project activity analysis, the GEN rate was proposed to be upgraded., A s a result, the Project Gender Rating was upgraded from GEN1 to GEN2.
- Tracking tool/core indicators were not reported during the MTR which creates a gap in tracking GEF core indicators. The MTR report stated that "The tracking tool provided to the MTR team does not include an update at the project's mid-term"
- TE team reviewed the data reported on the 'energy savings' indicators, and it turned out that the project team has been reporting energy savings from the solar systems installed and funded by the project. The TE team explained that solar systems don't generate energy savings benefits and therefore should not be accounted for in reporting to this indicator. This has largely affected the reported delivery of this particular target of the project..
- Numbers reported by the project in the PIRs related energy savings included indirect saving resulting from the implementation of the EE codes, whereas the defined target is only set for direct savings.
- Lifetime GHGs and energy savings calculations have been done based on 25 years of the technologies, and that is inconsistent with the assumptions made in the project document which is 20 years lifetime of the technologies.
- The satisfaction survey didn't include a separate control group of occupants as envisaged by the sixth indicator under the objective level, and therefore, the indicator can not be measured as expected. The survey focuses solely on the satisfaction rates and experiences of the residents of energy-efficient and low-carbon houses built as part of the project.

The evaluators have had access to all the reports presented to date. The format in which the data and information are presented requires careful examination and navigation to extract relevant evidence.

The project monitoring function is critical for the project success and based on shortcomings in M&E implementation in relation to inadequate monitoring of key elements of the project the **M&E implementation is rated Moderately Unsatisfactory (MU).**

A composite ranking that considers monitoring and evaluation design at entry together with the M & E plan's implementation for the **overall quality of M&E is Moderately *Satisfactory (MS).***

UNDP implementation/oversight (*) and Implementing Partner execution (*), overall project implementation/execution (*), coordination, and operational issues

Assessment element	Rating
Quality of UNDP Implementation /Oversight	Moderately Satisfactory (MS)
Quality of Implementing Partner Execution	Satisfactory (S)
Overall project implementation/execution	Satisfactory (S)

The project has been implemented following UNDP's NIM execution modality. UNDP is the GEF Implementing Agency for the project and as such remains the ultimate responsible party towards the GEF Secretariat and Council with regard to the use of GEF financial resources – and of any cash co-financing passing through UNDP accounts.

UNDP Uzbekistan has been responsible for the overall supervision and monitoring of the project and has been providing project assurance through the country office and the UNDP-GEF and through active participation in the project board. UNDP has provided direct project services for recruitments, procurement, MTR and TE. Implementing the project activities have been handled by Ministry of Construction as an executing agency for the project.

UNDP has met (and indeed exceeded) its financial cash contribution target to the project budget (so called TRAC funding) which was planned to be $300K and so far UNDP contributed around $ 450K.

UNDP CO has been supporting the project with monitoring the financial transactions by the project in terms of delivery, meeting targets and expenditure, reporting, budget revisions and ensuring there is no over-expenditure on the project. However, the planned annual audits were not implemented by UNDP despite the MTR findings on the financial management. Also, UNDP has been dealing with high turnover rate in the project staff in some cases leaving most of the PMU positions vacant for quit long time which caused delays.

UNDP CO has taken a lead in responding to the MTR findings and recommendations, and developed and implemented a management response plan that addresses most of the recommendations. The quality of that response is discussed under 'Adaptive Management' section.

Based on this, quality of **UNDP implementation/oversight is rated Moderately Satisfactory (MS)**.

The Implementing Partner for this project is the Gosarchitectstroy which was absorbed in the Ministry of Construction during government restructuring. Despite the scale of these changes, there has been little impact on the project PMU and its operation, and the project managed to continue through these changes smoothly.

The Ministry of Constriction has been performing the role of the chair of the Project Board, and it has been responsible and accountable for managing this project, including monitoring of project interventions, achieving project outcomes, and for the effective use of UNDP resources.

The Ministry of Construction holds the Government mandate for enforcing the building codes, so their leadership on this project was important sustainability element for the future. Nonetheless, the Ministry helped the project to leverage the government strictures to engage with other ministries and local authorities when and where it was needed.

A key factor contributing to ownership has been the robust integration of the PMU within the Ministry of Construction, fostering a strong sense of ownership within the ministry. The ownership of the Project has been very strong from the start. The NPD (Director of Energy Conservation) has assigned a focal point for each component, in addition to designating a Deputy NPD for the Project, this demonstrates ownership and commitment of the MEMR towards the project and its outcomes.

Based on the above the **quality of Implementing Partner Execution is rated Satisfactory (S).**

A combined rating of **overall project implementation/execution is Satisfactory (S).**

Risk management and Social and Environmental Standards

UNDP Environmental and Social Impact Assessment (ESIA) was carried out at design so that project programming would maximize social and environmental opportunities and benefits. Also, this analysis was carried out for

ensuring that adverse social and environmental risks and impacts would be avoided, minimized, mitigated and managed. The ESIA recognises that the project focuses on structural causes of the non-realization of rights; in this case, access to affordable, modern, and comfortable housing with a reliable supply of heat and power. It also recognises that project components include activities to build the capacities of duty-bearers to fulfill their obligations, including the ability to monitor the performance of buildings and verify savings, and on the other side build the capacity of rights-holders to claim their rights by increasing the awareness of home-owners of energy-efficient and renewable home features and increasing financing options for realizing those features.

According to the SESP, the main environmental risk is related to community health and safety risks due to the improper transport, storage, and use and/or disposal of waste or any hazardous or dangerous materials. Although the project is not funding the construction per se (construction is funded by ADB) but the project considered such risk into the framework of the Responsible Party Agreement (RPA) between UNDP and the Extra-Budget Intersectoral Energy Saving Fund under the Ministry of Energy of the Republic of Uzbekistan from 10/07/2023.

The RPA stated that UNDP-GEF project does not support applicants who use substances and technologies deemed unacceptable. The RPA has also reference the use of toxic and ozone-depleting substances is prohibited in accordance with the Montreal Protocol of September 16, 1987. Specifically, products and materials based on polystyrene foam, asbestos, Dichlorodiphenyl trichloromethylmethane (DDT), and freon, or similar substances, are not allowed. Additionally, foam plastic and similar flammable and fire-hazardous materials are prohibited for thermal insulation purposes. According to the RPA, and in case of reasonable doubts about the use of toxic substances, flammable materials, or ozone-depleting substances, support will be postponed until all circumstances are clarified with the help of project experts and, if necessary, external experts.

As stated under the M&E section, the ESIA's risks have not been monitored in terms of their status and actions taken to mitigate these risks, and PIRs have no regular updates on these risks.

Regarding risk management outside the SESP framework, the project document identified 6 risks that have been monitored throughout the project life cycle. As a standard UNDP requirement, the Project Manager is to monitor risks quarterly and report on the status of risks to the UNDP Country Office. The risks log has been kept up to date through PIR and recorded in ATLAS (and new system so called Quantum). PIRs have limited information on emerging risks and mitigation measures but risks were updated during implementation semi-annually as envisaged the prodoc.

An effective risk management strategy allows the project to identify strengths, weaknesses, opportunities and threats. By planning the right mitigation measures, the project can be ready to respond when needed.

3.3 Project Results

3.3.1 Progress towards objective, expected outcomes and impacts (*)

Assessment element	Rating
Progress towards objective, expected outcomes and impacts	Moderately Satisfactory (S) - Progress towards objective, outcome 2, 3 and 4. Unsatisfactory (U) for outcome 1

Overall, the project's objective to provide Uzbekistan's rural population with improved, affordable, and environmentally-friendly living conditions has been largely achieved through the successful adoption of EE prototype designs, the implementation of EE building codes, and the capacities and awareness established by the project (under outcomes 2, 3, and 4 respectively). However, there has been no success in introducing sustainable non-grant financial mechanisms for EE/RE technologies (outcome 1).

The project met its GHG emissions reduction targets by the project's end (63,812 t CO2 eq – 120% of the EOP target) and it partially met its 20-year GHG emissions reduction goal (64.5%). The project also achieved and outperformed its energy savings targets, achieving only 304% during the project and 169% over 20 years. This represents energy savings from the buildings construed based on the 24 prototype designs for EE and low-carbon houses that have been developed by the project, and where the GEF funding was used to cover the cost of developing these designs. A total of 6,770 people (50% females) across 1,354 households in Uzbekistan have directly benefited from the financial subsidies low-carbon housing via the green mortgage mechanism in 2019-2020, and 26 households benefited from the GLFM under the Inter-branch Energy Conservation Fund Energy Fund. 5,753 individuals (37% female) have benefited from the capacity building and awareness activities across all components.

Under outcome 1, the project was meant to develop a green mortgage market mechanism to scale-up demand for low-carbon housing. The Green Mortgage mechanism was established and operated by the national mortgage bank (QQB) using GEF funds to subsidize low-carbon measures during 2019-2020. The mechanism failed to stimulate EE market transformation, as it merely provided free solar systems, spending nearly $2 million on an unfeasible approach. Consequently, work on this component was paused, and a new Green Loan Financial Mechanism (GLFM) was developed by the project. The GLFM, started in July 2023, offers partial loan principal compensation for renewable energy and energy efficiency investments in five technologies.

The TE found that there are critical concerns with the GLFM, including 1) no plans to fund the GLFM beyond GEF funding; 2) The GLFM does not balance support between renewable energy (RE) and energy efficiency (EE), with 100% funding going to RE so far; 3) the GLFM's focus on RE limits its impact on the EE market; 4) The GLFM extends to urban areas, with equal focus on vulnerable rural communities which undermines the project's aim to target the most vulnerable in rural areas; and 5) There are no defined post-project arrangements for GLFM operations and financing. These challenges mean that the GLFM may not continue beyond the project, however, the RE/EE financing on normal standards (i.e without incentives) will continue to be available for communities on a business as usual scenario.

The original Project design intended to allocate only 5% of Component 1 support to RE, with the remaining 95% to EE measures due to their superior cost-efficiency (out of $ 3 mil). However, the project deviated significantly

from this plan, fully allocating its support to PV systems under the green mortgage mechanism, and similarly, under the new GLFM where 100% of the allocated funding has been used for RE, with 0% used for EE so far, simply because RE is more attractive for people and no limits set for each category by the finance mechanism. Nonetheless, 1,354 households (approximately 6,770 people, half of which females) benefited from purchasing low-carbon housing via the green mortgage mechanism in 2019-2020, and PV system via the GLFM under the fund in 2023-2024.

Under component 2, the project has collaborated closely with Qishloq Qurilish Loyiha (QQL) and developed a total of 24 prototype designs for EE and low-carbon houses, which are now nationally approved. These designs have already been implemented in several sites across the country. These designs are important achievements by the project to implement EE/LC measures on the ground effectively. Also, the project constructed a model Nearly-Zero Energy Houses (NZEH) (2 floors, 6 rooms, total area 164 m2) which incorporates elements of passive design and demonstrate EE/RE technologies, materials, and design principles. The house is fully constructed and demonstration event was held in September 2022 through local media covering all regions in Uzbekistan. The NZEH was also demonstrated during the International Youth Technical Summit (held on May 21-22 in Namangan, with participation by 215 people, including 92 girls / women) and at the workshop on the "Experience of foreign and domestic manufacturers in the development of energy-saving heat-insulating materials" (with participation by 56 people, including 12 women).

The project conducted 180 audits across different types of houses allowing for comparison between houses with and without EE measures. The results of energy audit showed that EE/LC houses consumed at average 134 kWh/m2 per year compared to 426 kWh/m2 that of non-energy efficient house. The heat resistance of EE/LC houses external wall was 3 times higher than that of non-energy efficient house.

It should be noted that energy audits in Uzbekistan are challenged with absence of regulatory and certification framework of energy audits, and also limited qualified energy auditors available in the market, and this will continue to be a barrier for future energy efficiency projects. In recognition of this challenge, the project conducted ToT training targeting the Ministry of Constriction and other Government institutions on the energy audits – with a hope that this triggers reforming energy audit framework and transfers skills into the private sector in the future, however, no plan in place to pursue this line of development.

The project developed TNA with aim to evaluate the existing market conditions and identify necessary supply-chain enhancements for the implementation of the State Programme on Affordable Rural Housing in Uzbekistan. It aims to improve the energy efficiency and sustainability of rural housing in Uzbekistan by integrating modern materials, technologies, and designs. The TNA assessed the current status of the market, identified the institutional, financial, and informational barriers hinder the adoption and scale-up of energy-efficient technologies, and also outlines the supply-side limitations include underdeveloped production ca

The TNA process involved conducting six women focus group meetings with total of 156 women participated across three regions: the Republic of Karakalpakstan, Ferghana Valley, and Kashkadarya Province. Each focus group comprised women from various social and occupational backgrounds, including medical personnel, teachers, bank employees, entrepreneurs, farmers, housewives, and beneficiaries of the state rural housing

program. These meetings aimed to assess women's needs for energy-efficient and low-carbon technologies in their households and to identify barriers and limitations to the adoption of such technologies.

The project delivered training to the participants in the construction process in each region to ensure full support of the construction and reconstruction processes, as well as effective control over the quality of construction and installation works. Also, the Project together with the Ministry of Construction conducted an exhibition of EE and LC materials for the experts of design institutes, 56 participants including 12 women attended.

Under component 3, the project developed 7 building codes (floors, roofing, thermal engineering, heating/ventilation and AC, PV and passive house design) that are fully adopted and being enforced, 3 code compliance manuals to support designers and construction professionals in the application of requirements (thermal engineering, solar water heaters, and heating/ventilation and AC), and 3 illustrated building design manuals (solar radiation calculation methodology, facade shading systems and green Roofs and Facades). Additionally, an Energy auditing methodology for residential buildings is developed and submitted for review to the Ministry of Construction, Housing and Communal Services and Ministry of Energy.

The enforcement and compliance process of building codes in Uzbekistan is reassuring. Construction and reconstruction of buildings and structures without formal approvals are prohibited, and this means that all residential and non-residential constructions are going through a process to obtain approval on the design at the beginning which represent the first step in the process to ensure compliance with the building codes. Also, the direct registration of construction and installation works is carried out by the Territorial Control Inspectorates in the field of construction. Non-compliance with building codes will affect obtaining a permit for the use of the facility on which construction and installation works have been completed. So far, there have been no non-compliance cases reported which implies 100% compliance with the new codes.

Energy audits of multi-apartment buildings – including baseline, EE, and LC buildings – are conducted for summer and winter periods in 2020-2023 to verify the compliance of building envelopes of those buildings with EE requirements. These audits confirmed that EE building codes were implemented to varying extents. For instance, in some regions, typical buildings showed lower energy efficiency compared to those designed with EE features. Energy-efficient buildings generally demonstrated better performance in terms of energy consumption for heating and hot water supply compared to typical buildings. The energy audits revealed significant differences in energy consumption between typical and energy-efficient buildings. The audits highlighted that energy consumption patterns varied significantly between summer and winter periods. Winter measurements provided critical data for assessing the thermal performance of building envelopes and the efficiency of heating systems.

The project also invested in building the capacities of the local specialists (architects, builders, designers, etc.) who were trained on code compliance, EE/LC design, planning, and use of relevant guidance manuals. A total of 1,658 including (223 females) trained. A study tour to Germany was organized for 11 representatives (1 woman) of 8 ministries and agencies to learn about the Passive House concept and best practices for energy-efficient buildings.

In close collaboration with the government design institution "Uzshaharsozlik LITI", which is responsible for reviewing two existing land-use plans, the project developed recommendations on inclusion of energy efficiency

requirements and climate considerations into two existing land-use codes ShNK 1.03.02-04 and ShNK 2.07.01-03. In June 2023, improved two codes are submitted to the Ministry of Construction, Housing and Communal Services for final review and approval, one of which is approved until this point. The project has provided training to local design specialists in August and September 2019 to increase their capacity to developed land use plans.

Under component 4, the project used the local master plan as an avenue to emphasize the importance of public participation in the development and approval of master plans for settlements. This includes multiple stages of public discussion, collection of opinions, and integration of community feedback into the final plan to advocate for the master plans to include considerations for minimizing environmental impacts, promoting energy efficiency, and integrating renewable energy sources. 32 communities (makhallas) took steps to incorporate climate change considerations into decision-making. The project delivered trainings on Master Plan Development aiming to enhance the capacity of local officials and community leaders in Uzbekistan on the development and implementation of master plans for rural settlements. These included mechanisms such as makhallas committees, which are local self-governing bodies, play a crucial role in representing community needs and facilitating public participation in decision-making processes.

There has been significant increase in the level of awareness of EE and low carbon housing and infrastructure through multiple avenues such as awareness workshops conducted in 10 regions, master plan training, training for journalists and science-based knowledge through the rural resource centers. However, based on the TE team engagement with beneficiaries, it has become evident that more awareness remains needed for the households on the energy efficiency and renewable energy and the associated benefits. These observations are also consistent with the awareness survey findings where 56.6% of the survey respondents (n=1,579) are unaware of the benefits provided when using RES and 82.3% believe knowledge on energy efficiency and RES should be included in educational programs. Also more awareness needs to be raised regarding the existing opportunities for financing EE/RE technologies, this is also supported by the survey result of only 14.6% of the survey respondents (n=1,579) are aware of the green loans available.

The project developed a communication Strategy for Raising Awareness on Energy-Efficient and Low-Carbon Rural Housing and Green Mortgage Lending in Uzbekistan, it outlines a comprehensive plan to increase public awareness and understanding of sustainable housing practices. The strategy includes a variety of activities such as educational programs, contests, interactive events, and promotional campaigns. All actions are designed to be interactive and engaging, targeting different audience groups effectively.

A total of 236 references about the project's activities have appeared in local and national media, including television, radio, newspapers, magazines, official websites of the Ministry of Construction and communal services and UNDP, as well as social networks including Facebook and Twitter. In addition, the project developed and presented animation videos at every event as well as public meetings on a regular basis. Moreover, the project conducted a contest among journalists and bloggers on the topic "Energy Efficient Buildings and Gender Mainstreaming - the key to sustainable development". About 100 mass media products were received and only 5 winners were selected.

Project Objective: To provide Uzbekistan's rural population with improved, affordable and environmentally-friendly living conditions.

Indicator Obj1: Total Lifetime Direct and Indirect GHG Emissions Avoided (t CO2eq). TE target: Direct GHG emissions avoided: 52,941 t CO2eq reduced or avoided calculated during the project lifetime from the EE and RE measures implemented and from strengthened building codes. Total direct GHG emissions avoided: 465,267 t CO2eq over an assumed technology and materials lifetime of 20 years. Indirect GHG emissions avoided: 891,925 t CO2e - 4.7 million t CO2e over 20 years, representing bottom-up and top-down estimates, respectively

Indicator obj 2: Lifetime energy saved (expressed in GJ). TE target: The project achieves energy savings of at least 939,250 GJ during the project lifetime, or 8,266,185 GJ over the of 20-year building lifetimes from direct investment, code strengthening and other measures facilitated by the project.

The cumulative estimated GHG emission reductions achieved by project as follows:

- 63,812 tons of direct CO2eq emissions reductions through the end of the project (October 2024). This figure arises from both EE and RE measures in the 1,328 LC housing units constructed in 2019-2020 for which the project issued direct subsidies for LC equipment via the green mortgage mechanism.
- 300,338 tons of direct CO2eq emissions reductions over a 20-year technology and materials lifetime. This figure arises from the same 1,328 housing units supported in 2019 and 2020.
- 9.8 million tons of indirect (consequential) lifetime CO2eq emissions reductions. This figure arises from 1,077 pcs of multistory EE houses constructed in 2019-2021 for which the project provided indirect support as they were built based on EE designs which were financed by the project, but without direct subsidies. This figure does not include the 1,328 housing units for which the project provided direct financial assistance[14].

The cumulative estimated energy savings achieved by the project as of June 30, 2023, are as follows:

- 2,858,347112GJ of direct energy savings during the project lifetime (until October 2024). This represents energy savings from the buildings construed based on the 24 prototype designs for EE and low-carbon houses that have been developed by the project, and where the GEF funding was used to cover the cost of developing these designs...
- 14,004,716GJ of direct energy savings over the 20-year building lifetimes. This represents energy savings from the buildings construed based on the 24 prototype designs for EE and low-carbon houses that have been developed by the project, and where the GEF funding was used to cover the cost of developing these designs..

The energy savings reported in the TE are significantly less than those reported in the PIR. There are two main reasons for such discrepancy 1) the project team reported 'indirect' savings resulting from the implementation of the EE codes, and 2) the project accounted for savings from RE investment through the subsidies programme. The TE team reviewed these numbers with the project team and removed PV-related energy savings (because RE doesn't save energy) and also removed the so called indirect energy savings.

The explanation as to why the project didn't meet its energy saving target is because almost 100% of the subsidies under the green mortgage and new GLFM have been invested in solar energy and 0% on EE technologies. The

[14] The incremental energy savings and GHG emissions for project lifetime consider project extension to October 2024.

same reason also explains the direct GHGs target being achieved simply because it accounted for GHGs avoidance through the provided RE (solar systems).

It should be noted that direct GHGs and energy savings targets by the end of the project have accounted for 1.5 additional years because of the project extension.

Table 6: Energy saving and greenhouse gas emissions indicators.

	Direct energy savings during project lifetime (GJ)	Direct lifetime energy saved over 20-year (GJ)	Direct GHG emissions mitigated until October 2024 (t CO2 eq)	Direct GHG emissions mitigated for lifetime over 20 years (t CO2 eq)	Indirect GHG emissions avoided
EOP target	939,250	8,266,185	52,941	465,267	891,925 t CO2e - 4.7 million t CO2e over 20 years, representing bottom-up and top-down estimates, respectively
Achieved	2,858,347[15]	14,004,716[16]	63,812	300,338	9,820,807 representing bottom-up (through the prototype designs)
% Achieved	304%	169%	120%	64.5%	111%

Indicator obj 3: Volume of investment mobilized and leveraged by GEF for low GHG development (co-financing and additional financing). TE target: By the end of the project, investments of at least USD 129 million are leveraged (not including GEF financing).

The end of project target has been achieved. The green mortgage mechanism mobilized $259.4 million in funding (QQB/ADB bank loans and down payments from 16,172 borrowers) for the purchase of 16,172 EE affordable rural family housing units in 2019-2021.

- $ 223,200,000 from Participating Banks (Qishloq Qurilish Bank, JSCB and Ipoteka Bank, JSCB) covering the Mortgages to finance the 1,588 pilot EE and Low-Carbon houses
- $35,700,000 Homebuyers Equity - Cash down payments to finance the 1,588 pilot EE and Low-Carbon houses
- The green loan financial mechanism mobilized $48750 (614.464.700 UZS) bank loans for 26 borrowers for the purchase of 26 solar panel installations in 2023-2024.

[15] This represents energy savings from the buildings construed based on the 24 prototype designs for EE and low-carbon houses that have been developed by the project, and where the GEF funding was used to cover the cost of developing these designs.

[16] This represents energy savings from the buildings construed based on the 24 prototype designs for EE and low-carbon houses that have been developed by the project, and where the GEF funding was used to cover the cost of developing these designs.

Indicator obj 4: Number of users of low-GHG systems (number, of which female). TE target: By the end of the project, at least 1,588 households (appr. 7,940 people, of which appr. 3,970 are female) will use low-GHG systems in the form of solar PV units and/or efficient technologies.

85% of the TE target achieved. 1,354 households. This covers approximately 6,770 people, including 3,385 women and girls).[17] This includes 1354 households who have purchased low-carbon housing via the green mortgage mechanism in 2019-2020, among which 778, or 59% are households headed by women, and 26 households benefited from the GLFM under the fund.

Indicator obj 5: Number of new development partnerships with funding for improved energy efficiency and/or sustainable energy solutions targeting underserved communities/groups and women. TE target: Project activities will result in at least one new development partnership for improved EE and/or sustainable energy solutions targeting underserved communities/groups and women.

The purpose of this indicator is to measure the project effectiveness in establishing partnerships for funding EE/RE. The project reported a number of partnerships that don't necessarily involve sustainable funding mechanism beyond the project. These include:

- LoA with IRENA: Development of a web application - a simulator of the solar potential of a selected area (city, town, etc.), which was carried out by the International Renewable Energy Agency (IRENA). Financing was provided from the UNDP/GEF project. The further use of this modeling tool by the Ministry of Energy and was agreed upon with IRENA as part of the contract with this agency[18].
- RPA UNDP with Energy Saving Fund: To support disbursed green loans by partner banks to Beneficiaries with the subsidy by UNDP/GEF, and upgrade and improve the energymarket.uz online platform to provide direct subsidy to Beneficiaries.
- Cooperation with the Scientific Research Institute of Technical Regulation and Standardization: Trainings aimed at an innovative approach were conducted in 12 regions of Uzbekistan to the development of the construction industry in Uzbekistan on the topic "Energy efficient, low-carbon housing, energy saving and the use of renewable energy sources in the construction of buildings and structures", intended for representatives of official organizations operating in the construction sector, design organizations and specialists from customer organizations.

Indicator obj 6: Local benefits: Satisfaction of beneficiaries and other local benefits generated. TE target: Satisfaction of new and existing EE and Low-Carbon house occupants with their housing and utility services will be at least as high as the satisfaction measured in a control group of occupants of standard RHP houses (as measured on a five-point scale). Indoor air temperature compliance with recommended norms will be at least comparable with houses in the selected control group.

The available data doesn't include a control group as requested by this indictor, so the TE target can not be assessed.

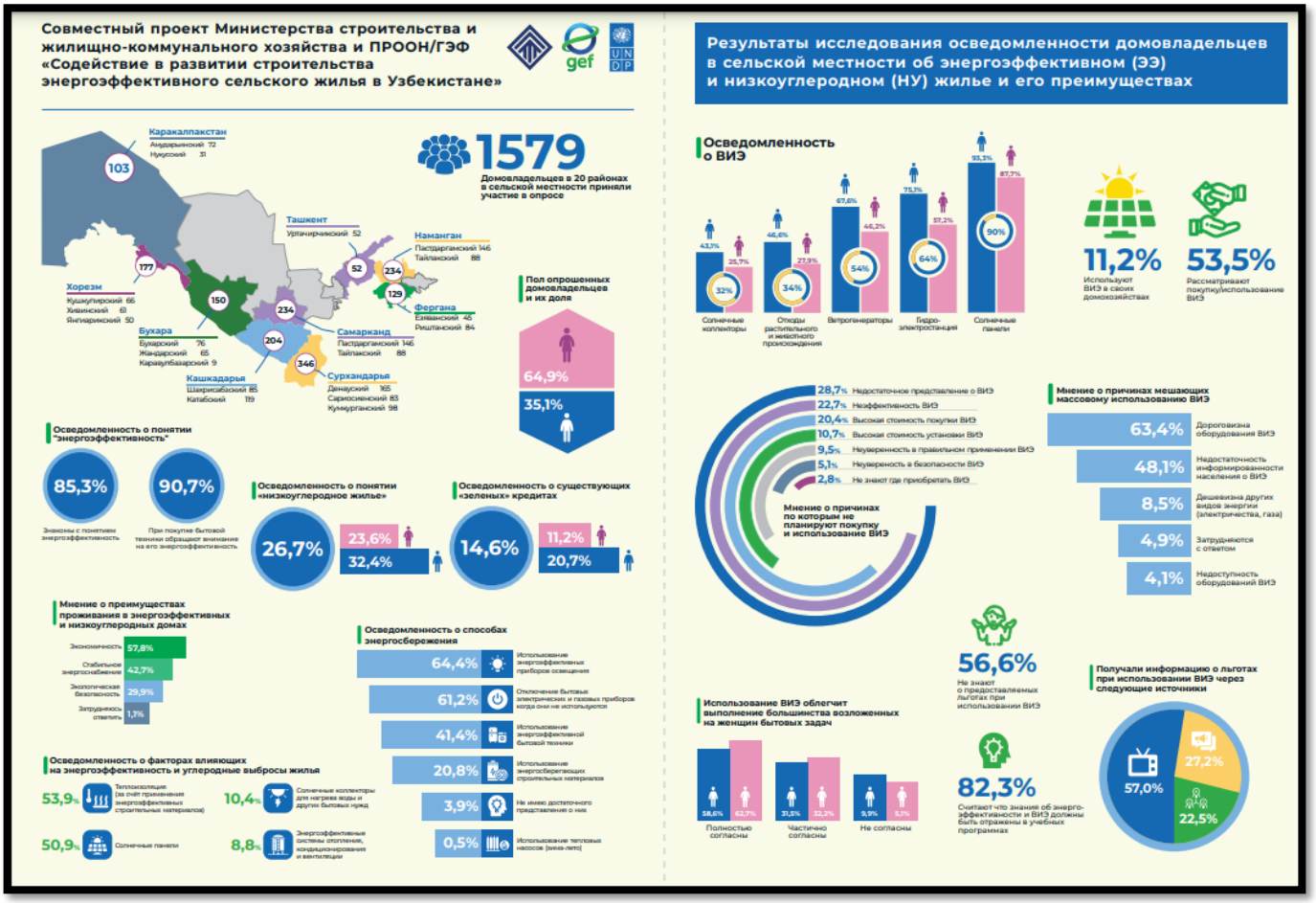
[17] Based on the same assumption of household size as in the project document. Each household consists of 5 people in average, half of which females.

[18] https://solarcity.irena.org/#en/simulator/tashkent/residential

However, the satisfaction and awareness survey conducted in October and November 2021 aimed to assess the satisfaction levels and awareness regarding energy-efficient and low-carbon housing among residents in five regions of Uzbekistan: Bukhara, Karakalpakstan, Kashkadarya, Namangan, and Tashkent. The survey included 140 respondents (of which 100 female), predominantly women, who provided insights into various aspects of their housing and the challenges they face. The survey aimed to gather data on their satisfaction with various aspects of their housing and awareness of energy efficiency and renewable energy technologies.

The results revealed a high satisfaction rate, with 77% of respondents reporting uninterrupted electricity supply and **approximately 80% of the respondents are satisfied with various aspects of their housing, including size, orientation, temperature regulation, quality of electricity supply, cold water supply, waste disposal, and relationships with neighbors.** However, the satisfaction survey didn't specify a separate control group of occupants. It focuses solely on the satisfaction rates and experiences of the residents of energy-efficient and low-carbon houses built as part of the project. Therefore, there is no control group satisfaction rate mentioned in the provided document and the indicator can not be fully measured as expected.

Figure 4: Satisfaction survey's key statistics in info graphics



Outcome 1: Green mortgage market mechanism to scale-up demand for low-carbon housing

Indicator 1.1: Status of non-grant mechanisms and/or incentives to invest in houses and other infrastructure featuring low-carbon design and/or technologies. TE target: At least one non-grant mechanism to encourage investment in energy efficiency and/or renewable energy is operational in Uzbekistan by the end of the project.

Target is not achieved

The Green Mortgage mechanism using GEF funds to subsidize low-carbon measures was established and operated in 2019-2020 by the national mortgage bank (Qishloq Qurilish Bank, i.e. QQB). Following the recommendation of the MTR, the Green Mortgage Mechanism used in 2019 and 2020 was revised and replaced with the Green Loan Financial Mechanism to support the green loan customers, which was approved by the Project Board and is to begin implementation after the RPA agreement signing with the Extra-budgetary Intersectoral Energy Saving Fund under the Ministry of Energy of Uzbekistan (in July 2023).

The MTR has rightly criticized the design and implementation of the green mortgage mechanism, stating that it failed to achieve its goal of stimulating market transformation by demonstrating the benefits of energy efficiency. Instead, it merely provided free solar systems to households, which does not qualify as a non-grant mechanism, has no replication potential, and fails to demonstrate EE benefits. The implementation of the green mortgage mechanism in 2019-2020 resulted in almost $2 million of project resources being spent on an unfeasible mechanism.

The MTR recommended freezing work under this component until a new feasible mechanism is established. It also suggested investigating whether a financial mechanism is needed at all, given the progress in component 3 of the project (i.e., building codes).

In response, UNDP commissioned a team of consultants to investigate options for restructuring component 1 of the project, as a result, a total of 6 options have been identified and assessed, and based on pros and cons analysis, the option of providing rebates for "Level 3" energy efficiency investments by households (option 6) was selected and recommended. The selected option was deemed to be fully consistent with the energy efficiency goals of the project.

However; things took a new turn afterwards, the new Green Loan Financial Mechanism (GLFM) was developed in a significantly different direction. The new GLFM is primarily providing partial compensation of the loan principal as a support instrument for renewable energy and energy efficiency household investments in 5 technologies (insulated windows (double and triple glazed); heat pumps; solar PV stations with storage; solar thermal panels; and walls insulation. Which is totally different from the recommendation made by the consultant.

It is evident for the TE that the GLFM is designed as a temporary financing mechanism that doesn't qualify as a non-grant mechanism as planned under this target, the TE found that GLFM is challenged with serious concerns, including:

- The sustainability of the GLFM beyond the project is unlikely under the current institutional and financial settings. Based on TE engagement with the Ministry of Construction, the Fund, and banks, it is evident that while the GLFM is welcomed from their perspective, there are no concrete plans to upscale and fund the GLFM beyond the GEF funding.

- It loses focus on EE. The new GLFM does not specify any limits or allocations between RE and energy efficiency EE. The original Project design intended to allocate only 5% of Component 1 support to RE, with the remaining 95% to EE measures due to their superior cost-efficiency. However, the project deviated significantly from this plan, fully allocating its support to PV systems under the green mortgage mechanism, and similarly, under the new GLFM where 100% of the allocated funding has been used for RE, with 0% used for EE so far, simply because RE is more attractive for people.
- Based on the RE focus of the GLFM, the GLFM's role in transforming the EE market remains questionable and indeed very limited.
- The new GLFM is now open for urban areas, which detracts from the project's primary focus on rural areas. The opportunity is given equally for all communities without preference to those essentially targeted by the project as the most vulnerable in rural areas.
- Post-project arrangements for GLFM operation are not defined nor agreed.

In brief, the project didn't introduce a financing mechanism that qualifies as a non-grant mechanism and facilitates EE market transformation as intended, therefore, the TE assesses this target as 'not achieved'.

Indicator 1.2: Capacity of financial institutions to design and operate dedicated financial products that are accessible to both men and women for low-carbon housing is present. TE target: Financial products reach at least 1,588 households (7,940 people) in rural areas by the end of the project.

85% of the TE target achieved. 1,354 households. This covers approximately 6,770 people, including 3,385 women and girls).[19] This includes 1354 households who have purchased low-carbon housing via the green mortgage mechanism in 2019-2020, among which 778, or 59% are households headed by women, and 26 households benefited from the GLFM under the fund.

Outcome 2: Construction and domestic supply chain for low-carbon housing and settlements strengthened

Indicator 2.1: Level of dissemination of prototype EE and low-carbon designs for rural houses and settlements; i.e., the number of rural households with access to houses with EE/RE technologies. TE target: By the end of the project, at least 1,588 households (7,940 people) have access to new rural houses featuring advanced EE/RE technologies.

The end of project target has been outperformed. Cumulatively 16,172 households (80,860 people) have access to new rural houses constructed in 2019-2021 featuring advanced EE technologies (Level 2 thermal performance insulation). This includes 1,328 households (800 single-story individual family houses and 528 apartments for 6,640 people cumulatively) have access to new Low Carbon affordable rural houses commissioned in 2019-2020 in the 9 pilot regions.

Indicator 2.2: Energy performance of the EE and low-carbon houses reflects significant improvements over standard RHP houses. TE target: By the end of the project, at least 180 audits conducted for rural houses constructed in 2018-2019 to demonstrate that the EE/LC houses complied with indoor climate regulations with lower energy expenditures than in a control group of standard RHP house.

[19] Based on the same assumption of household size as in the project document. Each household consists of 5 people in average, half of which females.

The end of project target has been achieved. In total 180 energy audits were conducted in 2020-2023. Energy audits of the selected 60 representative EE/LC and standard (baseline, without EE and LC measures) affordable rural houses constructed in 2018-2019 conducted in the 5 pilot regions (Fergana, Surkhandarya, Samarkand, Bukhara and Khorezm) in 2020-2021. Four types of rural houses audited (standard, EE, LC with PV systems, and LC with PV systems and solar water heaters). Audits tracked energy consumption for 12 months, covering all seasons.

In June 2022, the Project hired a local company for energy audit of additional 90 housing units (apartments in 4-storey multi-apartment houses) and resurvey of 30 single-story individual family houses. The results of energy audit (started in March 2020 and completed in September 2021) showed that EE/LC houses consumed at average 134 kWh/m2 per year compared to 426 kWh/m2 that of non-energy efficient house. The heat resistance of EE/LC houses external wall was 3 times higher than that of non-energy efficient house.

Indicator 2.3: Rural technology needs assessment (TNA) reflects current needs of both men and women. TE target: At least one focus group of women is convened during the rural TNA stakeholder consultations.

The end of project target has been achieved. Technology Needs Assessment (TNA) for EE and LC rural housing, which covered technological, and material needs and supply chain analysis in all regions of Uzbekistan, has been completed. This work included 6 focus groups of women convened to ensure thorough reflection of their perspectives in the assessment.

The purpose of the TNA was to evaluate the existing market conditions and identify necessary supply-chain enhancements for the implementation of the State Programme on Affordable Rural Housing in Uzbekistan. It aims to improve the energy efficiency and sustainability of rural housing in Uzbekistan by integrating modern materials, technologies, and designs.

The TNA assessed the current status of the market, identified the institutional, financial, and informational barriers hinder the adoption and scale-up of energy-efficient technologies, and also outlines the supply-side limitations include underdeveloped production capacities and quality issues with domestic materials.

The TNA provided recommendations to enhance vertical integration in the production of construction materials to improve efficiency and reduce costs; develop norms, rules, and standards to support the production of modern building materials tailored to local conditions; strengthen measures for the rational and sustainable use of mineral resources; and promote the development of small enterprises and improve logistical infrastructure to support material distribution.

The TNA provides a comprehensive analysis of the construction market, identifies key technologies and barriers, and offers actionable recommendations to enhance the supply chain and support the construction of energy-efficient, affordable rural housing in Uzbekistan.

The TNA process involved conducting six focus group meetings across three regions: the Republic of Karakalpakstan, Ferghana Valley, and Kashkadarya Province. Each focus group comprised women from various social and occupational backgrounds, including medical personnel, teachers, bank employees, entrepreneurs,

farmers, housewives, and beneficiaries of the state rural housing program. These meetings aimed to assess women's needs for energy-efficient and low-carbon technologies in their households and to identify barriers and limitations to the adoption of such technologies

In total, 156 women participated in these focus group meetings, distributed as follows:

- 50 women from the Republic of Karakalpakstan
- 54 women from Kashkadarya Province
- 52 women from Ferghana Valley

Indicator 2.4: Volume of sales through supply chain for low-carbon rural housing. TE target: By the end of the project, at least one company in each of the 5 pilot areas of Uzbekistan will have multiple sales related to rural housing construction.

The Project reported an increase in sales of those companies that have been contracted by the project itself to provide equipment. This is not a robust evidence on the increase in sale due to the project purchases as opposed due to growing market for EE equipment.

There is no material evidence that the project contributed directly to the increase in sales of suppliers of EE/RE technologies related to rural housing construction as a result of market transformation. The project, however, reported increase in sales of those vendors who have been engaged through the 9 pilot regions in 2019-2020 which were provided by 4 companies, and another 4 vendors supplied RE/EE technologies for the Nearly Zero Energy Building (NZEB) pilot.

The project reported that it contributed to the increase of 4 national companies' sales volumes of LC equipment for the construction of EE/LC housing in each of the nine pilot regions in 2019-2021. The EE/LC housing in each of the nine pilot regions in 2019-2021 were provided by 4 companies. In total 1328 units of solar PV systems (300/600W) and solar water heaters were installed by these 4 national companies, which sold their LC equipment and services to Qishloq Qurilish Invest (total value of approximately US $1,895,000) which was a single customer for all LC housing constructed under RHP. Also, the Nearly Zero Energy Building (NZEB) engaged 4 vendors to supply the solar system and EE technologies which presumably increased their sales for this particular reason.

Further, the project hired specialists in June 2023 to train relevant participants in the construction process in each region (12 regions with participation of 30-40 people) including customers from host parties, in order to mobilize available resources to ensure full support of the construction and reconstruction processes, as well as effective control over the quality of construction and installation works. Also, the Project together with the Ministry of Construction conducted a workshop and exhibition of EE and LC materials on the topic "Experience of foreign and domestic manufacturers in the development of energy-saving heat-insulating materials" for the experts of design institutes, 56 participants including 12 women. The event also included a mini exhibition, where 5 international and local companies presented/displayed EE/LC building technologies.

Outcome 3: Policy and regulatory reform to enable the scale-up of low-carbon housing and settlements

Indicator 3.1: Stringency of building codes with regard to energy performance of residential buildings (maximum energy consumption per square meter). TE target: By 2023, revised building codes on energy consumption and thermal performance with revisions requiring 30 percent lower energy consumption for residential buildings will

be in place. Revisions to five other building codes (broadly defined also to include land-use planning and zoning codes) will also be approved.

The end of project target has been achieved.

The project successfully reviewed four building codes and developed four new 'code compliance manuals' related to floors, roofing, thermal engineering, solar water heater, norms of energy consumption for HVAC, natural and artificial lightning and green construction to introduce stricter Minimum Energy Performance Standards for buildings. Additionally, as the government was transitioning to green energy sources and promoting passive construction techniques two new codes on PV and passive house design were developed.

The Project reviewed 4 existing building codes (BC): Floors, Roofing, Lighting, Green construction.

It strengthened Minimum Energy Performance Standards (MEPS) in 3 existing BCs by development of 3 new code compliance manuals: Thermal engineering, Norms of energy consumption for HVAC, and Solar hot water installation.

Two new BCs and one new code compliance manual were developed: Photovoltaic stations, Passive house.

Two reviewed codes (Floors, Roofing), two new developed codes (Photovoltaic stations, Passive house) and all four new code compliance manuals are fully adopted and being enforced by the Government.

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Additionally, an Energy auditing methodology for residential buildings is developed and submitted for review to the Ministry of Construction, Housing and Communal Services and Ministry of Energy.

A study tour to Germany was organized for 11 representatives (1 woman) of 8 ministries and agencies to learn about the Passive House concept and best practices for energy-efficient buildings.

Indicator 3.2: Rates of compliance with applicable energy performance standards in residential building codes. TE target: By the end of the project, there will be near-universal compliance for new residential buildings constructed in Uzbekistan.

The end of project target has been achieved. All new housing constructed under the RHP in 2019-2023 does comply with the adopted nationally in 2018 EE building code requirements (Level 2 thermal performance) in accordance with the President Decrees #PP-3379 dated 08.11.2017, #PP-4028 dated 24.11.2018 and #PP-4422 dated 22.08.2019

Energy audits of multi-apartment buildings – including baseline, EE, and LC buildings – are conducted for summer and winter periods in 2020-2023 to verify the compliance of building envelopes of those buildings with EE requirements.

Based on the energy audits for multi-apartment buildings conducted for summer and winter periods from 2020 to 2023 revealed the following results regarding the compliance with energy efficiency (EE) building codes:

- The energy audits included measurements and evaluations of energy consumption across different types of buildings (baseline, EE, and low-carbon buildings). The primary focus was on analyzing energy consumption for heating, hot water supply (GVS), and other electrical equipment.

- In terms of compliance, the audits confirmed that EE building codes were implemented to varying extents. For instance, in some regions, typical buildings showed lower energy efficiency compared to those designed with EE features. Energy-efficient buildings generally demonstrated better performance in terms of energy consumption for heating and hot water supply compared to typical buildings .
- The energy audits revealed significant differences in energy consumption between typical and energy-efficient buildings. For example, energy-efficient buildings with additional features like photoelectric stations (FES) and heliocollectors (GK) showed better performance in terms of energy savings. In some cases, energy consumption in energy-efficient buildings was higher than calculated values due to varying usage patterns and climatic conditions considered in the calculations.
- The audits highlighted that energy consumption patterns varied significantly between summer and winter periods. Winter measurements provided critical data for assessing the thermal performance of building envelopes and the efficiency of heating systems.

Indicator 3.3: Number of specialists (architects, builders, designers, etc.) certified/successfully completing training in the new codes, design review, certification, and compliance issues and techniques. TE targe: 1,500 specialists certified/successfully completing training by the final quarter of the project, including 40 percent women.

The project end target has been achieved. Cumulatively, the project reporting a total of 1,658 local specialists (architects, builders, designers, etc., including 223 females) trained on code compliance, EE/LC design, planning, and use of relevant guidance manuals.

The project conducted the following specific activities:

- More than 170 specialists (9 female) trained in master plan development, taking into account climate change considerations, effective land use and zoning;
- 180 specialists and responsible local officials (21 female) received training on how to integrate climate change considerations into account in local decision-making in Fergana, Samarkand, Bukhara, Surkhandarya and Khorezm.
- 357 specialists (26 female) trained in master plan development, taking into account climate change considerations, effective land use and zoning in 2019-2021.
- in July – August, 2021, 201 specialists (5 female) trained in international experience in the design and construction of energy efficient and low-carbon rural housing, practical and innovative system approaches in this area in Uzbekistan and amendments to the national regulatory documents and building codes in 2021.
- In October – November, 2021, 100 specialists (41 female) trained in Green Building Strategy in Uzbekistan in 2021.

It is noted though that female participation in the architects, builders, designers, etc. in trainings on code compliance, EE/LC design, planning, and use of relevant guidance manuals is around 14% (less than the defined target of 40%), this is may be attributed to the fact that the targeted occupations in these trainings are dominated by men, however, it is evident that the project has made training opportunities equally open for both gender. A participation rate of 40% is a good ambition, however, was probably too ambitious as a target value.

Indicator 3.4: Number of land-use plans and/or zoning regulations improved to maximize efficient resource use and incorporate climate considerations. TE target: By the end of the project, at least one siting regulation and one village-level land use plan will be adopted that promote energy savings and/or climate considerations.

The end of project target has not yet been achieved.

In close collaboration with the government design institution "Uzshaharsozlik LITI", which is responsible for reviewing two existing land-use plans, the project developed recommendations on inclusion of energy efficiency requirements and climate considerations into two existing land-use codes ShNK 1.03.02-04 and ShNK 2.07.01-03. In June 2023, improved two codes are submitted to the Ministry of Construction, Housing and Communal Services for final review and approval, but no final approval yet. The project has provided training to local design specialists in August and September 2019 to increase their capacity to developed land use plans..

The focus is on changes that may be needed to the urban planning norms and standards (ShNK) that the government uses to regulate the construction sector – in particular numbers 1.03.02-04 and 2.07.01-03. Both ShNKs are urban planning regulations that are commonly used in the country:

- SHNK 1.03.02 – 04 describes 'instructions on the preparation and approval of urban planning documentation in the field of urban planning'.
- SHNK 2.07.01 – 03 describes 'rules for the planning and development of urban and rural settlements'. This one is approved in July 2024.

Outcome 4: Marketing and Promotion of Low-Carbon Houses and Settlements

Indicator 4.1: Number of communities [or districts] that support incorporating climate change considerations into decision-making. TE target: By the end of the project, at least 15 communities take steps to incorporate climate change considerations into decision-making, with women constituting at least 30 percent of participants.

The project end target has been achieved.

32 communities (makhallas) took steps to incorporate climate change considerations into decision-making, however against 30 percent requested woman participants only 21% took active involvements into process. These included mechanisms such as makhallas committees, which are local self-governing bodies, play a crucial role in representing community needs and facilitating public participation in decision-making processes. These committees are pivotal in gathering community input and ensuring it is considered in urban planning.

The project has conducted a comprehensive assessment to identify the decision-making mechanism with the focus in climate change considerations in 2019. The assessment was held in Bukhara, Samarqand, Khorezm, Surkhandarya and Fergana regions. The primary goal of the assessment was to identify decision making mechanisms and explore the incorporating climate change considerations into local decision-making system.

In September-December 2022, the team with the help of the National consultant made practical steps on incorporating climate change considerations into decision making process in 32 communities (makhallas) from Khorezm, Kashkadarya and Samarqand regions, including training programs to educate local authorities and community members on climate change impacts, adaptation, and mitigation strategies, developing localized climate action plans focused on addressing specific vulnerabilities, and engaging the communities through workshops, seminars, and public meetings to raise awareness about climate change. The primary goal of the activity was to contribute for involving of community-based mechanism of decision making to incorporate climate change considerations into decision-making, with women constituting at least 30 percent of participants. From 15

communities 81 people participated in public consultations focused on incorporating climate and energy considerations into local decision making on rural planning. Out of 81 participants 17 were women.

According to the Urban Planning Code of Uzbekistan, the development of master plans must consider the interests of society, the environment, and sustainable development. The master plans are required to undergo public scrutiny to ensure transparency and inclusivity in decision-making. So,

The project used the master plan as an avenue to emphasize the importance of public participation in the development and approval of master plans for settlements. This includes multiple stages of public discussion, collection of opinions, and integration of community feedback into the final plan to advocate for the master plans to include considerations for minimizing environmental impacts, promoting energy efficiency, and integrating renewable energy sources.

The project delivered trainings on Master Plan Development aiming to enhance the capacity of local officials and community leaders in Uzbekistan on the development and implementation of master plans for rural settlements. The training sessions on master plan development have laid a solid foundation for improving urban planning practices in Uzbekistan. By continuing to build capacity, allocate resources, and engage communities, Uzbekistan can develop master plans that promote sustainable development, enhance climate resilience, and improve the quality of life for its residents. The training sessions were attended by a diverse group of participants, including local government officials, urban planners, architects, engineers, and community representatives. A total of 197 participants were involved in these training sessions (of which 96 females).

Indicator 4.2: Percentage of project stakeholders aware of EE and low-carbon housing and infrastructure. TE target: By the end of the project, at least 90% of project participants (defined as participating households, participating banks, and relevant government agencies involved in project implementation) are aware of the benefits of EE and low-carbon houses.

The project end target has been achieved. The project reported that cumulatively, 93% of project stakeholders aware of EE and low carbon housing and infrastructure. The awareness raising level was measured based on analysis of feedback provided by the project stakeholders in the questionnaires filled out within the project capacity building activities:

- More than 360 specialists, including 26 women, participated in trainings on master plan development in 9 pilot regions in 2019-2021.
- 201 persons within workshops conducted in 10 regions of Uzbekistan in July-August 2021; 35 persons in May 2022.
- Moreover, 5 rural resource centers in pilot regions are functioning as a source of science-based knowledge, information and data as well as consultancy services related to 'green' housing provided at the spot to a variety of users – from professionals to homeowners in the regions.
- In December 2021, project conducted a quality assurance of IT software in 5 rural resource centers to monitor and evaluate of the low – carbon houses constructed in the regions.

Indicator 4.3: Percentage of rural homeowners aware of EE and low-carbon housing and infrastructure. TE target: By the end of the project, at least 10% of all rural homeowners (including owners of new RHP houses, existing RHP houses, and other privately-owned single-family houses) in pilot areas are aware of the benefits of

EE and low-carbon houses. Awareness among project beneficiaries does not differ significantly between women and men in target groups surveyed.

The end of project target has been partially achieved.

According to statistics, the resident population in the project pilot districts (Karakalpakstan, Khorezm, Bukhara, Samarkand, Fergana, Namangan, Surkhandarya, Kashkadarya, and Tashkent region) is 3,445,448 people. The average household size is 5 people (as per official statistic numbers), implying around 689,089 households in these pilot areas.

Training conducted from September until November 2022 for journalists and bloggers on communicating energy efficiency (EE) and climate change led to about 5% awareness increase among rural homeowners. Awareness sessions occurred in 5 regions with established resource centers, involving 129 participants (53 women, 76 men), resulting in about 100,000 villagers improving their knowledge on the benefits of EE and low-carbon houses.

Based on the TE team engagement with beneficiaries, it has become evident that more awareness remains needed for the households on the energy efficiency and renewable energy and the associated benefits. These observations are also consistent with the awareness survey findings where 56.6% of the survey respondents (n=1,579) are unaware of the benefits provided when using RES with only 26.7% of respondents are aware of EE and low-carbon housing and its benefits, and 82.3% believe knowledge on energy efficiency and RES should be included in educational programs. Also, more awareness needs to be raised regarding the existing opportunities for financing EE/RE technologies, this is also supported by the survey result of only 14.6% of the survey respondents (n=1,579) are aware of the green loans available.

According the survey results, here are some statistics related to awareness:

- 56.6% are unaware of the benefits provided when using RES
- 82.3% believe knowledge on energy efficiency and RES should be included in educational programs.
- 90% are aware of RES.
- 93.3% of those aware have knowledge about RES.
- 87.7% of those aware understand the concept of RES.
- 85.3% are familiar with the term "energy efficiency."
- 90.7% consider energy efficiency when purchasing household appliances.
- 14.6% are aware of existing green loans.

<u>Indicator 4.4: Activities under the project communication strategy that explicitly consider gender.</u> TE target: Communication strategies will reflect women's and men's communication channels in rural areas on an ongoing basis.

The end of project target has been achieved. The project developed a communication Strategy for Raising Awareness on Energy-Efficient and Low-Carbon Rural Housing and Green Mortgage Lending in Uzbekistan, it outlines a comprehensive plan to increase public awareness and understanding of sustainable housing practices. The strategy includes a variety of activities such as educational programs, contests, interactive events, and

promotional campaigns. All actions are designed to be interactive and engaging, targeting different audience groups effectively.

Cumulative from the beginning of the project 236 references about the project's activities have appeared in local and national media, including television, radio, newspapers, magazines, official websites of the Ministry of Construction and communal services and UNDP, as well as social networks including Facebook and Twitter.

The communication strategy was diligently executed by engaged PR company. Notably, gender aspects have been conscientiously prioritized in all developed media products from the project's outset.

Following media products were produced so far:

- 7 publications at UNDP web site;
- 8 posts, in UNDP facebook webpage;
- 1 human story at UNDP web site;
- 1 OpEd at national leading media source;
- 90 references about project activities have appeared in local and national leading media sources, including television, radio, newspapers, magazines.

In addition, the project developed and presented animation videos at every event as well as public meetings on a regular basis. Moreover, over the project conducted a contest among journalists and bloggers on the topic "Energy Efficient Buildings and Gender Mainstreaming - the key to sustainable development".

About 100 mass media products were received and only 5 winners were selected.

3.3.2 Relevance (*)

Assessment element	Rating
Relevance	Highly Satisfactory (HS).

Relevance is the extent to which a project's objectives are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donors' policies.

The GEF-finance, UNDP implemented project is highly relevant to the national policy framework in Uzbekistan embarking on its high profile RHP programme and helping to achieve NDC aspirations. It also addresses the critical needs of rural communities in Uzbekistan, providing access to EE and RE technologies to enhance their energy security, electricity supply, thermal comfort and reduce energy costs. The project aligns with UNDP and GEF define priorities.

Relevance to the national policies and strategies: Uzbekistan's national planning processes clearly state the goal of integrating sustainable natural resource use principles into policy-making, legislation, and institutions. These principles have been adopted to ensure water, energy, and food security for the population and to guarantee that the country's development is economically, environmentally, and socially sustainable.

The Republic of Uzbekistan has increased its commitments in the updated Nationally Determined Contribution (NDC) and intends to reduce specific greenhouse gas emissions per unit of GDP by 35% by 2030 from the level of 2010 instead of 10% specified in the NDC1. The new goal of the Republic of Uzbekistan in terms of climate change mitigation, which seeks to be achieved by 2030, is hereby formulated as follows: reduce by 2030 specific

greenhouse gas emissions per unit of GDP by 35% from the level of 2010. The updated NDC recognizes the important role of structural reforms in ensuring policy changes over the long run, prioritizing energy efficiency measures and the expansion of renewable energy sources[20].

The 'Market Transformation for Sustainable Rural Housing in Uzbekistan' project helps achieve the core objectives of the National Programme for Increasing Energy Efficiency in Buildings (2015-2020) which is designed to reduce energy consumption, improve competitiveness and to catalyse economic transformation and well-being. The project contributes directly to key elements of this programme through development of prototype efficient buildings; construction of energy-efficient buildings and facilities; training for architects, engineers, and energy auditors; and other activities. The project is also aligned with the National Low-Emission Development Strategy of Uzbekistan, which was developed with technical assistance from UNDP, prioritizes the building sector and energy sector (demand and supply) as the key sectors where investments should be focused. The project is also highly relevant to the Presidential Resolutions to support rural housing in Uzbekistan, including the integration of energy efficiency and renewable energy.

The project is aligned with, and embarks on, the Rural Housing Programme (RHP) to deliver sustainable rural housing, where the Government of Uzbekistan is making significant investments in new rural and peri-urban settlements through its RHP. Launched in 2009, the RHP was accompanied by a Presidential Decree, "On Additional Measures for Scaling-Up Housing Construction in Rural Areas.

Relevance to the UNDP: The project aligns with UNDP's Country Programme Document (CPD) for Uzbekistan 2021-2025. The CPD is designed to assist Uzbekistan's Strategy on Transition to Green Economy by 2030 by recognising this strategy as a major priority. It aligns with the FC outcome 'By 2025, most at risk regions and communities of Uzbekistan are more resilient to climate change and disasters, and benefit from increasingly sustainable and gender sensitive efficient management of natural resources and infrastructure, robust climate action, inclusive environmental governance and protection'. The CPD sets specific targets for renewable energy and energy efficiency it is plan.

Relevance to the GEF: The goal of the GEF-6 Climate Change Mitigation Program is to support developing countries and economies in transition to make transformational shifts towards a low emission development path. The project aligns specifically with the GEF 6's strategic objective under Climate Change Mitigation CCM-2: Promote Market Transformation for Energy-Efficiency in Industry and the Building Sector. The project also generates global environmental benefits in the form of reduced emissions of greenhouse gases.

Relevance to the needs of beneficiaries: Through the TE engagement with the beneficiaries, it has been evident that the project is highly relevant to the needs of the rural communities in Uzbekistan. Access EE/RE technologies is highly needed in these communities to overcome the power outages, getting enough electricity supply and reduce the cost of the energy at household level, in addition to achieve the best thermal comfort. These needs have also been reaffirmed through the awareness survey where 56.6% are unaware of the benefits provided when

[20] Uzbekistan Updated Nationally Determined Contribution of 2021

using RE/EE and 82.3% believe knowledge on energy efficiency and RE/EE should be included in educational programs.

Therefore, relevance is assessed on a six-point scale as **Highly Satisfactory (HS).**

3.3.3 Effectiveness (*)

Assessment element	Rating
Effectiveness	Moderately Satisfactory (MS)

The effectiveness of a project is defined as the degree to which the development intervention's objectives were achieved or are expected to be achieved. The valorization of effectiveness is used as an aggregate for judgment of the merit or worth of an activity, (i.e., the extent to which an intervention has attained, or is expected to attain, its major relevant objectives proficiently in a sustainable fashion and with a positive institutional development impact).

The effectiveness of this project can be rated as MS (Moderately Satisfactory) since it met expectations as to the degree of the outcomes are achieved (except outcome 1). Objective level targets are mostly met (except energy savings target), but finance mechanisms have not materialized as envisaged in the design.

The project faced a number of very forceful challenges that, although taken care of adaptively to the degree possible, in some ways required resources to adapt and these externalities had had an impact on the project implementation as well as on the results. The main hindering issues are:

- **Electricity subsidies**: Uzbekistan is one of the most energy and emissions-intensive countries in the world. High subsidies keep electricity and natural gas prices low, resulting in insufficient revenue to cover production and delivery costs. These low prices discourage households and businesses from pursuing energy efficiency and conservation efforts, and they limit the sector's capacity to improve service delivery. However, the government has been restructuring these subsidies to encourage more efficient energy use and to support renewable energy sources. The effectiveness of these measures in promoting energy efficiency investments depends on the balance between making energy affordable and creating incentives for energy-saving investments.
- **Consumer limited awareness about EE/RE**. Although the project has significantly raised awareness among those involved in the pilot demonstration projects, this increased understanding has largely not extended beyond these communities. Awareness remains a key barrier towards EE/RE technology acceptance and adoption in Uzbekistan. Knowledge about the benefits and effectiveness of EE/RE is still not widespread. This indicates a need for broader educational and outreach efforts to ensure that the advantages of energy-efficient and renewable are understood and embraced by a wider segment of organizations, thereby maximizing the environmental and economic benefits of such technologies.
- **Limited capacity of the EE/RE suppliers in Uzbekistan:** The limited capacity of local suppliers affects the deployment of EE/RE projects, hinders the transition to sustainable energy, and impedes economic growth. The EE/RE suppliers in Uzbekistan face number of challenges including lack of technical expertise, limited access to advanced technology and knowledge in EE/RE sectors and absence of policy framework to operate energy services (e.g absence of national certification system for energy audit). Enhancing the capacity of EE/RE suppliers in Uzbekistan is critical for the successful transition to sustainable energy. By addressing technical, financial, regulatory, and market challenges, and through coordinated efforts from both the public and private sectors, Uzbekistan can build a robust EE/RE industry.
- **COVID-19**: The pandemic has had multiple impacts on the project, 1) the pandemic came at a time when filed activities and direct engagement with the local authorities/communities were due particularly for pilot demonstration activities, and as these were not possible and online engagements were done instead, 2) COVID

created an uncertain environment for engaging in major investment by local authorities and financing agencies for a period of time during the peak of COVID response and recovery.

- **High turnover of project staff.** The project has experienced substantial challenges in its management with an unusually high turnover of staff in crucial positions. The project has operated for at least 6 months without a manager and even now, after already so many staff changes. The project manager role changed 4 times over the course of the project lifetime. Such high turnover has been very disruptive for delivering activities and outcomes.
- **Lengthy procurement and recruitment process** have caused delays in delivering some of the project activities, particularly in setting up the PMU team. These processes are critical components of project planning and execution, ensuring that the right resources, both human and material, are available to meet the project's objectives. However, when these processes are protracted, they can adversely affect the project's timeline and efficiency.

The factors that have aided or supported effective achievement of goals have been identified as follows:

- **Inclusive stakeholders engagement**: Stakeholders' engagement was critical in the project given that the project has been working across wide spectrum of agencies to cover the policies, legislation, manufacturing, and financing agencies. From design onward the project had a healthy inclusion of some stakeholders and beneficiaries and was able to establish partnerships with emerging organizations such as the ministry of energy and the fund after government restructuring.
- **RHP as a strong foundation**: A notable feature of the project design is that it embarks on the Rural Housing Programme (RHP) as a strong 'vehicle' to achieve its objective, where the Government of Uzbekistan is making significant investments in new rural and peri-urban settlements through its RHP. The RHP has been a strong foundation acting as a 'vehicle' to drive project delivery, increase its relevance to the government policies, and ensure government ownership and contribution to the project (including co-financing).

3.3.4 Efficiency (*)

Assessment element	Rating
Efficiency	Moderately Unsatisfactory (MU)

Efficiency is defined as the extent to which results have been delivered with the least costly resources possible. Efficiency is a measure of how economically resources/inputs (funds, expertise, time, etc.) are converted into results.

The cost-effectiveness of the stems from its foundation on the barrier removal approach, which is inherently cost-effective, as reasonably argued in the project document. Financially, by covering only a portion of the relatively low additional cost of EE and Low-Carbon house construction (3-6%), it will reduce energy requirements and GHG emissions in a building by approximately 25%.

Another aspect of the project cost-effectiveness is the partnerships with the financial institutions (Qishloq Qurilish Bank, JSCB and Ipoteka Bank, JSCB) and the new fund established under the ministry of energy. From these partners, the project was able to mobilise over $ 223 million in co-financing by covering the incremental cost of EE/RE in the project.

However; the project spending on component 1 (Approx $ 3 million) didn't result in a sustainable non-grant mechanism as envisaged in the project design. Providing free solar under the green mortgage and subsidizing the principle of RE loan under the GLFM is not the most cost-effective approach and both (green mortgage and GLFM) don't qualify for a non-grant mechanism. These subsidies are basically irretrievable and had little chance of replication.

Assuming full consumption of the 2024's budget, the project is expected to consume 100% of the GEF funding, with UNDP making additional cash co-funding reaching $450K (originally planned $300K). The full spending of 2024 budget is largely dependent on the Fund's ability to spend around $800K on the green loan financing mechanism.

On the project timeframe, the project witnessed significant delays mainly due to high turnover in staff, and the fact the PMU was almost vacant for 6 months. The project was initially planned for 6 years which is quite long time, but also required an extension for an additional 1.5 years to end in October 2024. A total of 7.5 years brings an expensive administrative cost burden for a project at this scale (i.e $ 6-million project).

Regarding the human resources, the project has been challenged with a very high turnover in project staff with 4 project managers and multiple task managers changed over the course of the project. At certain point, main project positions were vacant for almost 6 months, which caused delays.

1819 **Table 7: The project financial delivery**

Outcome	Budget (from ProDoc)	Actual Expenditures by year								Total Disbursed	Total remaining	Financial Delivery %
		2017	2018	2019	2020	2021	2022	2023	2024			
Component 1	3,500,000.00	21,445.92	142,541.95	1,067,222.32	971,475.59	-58,262.30	64,757.94	150,201.76	697,755.16	3,057,138.34	442,862	87%
Component 2	1,200,000.00	10,727.20	258,063.93	210,434.25	69,093.85	151,767.03	167,163.48	201,261.33	209,357.00	1,277,868.07	-77,868	106%
Component 3	500,000.00	8,874.62	92,751.08	135,088.34	31,282.29	30,736.02	194,976.98	127,628.34	55,425.63	676,763.30	-176,763	135%
Component 4	520,000.00	3,003.92	28,542.16	77,129.31	99,545.51	45,238.85	123,967.17	116,255.64	214,547.73	708,230.29	-188,230	136%
Project Management GEF	280,000.00	21,237.37	36,463.16	19,339.27	23,456.31	40,023.26	39,368.24	64,529.98	35,582.41	280,000.00	0	100%
TRAC	300,000.00	56,584.97	83,181.27	88,281.41	57,252.05	63,563.10	53,614.92	16,973.15	28,050.00	447,500.87	-147,501	149%
Total (Actual)	6,000,000.00	67,306.03	560,380.28	1,511,232.49	1,196,873.55	211,523.86	592,255.81	661,900.05	1,214,691.93	6,000,000.00	0	100%
Total (Actual) TRAC	300,000.00	56,584.97	83,181.27	88,281.41	57,252.05	63,563.10	53,614.92	16,973.15	28,050.00	447,500.87	-147,501	149%

1820

1821 Given the above, the efficiency of implementation faced number of shortcomings. Therefore, the overall ranking of efficiency is Moderately
1822 Unsatisfactory (MU).

3.3.5 Overall Outcome (*)

Given the objective-level and outcome-level targets are mostly met, the overall project outcome is ranked as Moderately Satisfactory (MS) for outcome 2,3 and 4 and Unsatisfactory for outcome 1.

3.3.6 Sustainability: financial (*), socio-political (*), institutional framework and governance (*), environmental (*), and overall likelihood (*)

Assessment element	Rating
Financial	Likely (L) for outcome 2,3 and 4. Unlikely for outcome 1.
Institutional Framework and governance	Likely (L) for outcome 2,3 and 4. Unlikely for outcome 1.
Socio-political	Likely (L)
Environmental	Likely (L)
Overall Likelihood of Sustainability	Likely (L) for outcome 2,3 and 4. Unlikely for outcome 1.

Sustainability of the project is judged by the commitment of the project benefits to continue and replicate beyond the project completion date. The evaluation identifies key risks to sustainability and explains how these risks may affect continuation of the project benefits after the project closes. The assessment covers institutional/governance risks, financial, socio-political, and environmental risks.

Financial sustainability

The financial risks to sustainability relate to the likelihood of continuation of the funding offer for EE/RE in rural housing. Both green mortgage and the new GLFM are not financially sustainable, currently, there are no clear plans defined to sustain the GLFM mechanism beyond the GEF resource, no funding allocated by the Ministry of construction nor by the fund for future years to continue the GLFM functionality, also there is no certain international financing agency seems to be willing to support the GLFM, unsurprisingly as it is just a grant mechanism. Subsidies, by their nature, are not sustainable: once the budget runs out, the subsidy ends.

The Asian Development Bank (ADB) has recently approved a $150 million loan that will help expand green renovation loans in Uzbekistan while boosting the funding available to commercial lenders in the country to continue providing affordable home loans. The loan, under ADB's Mortgage Market Sector Development Program, will supplement funding for the Mortgage Refinancing Company of Uzbekistan (UzMRC) to make local currency resources available to eligible financial institutions that provide residential mortgages, home improvement loans, and refinance green renovation loans. In Uzbekistan, borrowers can use green renovation loans to refurbish or install heating and cooling systems, install solar panels, improve insulation water—improving energy efficiency[21]. The ADB funding mechanisms is not directly linked with GLFM, so it is not providing resources for this specific scheme, in fact, it is loan-based programme which means it is non-grant mechanism (unlike the GLFM), nonetheless, the ADB initiative is expected in the future to contribute to the overall objectives of the GEF project.

Asian Development Bank (ADB) and Islamic Development Bank (IsDB) have not extended funding for rural housing construction beyond the end of 2021. This meant transition from the government subsidized mortgage to a new commercial mortgage system. And with the GLFM unlikely to continue, then a standard commercial loan for RE/EE will continue to be available for the rural communities in Uzbekistan (i.e without the project subsidies), however, the appetite to uptake these loans remains limited in light of the heavily subsidised tariff[22] and the fact that the

[21] More information about the ADB program is available here.

[22] Recently, subsidized flat energy tariffs were replaced by the new tariff system: announced in April 2024, in force from 01 May 2024 the tariff for "social norm" of 200 kWh (very low if air conditioners are used) was increased by 52.5% (UZS 450)

current payback period reaches up to 25 years. The government initiated a process of lifting subsidies which is expected to enhance the overall implementation of EE/RE policies including the uptake of EE/RE loans. Households can only be motivated for solar energy to offset the power outages or to get additional/stronger supply, but not because it economically feasible case.

The good news, though, that the EE building codes and EE/RE prototype designs are embedded into the Government policies and frameworks, and the finance for implementing these are also embedded in the RHP or other housing programmes, especially that the EE codes are mandatory with effective enforcement mechanisms in place, so the possibility of replication is quite high through this line when constructing new housing project through the RHP (if extended or renewed) or any other similar housing programs.

Based on this, the financial sustainability for the implementing EE codes and EE/RE prototype designs are Likely (L), and for GLFM subsidy mechanism is Unlikely (U).

Institutional framework and governance risks to sustainability

The project signed RPA agreement with the Extra-budgetary Intersectoral Energy Saving Fund under the Ministry of Energy of Uzbekistan in July 2023, and the timeframe of this agreement is bound by the timeframe of the project i.e October 2024. There is no specific institutional settings defined no agreed for the continuation of the GLFM subsidies beyond that stage, and as said above, in absence of future funding for the allocation the sustainability of outcome 1 is Unlikely.

On the other side, there is a strong institutional framework backing up the EE building codes and EE/RE prototype designs. The ministry on construction takes a leading role in developing and implementing the EE code including effective enforcement mechanisms are in place. Also, Qishloq Qurilish Loyiha (QQL) totally owns the new EE/RE prototype designs and started already implementing them.

The project invested heavily in capacity building which plays a pivotal role in ensuring the long-term success and sustainability of the project outcomes. Training included energy audit, Green loan financial support mechanism, TOT on the application of new energy-saving technologies and solutions. By installing robust capacities in energy management and maintenance, the project lays a solid foundation for these initiatives to sustain.

The project developed recommendations on inclusion of energy efficiency requirements and climate considerations into two existing land-use codes ShNK 1.03.02-04 and ShNK 2.07.01-03. In June 2023, improved two codes are submitted to the Ministry of Construction, Housing and Communal Services for final review and approval, yet and only the later has been approved. It is important for the project to ensure that full endorsement of the recommendations prior project closure.

The institutional framework for outcomes 2,3 and 4 is highly supportive and poses no risks, serving as a crucial driver for the project's success.

Based on this, the institutional framework and governance sustainability for the implementing EE codes and EE/RE prototype designs are Likely (L), and for GLFM subsidy mechanism is Unlikely (U).

Socio-political risks to sustainability

When analysing socio economic risks to sustainability, an examination is made of the potential social or political risks that may jeopardize sustainability of project outcomes.

The contributed to increase level of awareness of the public as well as local authorities effectively. The awareness survey shows better trends in awareness and adoptions of the EE/RE technologies, however, there is more needs to be done to motivate consumer behaviours towards EE/RE technologies.

Through the TE engagement with beneficiaries, it was evident the lack of knowledge and skills in dealing with the solar systems installed, and this is further complicated by the lack of qualified suppliers and professional maintenance services of the PV in rural areas. Some of the beneficiaries have pointed out that inverters were exploded when they exposed to heavy load which also could expose the households to a health risk if not educated on how and when to use the solar system.

Another important issue to pay attention to is the social risk associated with tariff reforms announced by the government of Uzbekistan. Although these are beyond the control of this project, but it is important to advocate for socially responsible tariff reforms acknowledging those most vulnerable and poor communities by providing them with alternatives to avoid overburden them.

The project includes activities aimed at building the capacities of duty-bearers to fulfill their obligations, such as monitoring building performance and verifying savings. Additionally, the project aims to empower rights-holders by raising homeowners' awareness of energy-efficient and renewable home features and increasing financing options to realize those features.

Therefore, the ranking for **socio – political sustainability is Likely (L).**

Environmental risks to sustainability

The project is explicitly designed to mainstream environmental sustainability by introducing more efficient and less resource-intensive housing throughout rural areas in Uzbekistan. Efficient homes through the minimum energy performance standards and EE building codes and Renewable energy technologies reduce the amount of non-renewable resources consumed in rural areas and avoid GHGs.

The main environmental risk pertains to community health and safety due to the improper transport, storage, use, and disposal of waste or hazardous materials. Although the project itself is not funding construction (this is funded by ADB), it has addressed this risk within the framework of the Responsible Party Agreement (RPA) between UNDP and the Extra-Budget Intersectoral Energy Saving Fund under the Ministry of Energy of Uzbekistan, effective from 10/07/2023. The project has included exclusionary criteria related to the use of hazardous materials in the Green Loan Financial Mechanism Manual to mitigate these risks.

Therefore, the ranking for **environmental sustainability is Likely (L).**

Taking a composite view of the rankings for financial, socio – political, institutional as well as environmental sustainability probabilities, the overall likelihood of sustainability is ranked as Likely (L) for outcomes 2, 3 and 4 and Unlikely (U) for outcome 1.

3.3.7 Country ownership

National governmental institutions in Uzbekistan have shown a commendable level of country ownership. The adoption and endorsement of policies, regulations, and decrees, including EE building codes by the Ministry of Construction and the EE/RE design prototypes by Qishloq Qurilish Loyiha (QQL) demonstrate a significant commitment from national partners, this is also true in case of the local authorities who have been faciliatating the on ground implementation. There are no concerns over the ownership of the EE building codes and EE/RE design prototypes. The strong collaborative spirit in the form of information sharing, research, and collaboration, etc. prevailed among stakeholders from all sectors.

The project extended its collaboration with the Ministry of Energy, particularly with the Fund through signing the RPA in July 2023. The fund has been also committed to the RPA terms since then, but as pointed out earlier in this report, there are no agreed arrangements for the time after the project concludes.

3.3.8 Gender equality and women empowerment

The project successfully incorporates a gender perspective throughout all project phases, including planning, execution, monitoring, evaluation, and reporting. This approach ensures equitable access and benefits for both women and men to all resources provided by the project, such as EE/RE solutions. From the outset, the has prioritized gender strategies and analysis to identify and address gender-related issues, disparities, and dynamics within the project's scope. This foundational work enabled the development of gender-sensitive plans and activities.

The project recognises that women are particularly burdened by power interruptions and lack of electricity, women's engagement in microenterprise and home-based work is seen as an important means of expanding women's economic opportunities, but many women's informal sector activities are energy-intensive and therefore affected by energy availability and price.

From the RHP point of view, gender considerations are already closely monitored. In the framework of its lending to the Rural Housing Programme, the international lending partner, ADB, has established a 30% quota for loans to women. The new Green Loan Financial Mechanism (GLFM) to support green loans in rural housing offers more opportunities for females by increasing the subsidy level for females by 2.5%.

During the implementation, the project has mainstreamed gender into its activities, for example, 56 women journalists successfully participated in training for media representatives on the topic "Effective communication skills to address topics such as energy efficiency, climate change, and the advantages of adopting energy-efficient and low-carbon housing solutions in rural areas". Women also participated in the workshop and exhibition of EE and LC materials on the topic "Experience of foreign and domestic manufacturers in the development of energy-saving heat-insulating materials" for the staff of design institutes.

It is noted that female participation in trainings for architects, builders, designers, etc., on code compliance, EE/LC design, planning, and use of relevant guidance manuals is around 14%, falling short of the defined target of 40%. This may be attributed to the male dominance in these occupations. However, it is evident that the project has made training opportunities equally accessible to both genders.

Data collection for 'people-count' related indicators has been designed and implemented in a gender disaggregated approach where possible, including through the awareness and satisfaction surveys where gender balance has been ensured in the number of respondents.

The representation of women within the project management and teams seems to be appropriate, women are actively participating in events, and efforts are being made to maintain gender balance. Gender equality has been promoted across project activities and platforms such as technical meetings and workshops, monitoring and reporting; and forums in which energy efficiency related issues are discussed and in which potential solutions are proposed.

3.3.9 Cross-cutting Issues

The project promotes the active participation of both rights-holders (rural families) and duty-bearers (government officials at the local, provincial, and country level). The project was crafted and executed with emphasis on human rights principles, incorporating the ideals of equality in both the distribution of knowledge and the sharing of its benefits. By promoting access to affordable, modern, and comfortable housing with a reliable supply of heat and power to the rural communities, and implementing an inclusive participatory engagement approach in targeting beneficiaries in the rural areas, the principles of Leave No One Behind (LNOB) has been applied to reach those who are most vulnerable and disadvantaged. Cross-cutting issues such as poverty alleviation, disaster prevention and recovery and human rights have been integrated into UNDP Social and Environmental and Social Screening (SESP) as relevant.

3.3.10 GEF Additionality

GEF additionality, defined as the additional outcome (both environmental and otherwise) that can be directly associated with the GEF-supported project. In December 2018, the GEF Council approved 'An Evaluative Approach to Assessing GEF's Additionality'. GEF IEO classifies additionality into six factors: Specific Environmental Additionality; Legal/Regulatory Additionality; Institutional Additionality/Governance additionality; Financial Additionality; Socio-Economic Additionality; and Innovation Additionality[23].

The GEF additionality in the project involves overcoming the key barrier to the wider adoption of EE/RE in Uzbekistan that would have not been achieved without the GEF funding, the project contributes 4 main types of additionalities, these include:

Table 8: GEF additionality

Additionality	Project contribution
Legal/Regulatory Additionality	Overcoming the regulatory barriers by introducing the new building codes for EE and RE.
Institutional Additionality/Governance additionality	Overcoming the limited capacity barrier by building the individual and institutional capacities of the ministry of construction, QQL, QQB as well as architects, builders and designers.

[23] GEF -IEO, An Evaluative Approach to Assessing GEF's Additionality, 2018.

Financial Additionality	Overcoming the financial barrier by introducing financial mechanism to fund the EE/RE. Given the unsatisfactory delivery of outcome 1 under this project, the financial barriers remain valid, and the use of GEF resources under component 1 didn't demonstrate incremental value.
Specific Environmental Additionality	Co2 reduction and overcoming the awareness barrier by increasing, to a certain extent, the capacities and awareness on the importance of energy efficiency and its benefits, and the opportunities to achieve energy and non-energy benefits from energy efficiency.

3.3.11 Catalytic Role / Replication Effect

Replication lies at the heart of the project strategy and design, conceptually the project is meant to remove barriers and enable the environment for large scale adoption of EE housing in Uzbekistan and develop sustainable financing models that continue to attract attentions of rural communities to the EE/low carbon housing.

The replicability of the project outcome is assessed at two levels

- Through the implementation of the EE building codes and EE designs prototypes, and these have already been seen during the implementation stage of the project where the building codes and the new deigns are indeed being implemented on the ground, and it is evident that it will continue to replicate and upscale further in the future independently from the project.
- Through the introduced subsidy mechanism: It is fair to expect that no replication is expected based on this financial mechanism in the absence of clearly defined financial and institutional arrangements for the subsidy programme to continue after the project.
- The replicability of the NZEH is also limited, despite successful demonstrations, mainly because of the large capital investment needed upfront without financial incentives.

In brief, replications through RHP (if renewed) and similar programmes are very likely as a result of the EE building codes and EE designs prototypes, but the individual level, replication is quite limited because of the large capital investment needed upfront without financial incentives, especially in light of the heavily subsidized tariffs.

3.3.12 Progress to impacts

Long-term impacts (of different sorts) can be expected from the project on the short term and long-term. The project achievements on regulatory framework, capacity building, EE building codes and EE designs prototypes will result in number of impacts including more reduction of CO2 emission, electricity savings, cost savings and non-energy benefits (for example thermal comfort, improved economic status, increased productivity/quality or reduced maintenance costs).

According to the energy audits done by the project, the heat resistance of EE/LC house external walls was three times higher than that of non-EE houses, and EE/LC houses consumed an average of 134 kWh/m² per year compared to 426 kWh/m² for non-EE houses.

These audits confirmed that EE building codes were implemented to varying extents. For instance, in some regions, typical buildings showed lower energy efficiency compared to those designed with EE features. Energy-efficient buildings generally demonstrated better performance in terms of energy consumption for heating and

hot water supply compared to typical buildings. The energy audits revealed significant differences in energy consumption between typical and energy-efficient buildings. The audits highlighted that energy consumption patterns varied significantly between summer and winter periods. Winter measurements provided critical data for assessing the thermal performance of building envelopes and the efficiency of heating systems.

4. Conclusions, Recommendations & Lessons

4.1 Main Findings & conclusions

Project results

1. The project's objective has been largely achieved through the successful adoption of EE prototype housing designs, the implementation of EE building codes, and the capacities and awareness established by the project (under outcomes 2, 3, and 4 respectively). However, the project failed to introduce sustainable non-grant financial mechanisms for EE and renewable energy (RE) technologies.

2. The project met its GHG emissions reduction targets by the project's end (63,812 t CO2 eq – 120% of the EOP target) and it partially met its 20-year GHG emissions reduction goal (64.5%). The project also achieved and outperformed its energy savings targets, achieving only 304% during the project and 169% over 20 years. This represents energy savings from the buildings construed based on the 24 prototype designs for EE and low-carbon houses that have been developed by the project, and where the GEF funding was used to cover the cost of developing these designs.

3. The project directly benefited 6,770 people (50% females) across 1,354 households through financial subsidies for low-carbon housing via the green mortgage mechanism between 2019-2020. Additionally, 26 households benefited from the Green Loan Financial Mechanism (GLFM) under the Inter-branch Energy Conservation Fund. 5,753 individuals (37% female) have benefited from the capacity building and awareness activities across all components.

4. **Under component 1,** the Green Mortgage mechanism failed to stimulate EE housing market transformation, as it focused on providing free solar systems, spending nearly $2 million on an unfeasible approach. Consequently, the project paused this component and developed a Green Loan Financial Mechanism (GLFM).

5. The GLFM faces critical concerns: it has no plans for funding beyond GEF support, does not balance support between RE and EE, limiting its impact on the EE market, and it is extended to urban areas, which undermines the project's goal of targeting vulnerable rural communities. It also lacks defined post-project arrangements for operations and financing. These challenges suggest the GLFM may not continue beyond the project, though RE/EE financing on normal standards will remain available to communities.

6. The project's original design intended to allocate only 5% of Component 1 support to RE and 95% to EE measures due to their superior cost-efficiency. However, the project deviated from this plan, fully allocating its support to photovoltaic (PV) systems under the green mortgage mechanism and the GLFM. This deviation occurred because RE is more attractive to people, and no limits were set for each category by the finance mechanism. Nonetheless, the green mortgage mechanism in 2019-2020 benefited 1,354 households (approximately 6,770 people, half of whom are females) through the purchase of low-carbon housing, and the GLFM in 2023-2024 enabled the acquisition of PV systems.

7. **Under component 2,** the project collaborated closely with QQL to develop 24 prototype designs for EE and low-carbon houses, which are now nationally approved and implemented at multiple sites across

Uzbekistan. This collaboration represents a significant achievement, demonstrating the project's effectiveness in implementing EE/LC measures on the ground. Additionally, the project constructed a Nearly-Zero Energy House (NZEH), incorporating passive design elements and showcasing EE/RE technologies. The NZEH was completed and demonstrated in various events, including a local media event in September 2022 and the International Youth Technical Summit in May 2023.

8. The project conducted 180 energy audits across different types of houses, revealing that EE/LC houses consumed an average of 134 kWh/m² per year compared to 426 kWh/m² for non-EE houses. The heat resistance of EE/LC house external walls was three times higher than that of non-EE houses. Despite these positive results, the absence of a regulatory and certification framework for energy audits and the limited availability of qualified energy auditors in Uzbekistan pose significant challenges.

9. The project developed a Technology Needs Assessment (TNA) to evaluate market conditions and identify necessary supply-chain enhancements for implementing the State Programme on Affordable Rural Housing in Uzbekistan. Six women-focused group meetings, involving 156 women from diverse backgrounds, were conducted to assess their needs for EE/LC technologies and identify barriers to adoption.

10. The project provided training to participants in the construction process (architects, builders and designers) across various regions, ensuring support for construction and reconstruction activities and effective control over the quality of construction and installation works.

11. **Under component 3**, The project successfully reviewed four building codes and developed four new 'code compliance manuals' related to floors, roofing, thermal engineering, solar water heater, norms of energy consumption for HVAC, natural and artificial lightning and green construction to introduce stricter Minimum Energy Performance Standards for buildings. Additionally, as the government was transitioning to the green energy sources and promoting passive construction techniques two new codes on PV and passive house design were developed..

12. The enforcement and compliance process for building codes in Uzbekistan is robust. All construction and reconstruction projects must obtain design approval at the outset, ensuring compliance with building codes. To date, no non-compliance cases have been reported, indicating 100% compliance with the new codes.

13. The project significantly invested in building the capacities of local specialists, training 1,658 individuals (including 223 females) on code compliance, EE/LC design, planning, and the use of relevant guidance manuals.

14. The project developed recommendations for incorporating energy efficiency requirements and climate considerations into two existing land-use codes (ShNK 1.03.02-04 and ShNK 2.07.01-03). These recommendations were submitted for final review and approval, the latter one is approved.

15. **Under component 4**, the project utilized local master plans to emphasize the importance of public participation in developing and approving master plans for settlements. 32 communities (makhallas) incorporated climate change considerations into their decision-making processes.

16. Awareness of EE and low-carbon housing significantly increased through various initiatives, including workshops in 10 regions, master plan training, journalist training, and science-based knowledge dissemination via rural resource centers. However, TE engagement with beneficiaries and survey results indicate a continued need for more awareness. Only 56.6% of survey respondents (n=1,579) were aware of the benefits of renewable energy sources (RES), and 82.3% believed knowledge on EE and RES should be included in educational programs. Furthermore, only 14.6% were aware of available green loans, highlighting a gap in awareness regarding financing opportunities for EE/RE technologies.

17. The project's activities received significant media coverage, with 236 references in local and national media, including television, radio, newspapers, magazines, official websites, and social networks.

18. **Adaptive management**: While some of the MTR recommendations have been positively responded to, others were partially implemented. The MTR recommended significant changes to improve project management. A key recommendation was to reassess component 1, shifting focus from "green mortgages" redirect focus to other project components. UNDP commissioned a team of consultants that proposed providing rebates for energy efficiency investments, but the final GLFM developed instead offered partial loan principal compensation for renewable energy and energy efficiency investments, diverging from the initial recommendation. This change raises concerns about the project's adaptive management and the effectiveness of its decision-making processes.

19. **Relevance**: The project is aligned with, and embarks on, the Rural Housing Programme (RHP) to deliver sustainable rural housing, where the Government of Uzbekistan is making significant investments in new rural and peri-urban settlements through its RHP. Launched in 2009, the RHP was accompanied by a Presidential Decree, "On Additional Measures for Scaling-Up Housing Construction in Rural Areas.

20. **Effectiveness**: The project faced significant challenges that impacted implementation, including low energy prices due to subsidies, limited consumer awareness of EE and RE benefits, the restricted capacity of local EE/RE suppliers, the COVID-19 pandemic disrupted field activities and investment engagements, high staff turnover and lengthy procurement processes further hindered progress. Despite these obstacles, the project adapted as much as possible, leveraging inclusive stakeholder engagement and the Rural Housing Programme (RHP) to align with government policies and secure co-financing.

21. **Efficiency**: The project's cost-effectiveness stems from its barrier removal approach, which is inherently cost-effective. Partnerships with financial institutions and the new fund under the Ministry of Energy were also crucial, mobilizing over $223 million in co-financing to cover the incremental costs of EE/RE measures. However, the $3 million spent on component 1 did not result in a sustainable non-grant mechanism as intended. The approach of providing free solar systems and subsidizing RE loans under the green mortgage and GLFM proved not cost-effective and lacked replication potential.

22. The project faced significant delays, largely due to high staff turnover and a nearly vacant PMU for six months, extending the project timeline from an initial six years to 7.5 years, ending in October 2024. These delays increased administrative costs for the $6 million project. Assuming full consumption of the 2024's budget, the project is expected to consume 100% of the GEF funding, with UNDP making additional cash

co-funding reaching $450K (originally planned $300K). No audits have taken place over the last seven years despite the MTR comments on the financial management of the project

23. **Financial sustainability**: The project's financial sustainability is at risk due to the lack of clear plans or allocated funds to continue the Green Loan Financial Mechanism (GLFM) and green mortgage beyond GEF resources, with no international agencies likely to support these grant-based mechanisms. While standard loans for EE/RE remain available, their uptake is limited due to subsidized energy tariffs and long payback periods. However, the project's embedding of EE building codes and EE/RE prototype designs into government policies and frameworks, with integrated financing in the Rural Housing Programme (RHP) and mandatory enforcement, ensures high potential for replication and sustained impact through government channels.

24. **Institutional sustainability**: The project's sustainability is jeopardized by the lack of plans or funds for continuing the GLFM subsidies beyond the project's end in October 2024. Conversely, the strong institutional framework for EE building codes and EE/RE prototype designs, led by the Ministry of Construction and QQL, ensures these components' durability. Significant investment in capacity building, including training in energy audits and energy management, further supports the project's long-term success.

25. **Socio-political sustainability**: While awareness and adoption trends have improved, more efforts are needed to motivate consumer behaviours towards EE/RE technologies. The TE engagement with beneficiaries revealed a lack of knowledge and skills in managing installed solar systems, compounded by a scarcity of qualified suppliers and professional maintenance services in rural areas.

26. **Environmental sustainability**: The project is explicitly designed to mainstream environmental sustainability by promoting more efficient and less resource-intensive housing throughout rural Uzbekistan. The primary environmental risk involves community health and safety due to improper transport, storage, use, and disposal of waste or hazardous materials. Although the project does not fund construction directly (funded by ADB), it has addressed this risk by including exclusionary criteria related to hazardous materials in the Green Loan Financial Mechanism Manual.

27. **Replications** through RHP and similar programmes are very likely as a result of the EE building codes and EE designs prototypes, however, at the individual level, replication is quite limited because of the large capital investment needed upfront without financial incentives, especially in light of the heavily subsidized tariffs.

28. **Gender mainstreaming**: The project successfully incorporates a gender perspective throughout all phases, ensuring equitable access and benefits for both women and men to EE/RE solutions. By prioritizing gender strategies and analysis from the outset, the project developed gender-sensitive plans and activities that address gender-related issues, disparities, and dynamics. The Rural Housing Programme (RHP) already closely monitors gender considerations, with the ADB establishing a 30% quota for loans to women. The new Green Loan Financial Mechanism (GLFM) offers more opportunities for females by increasing the subsidy level by 2.5% for women. The project mainstreamed gender into its activities, and women were

appropriately represented within project management and actively participated in events, promoting gender equality across all project activities and platforms.

29. **Co-finance**: The project has significantly exceeded its co-financing targets, securing a total of USD 282,771,537 by the TE stage, bringing the total project cost to USD 286,771,537 assuming full consumption of GEF resources. The UNDP cash co-financing target was surpassed, increasing from $300K to $450K. The majority of co-financing came from QQB, QQL, and homebuyers, with $223,200,000 from participating banks (Qishloq Qurilish Bank, JSCB and Ipoteka Bank, JSCB) for financing 1,588 pilot EE and low-carbon houses, $23,420,439 from Qishloq Qurilish Loyiha, LLC (QQL) for design revision, site preparation, and construction oversight, and $35,700,000 from homebuyers as cash down payments.

30. **Stakeholder participation**: The project actively cooperated with various stakeholders such as the Ministry of Construction, Housing, and Communal Services, the Ministry of Energy's Research Institutes, and financial institutions like JSCB "Qishloq Qurilish Bank". Stakeholder engagement was essential, covering policies, legislation, and financing. Although the project effectively engaged with financing agencies, it had limited involvement with private sector suppliers and energy service companies.

31. **M&E**: The M&E Framework includes standard UNDP-GEF items, however, it lacks a detailed Monitoring Plan specifying data collection processes, methods, frequency, verification means, assumptions, and responsibilities. Despite this, the overall M&E design is adequate for monitoring results and tracking progress, supported by sufficient resources (US$ 248,000) and clearly defined roles and responsibilities. However, the evaluation budget of $50,000 may be underestimated for a project of this scale.

32. The project board, activated in 2017, held its first meeting in September 2017 and has met 12 times in total, providing strategic guidance and oversight, including approving a project extension. However, no board meeting occurred in 2020 due to COVID. Several shortcomings in the M&E systems were identified including: annual audits were not conducted over the past seven years; core indicators and tracking tools were not updated at mid-term, as noted by the MTR; the reported energy savings included inaccurate calculations from solar systems; PIRs included indirect energy savings from EE code implementation, although targets were set for direct savings only; lifetime GHG and energy savings calculations used a 25-year technology lifespan instead of the 20 years assumed in the project document; and the satisfaction survey did not include a control group, making it difficult to measure the sixth objective-level indicator as expected.

33. **Quality of UNDP Implementation**: UNDP handled direct project services, including recruitments, procurement, MTR, and TE, while the Ministry of Construction served as the executing agency. UNDP exceeded its financial contribution target, contributing $450K instead of the planned $300K. Despite supporting financial monitoring, UNDP did not conduct the planned annual audits, even after MTR findings highlighted financial management issues. High staff turnover and prolonged vacancies in the PMU also caused delays. Nevertheless, UNDP led the response to MTR recommendations, developing and implementing a management response plan, with the quality of this response covered in the 'Adaptive Management' section.

34. **Quality of Implementing Partner**: The PMU continued to operate smoothly. The Ministry of Construction, serving as the chair of the Project Board, was responsible for managing the project. The Ministry's leadership was crucial for sustainability, given its mandate to enforce building codes. It also facilitated engagement with other ministries and local authorities.

35. **Project design:** The TE team found the project design to be a mix of strengths and weaknesses, resulting in a moderately satisfactory rating. Positively, the design effectively identified and aimed to address both market and non-market barriers to incorporating energy and climate considerations in housing investments, particularly acknowledging affordability as a major obstacle. The project aimed to tackle these barriers through policy and financial de-risking instruments and targeted financial incentives. A significant strength was leveraging the RHP as a foundational vehicle to drive project delivery, align with government policies, and ensure government ownership.

36. However, the project design lacked a robust feasibility analysis of the green mortgage scheme, failing to justify its impact on the market. and whether 0.3% annual reduction in the already heavily subsidised interest rate would indeed make any difference at all in the level of uptake of low-carbon housing particularly in light of the heavily subsidized electricity tariff. The project's ToC did not provide a clear pathway for market transformation, particularly through component 1. The lack of a comprehensive market transformation framework led to significant delivery challenges and required numerous adaptive measures during implementation.

37. The PRF was generally found to be clear, feasible, and logically sequenced, linking project outcomes and outputs effectively to the project objective. However, some minor shortcomings were noted in the PRF including: the wording of some indicators could be more consistent with their targets to avoid confusion; measuring number of focus groups convened during the rural technology needs assessment (TNA), is not a suitable target for a needs assessment; and the lack for an indicator to measure the application of new designs in rural housing projects, which is a crucial impact under outcome 2.

4.2 Recommendations and Lessons Learned

Below recommendations take into account the timeframe available to implement recommendation. The project is so close to be operationally closed at the time of drafting this TE evaluation report (i.e until October 2024). Accordingly, the following are a mix of recommendations for corrective actions and forward-looking recommendations/ lesson learned focussed on future programming:

#	TE Recommendation	Entity Responsible	Timeframe
1	**Develop an exit plan with focus on documenting future arrangements for EE building codes, EE/RE prototype designs, land use plan recommendations, future housing loans, etc**. The strategy should set out the status of activities under each component and describes what is needed to take the work forward after the close of the project. The exit strategy should be focussed on handing over the final products to the stakeholders, ensuring access to the project resources after the project ends, and more importantly documenting the future arrangements	PMU	Aug-Oct 24
2	Follow up with the Ministry of Construction, Housing and Commercial Services, to ensure full **endorsement of the recommendations on inclusion of energy efficiency requirements and climate considerations into two existing land-use codes** ShNK 1.03.02-04 related to instructions on the preparation and approval of urban planning documentation in the field of urban planning.	PMU	Aug-Oct 24
3	**Develop and implement a capacity building programme focused on the participated communities (homeowners, local technicians, and community leaders)** on basic PV solar system operation, routine maintenance procedures, troubleshooting common issues, and safety practices. This should include: - Training sessions - Development of a simple, illustrated maintenance guidelines and checklists that outline regular maintenance tasks, timelines, and indicators of potential issues. - Connecting the communities with PV system providers/installation companies to provide maintenance services when needed.	PMU	Aug-Oct 24

Lessons learned.

- **Full design of the financial mechanism for Energy Efficiency (EE) and Renewable Energy (RE) should be part of the project proposal not to be left for the implementation stage.** Incorporating a comprehensive financial mechanism for Energy Efficiency (EE) and Renewable Energy (RE) into the project proposal is critical to ensure

the project's success and sustainability. This mechanism should outline how the project will be financed, managed, and sustained over time, addressing potential risks and ensuring stakeholder engagement.

- **Throughout the project implementation, take a step back, and apply the rule of "Pause. Reflect. Reset. Refocus.".** The component 1 of this project has gone out of scope at one point and this led to substantive impacts on the project delivery and outcomes. In a complex projects like this one, it is a good project management practice for the PMU and RTAs to take step back and think about what went well? What didn't work so well? Are we still on the right pathway with the theory of change? What is our end game of our activities? This approach allows project teams to periodically take a step back, evaluate the current state of the project, identify issues, and make necessary adjustments to ensure successful project completion.
- **Effective Engagement with Energy Efficiency (EE) and Renewable Energy (RE) Suppliers for Project Implementation.** Implementing Energy Efficiency (EE) and Renewable Energy (RE) projects requires effective engagement with suppliers to ensure the success and sustainability of these initiatives. Engaging suppliers effectively involves clear communication, robust partnership frameworks, capacity building, and continuous collaboration. The existence of qualified suppliers ensures quality services and sustainability beyond the project.
- **Effective engagement and communication with stakeholders are essential for success**: Projects that involve a transition to energy-efficient technologies, such as EE/RE housing, necessitate the involvement and buy-in of various stakeholders, including government entities, the private sector, local communities, and end-users. The TE findings underscore the importance of engaging these groups early and throughout the project lifecycle to ensure alignment of goals, understanding of benefits, and mitigation of resistance to change. The significant engagement with local stakeholders and the training of 1,658 individuals demonstrate the effectiveness of capacity-building initiatives. Continued investment in local capacities and stakeholder engagement is essential for sustaining project impacts and fostering community ownership.
- **Strong Monitoring and Evaluation (M&E) Systems are essential:** The shortcomings in the M&E systems, such as lack of annual audits and detailed monitoring plans, indicate the need for more rigorous and comprehensive M&E frameworks. Clear, consistent indicators and regular updates are essential for accurate progress tracking and impact assessment.
- **Adherence to Recommendations and Adaptive Management:** The deviation from consultant recommendations in the GLFM development is assessed as a major drawback in the project adaptive management. This highlights the importance of adhering to expert advice and maintaining a transparent adaptive management process. Clear justifications for any deviations should be documented to ensure strategic coherence and stakeholder confidence.

Annexes

Annex 1: TE ToR (excluding ToR annexes)

Annex 2: List of documents reviewed.

List of documents that have been reviewed includes, but not limited to:

1. Project Identification Form (PIF)
2. Final UNDP-GEF Project Document with all annexes
3. CEO Endorsement Request
4. UNDP Social and Environmental Screening Procedure (SESP)
5. Inception Workshop Report
6. Mid-Term Review report and management response to MTR recommendations
7. All Project Implementation Reports (PIRs)
8. Minutes of Project Board Meetings and of other meetings (i.e., Project Appraisal Committee meetings)
9. GEF Tracking Tools (from CEO Endorsement, midterm and terminal stages)
10. GEF/LDCF/SCCF Core Indicators (from PIF, CEO Endorsement, midterm and terminal stages);
11. Financial data, including actual expenditures by project outcome, including management costs, and including documentation of any significant budget revisions.
12. Co-financing data with expected and actual contributions broken down by type of co-financing, source, and whether the contribution is considered as investment mobilized or recurring expenditures.
13. Risks log report (generated from Quantum) for the status of risks
14. Electronic copies of project outputs (booklets, manuals, technical reports, articles, etc.)
15. Sample of project communications materials
16. Summary list of formal meetings, workshops, etc. held, with date, location, topic, and number of participants.
17. Minutes of meetings and workshop reports covering key meetings by the project
18. Awareness survey reports
19. Project communication strategy
20. Green Loan Financial Mechanism report
21. 20. Energy Audits Full summary report
22. Market survey reports
23. All decrees and regulations produced during the project implementation.
24. MoUs/RPAs signed by the project.
25. President Decrees #PP-3379 dated 08.11.2017, #PP-4028 dated 24.11.2018 and #PP-4422 dated 22.08.2019
26. Consultant's Report on Recommendations for Urban Planning Codes
27. Consultant's Report on 32 Communities' Decision-making Mechanism in Rural Settlements Planning
28. Awareness report/questionnaire data that was filled out within the project capacity building activities

Annex 3: Evaluation Question Matrix

Evaluation matrix is important to identifying the key evaluation questions and how they will be answered through the selected methods. The evaluation matrix is a tool that evaluators create as a map and reference in planning and conducting an evaluation. It also serves as a useful tool for summarizing and visually presenting the evaluation design and methodology for discussions with stakeholders. It details evaluation questions that the evaluation will answer, data sources, data collection and analysis tools or methods appropriate for each data source, and the standard or measure by which each question will be evaluated.

Table 9: Evaluation Matrix

Evaluative Criteria Questions	Indicators/evidence	Sources	Methodology
Relevance: How does the project relate to the main objectives of the GEF Focal area, and to the environment and development priorities a the national level?			
· To what extent was the project in line with GEF focal area, UNDP CPD, UNSDCF, Uzbikstan's Nationally Determined Contribution (NDC)?	· Level of alignment of project's activities with relevant stakeholders' plans · Stakeholders' perceptions on the relevance of project's activities to their needs · Degree of involvement and inclusiveness of beneficiaries and stakeholders in project design and implementation	· project documentations · national policies or strategies, project websites · Project stakeholders feedback	· Desk review · Stakeholders' interviews
· To what extent was the theory of change applied in the project relevant to promoting investment in energy efficient lighting	· Degree of coherence of the project design in terms of theory of change, components, choice of partners, structure, delivery mechanism, scope, budget, use of resources, etc.	· project documentations · Project stakeholders feedback	· Desk review · Stakeholders' interviews
· Are the project objectives and outputs clear, practical and feasible within its frame? Do they clearly address target groups?	· Level of coherence between programme design and project implementation approach · Identification of the problem and its causes in the project being addressed?	· project documentations · Project stakeholders feedback	· Desk review · Stakeholders' interviews
· To what extent were lessons learned from other relevant projects considered in the design?	· Degree to which other projects are referenced in the project design with lessons identified and built upon	· project documentations · Project stakeholders feedback	· Desk review · Stakeholders' interviews
· To what extent does the Project create synergy/linkages with	· Project's strategic partnerships and complementarities with other projects	· project documentations · Project stakeholders feedback	· Desk review · Stakeholders' interviews

other projects and interventions in the country?			
· To what extent was this Project designed as rights based and gender sensitive?	· Degree to which the project design identifies and address gender and human rights issues · Existence of gender actions plan	· project documentations · Project stakeholders feedback	· Desk review · Stakeholders' interviews
Effectiveness: To what extent have the expected outcomes and objectives of the project been achieved?			
· To what extent did the Project contribute to the attainment of the development of outputs and outcomes initially expected/stipulated in the Project Document's logical framework until the end of the project duration?	· **Delivery on project targets defined in the PRF** · Stakeholder feedback on the delivery and most significant achievements	· project documentations (PIRs) · Progress reports · Project deliverables · Project stakeholders feedback	· Desk review · Stakeholders' interviews
· To what extent has the UNDP partnership strategy been appropriate and effective?	· Partners feedback · Evidence on co-design and co-delivery of project activities	· project documentations (PIRs) · Progress reports · Project deliverables · Project stakeholders feedback	· Desk review · Stakeholders' interviews
· In which areas does the project have the greatest achievements? Why and what have been the supporting factors? How can the project build on or expand these achievements?	· Evidence of success factors · Stakeholders feedback on the upscaling potential	· project documentations (PIRs) · Progress reports · Project deliverables · Project stakeholders feedback	· Desk review · Stakeholders' interviews
· In which areas does the project have the fewest achievements? What have been the constraining factors and why? How can or could they be overcome?	· Stakeholders perceptions on the constraints	· project documentations (PIRs) · Progress reports · Project deliverables · Project stakeholders feedback	· Desk review · Stakeholders' interviews
· To what extent are project management and implementation	· Stakeholders feedback on the effectiveness of their participation	· project documentations (PIRs) · Progress reports	· Desk review · Stakeholders' interviews

participatory, and is this participation of target groups/stakeholders contributing towards achievement of the project objectives?	· Number, and type, of engagements with stakeholders · Extent to which stakeholders are aware of the project and its activities	· Project deliverables · Project stakeholders feedback	·
· To what extent has the project been appropriately responsive to the needs of the target groups and changing partner priorities?	· Stakeholders feedback on the extent to which their needs are addressed · Documented adaptive management actions to accommodate the changing priorities ·	· project documentations (PIRs) · Progress reports · Project deliverables · Project stakeholders feedback ·	· Desk review · Stakeholders' interviews ·
· Did Covid-19 measures have a positive or negative effect on the achievement of Project results?	· Documented implications of the COVID 19 · Documented delays that are directly attributed to the COVID 19 · Changes on project results as a result of the COVID 19. ·	· project documentations (PIRs) · Progress reports · Project deliverables · Project stakeholders feedback ·	· Desk review · Stakeholders' interviews ·
Efficiency: Was the project implemented efficiently, in line with international and national norms and standards?			
· How well did Project Management work for achievement of results?	· Extent to which project targets are met · Stakeholders feedback on the effectiveness of the project management · Effectiveness of the M&E functions · Frequency and effectiveness of the board in decision making and strategic guidance	· project documentations (PIRs) · board MoM · Progress reports · Project deliverables · Project stakeholders feedback	· Desk review · Stakeholders' interviews
· To what extent has there been an economical use of financial and human resources? Have resources (funds, staff, time, expertise, etc.) been allocated strategically and cost-effectively to achieve outcomes?	· Cost in view of results achieved compared to costs of similar projects from other organizations · Project team feedback ·	· project documentations (PIRs) · board MoM · Progress reports · Project deliverables · Project stakeholders feedback	· Desk review · Stakeholders' interviews

· To what extent have project funds and activities been delivered in a timely manner?	· Level of discrepancy between planned and utilized financial expenditures · Planned vs. actual funds leveraged · Timeliness of activities delivery · Co-financing data and evidence · Level of cash and in-kind co-financing relative to expected level	· project documentations · risk/issue register · PIRs · Project stakeholders feedback	· Desk review · Stakeholders' interviews
· To what extent do the M&E systems utilized by UNDP ensure effective and efficient project management?	· Existence, quality and use of M&E, feedback and dissemination mechanism to share findings, lessons learned and recommendation · Quality of M&E at the design stage · Quality of M&E throughout the implementation · Adequacy of the M&E budget · Alignment of M&E to the GEF requirements · Response to the MTR findings	· project documentations (PIRs) · board MoM · Progress reports · Project deliverables · Project stakeholders feedback	· Desk review · Stakeholders' interviews
· To what extent was there any identified synergy between UNDP initiatives/projects that contributed to reducing costs while supporting results?	· Linkages with the UNDP energy portfolio in the country · Documented cooperation and complementarities	· project documentations (PIRs) · board MoM · Progress reports · Project deliverables · Project stakeholders feedback	· Desk review · Stakeholders' interviews
Sustainability: To what extent are there financial, institutional, socio-political, and/or environmental risks to sustaining long-term project results?			
· To what extent will targeted stakeholders benefit from the project interventions in the long-term?	· Stakeholders feedback on the long term benefits · Level of ownership of the project benefits by the stakeholders · Existence of financial and institutional settings to support long term benefits ·	· project documentations (PIRs) · Risk log · Progress reports · Project deliverables · Project stakeholders feedback ·	· Desk review · Stakeholders' interviews ·
· Are there any political or financial risks that may jeopardize sustainability of project results?	· Evidence of commitments from government or other stakeholder to financially support relevant sectors of activities after project end	· project documentations (PIRs) · Risk log · Progress reports · Project deliverables	· Desk review · Stakeholders' interviews ·

	· Level of recurrent costs after completion of project and funding sources for those recurrent costs	· Project stakeholders feedback	
· Are the legal frameworks, policies and governance structures and processes in place for sustaining Project benefits?	· Efforts to support the development of relevant policies at the country level	· project documentations (PIRs) · Risk log · Progress reports · Project deliverables · Project stakeholders feedback	· Desk review · Stakeholders' interviews
· To what extent have development partners committed to providing continuing support? What is the risk that the level of stakeholder ownership will be insufficient to allow for the Project outcomes/benefits to be sustained?	· Level of project stakeholders ownership · Evidence of commitments from government or other stakeholder to financially support relevant sectors of activities after project end · Level of capacities at the country level to continue delivering on the project results	· project documentations (PIRs) · Risk log · Progress reports · Project deliverables · Project stakeholders feedback	· Desk review · Stakeholders' interviews
· To what extent does this UNDP intervention have a well-designed and well-planned exit strategy?	· Exit strategy in place and actively operationalisation	· project documentations (PIRs) · Risk log · Progress reports · Project deliverables · Project stakeholders feedback	· Desk review · Stakeholders' interviews
Cross-cutting issues and gender equality and women's empowerment: How did the project contribute to gender equality and women's empowerment?			
· To what extent have gender equality and the empowerment of women been addressed in the design, implementation and monitoring of the project?	· Extent to which programme products are sensitive to gender · Extent to which project data are sex-disaggregated · Existence of logical linkages between gender results and project outcomes and impacts	· project documentations · Project stakeholders feedback · List of project participants	· Desk review · Stakeholders' interviews
· Is the gender marker assigned to this project representative of reality?	· Existence of gender marker	· project documentations	· Desk review

Impact: Are there indications that the project has contributed to, or enabled progress toward reduced environmental stress and/or improved ecological status?			
To what extent has the project provided an enabling environment and basis for deployment of energy efficient lights?	Elements in place in those different management functions, at appropriate levels in terms of adequate structures, strategies, systems, skills, incentives and interrelationships with other key actors Evidence/Quality of steps taken to create an enabling environment and sustainability Degree to which project activities and results have been taken over by local counterparts	project documentations PIRs Project stakeholders feedback	Desk review Stakeholders' interviews
To what extent has the project established a sustainable financing mechanism for energy efficient lighting?	Effectiveness of the financing mechanism Stakeholders feedback the financing mechanism Evidence on new financing mechanisms	project documentations PIRs Project stakeholders feedback	Desk review Stakeholders' interviews

Annex 4: Interview questions

It should be noted that below interview questions have been used as a guide in the interviews, however, each individual interview is unique, and questions have been tailored to the interviewees' roles and perspectives. In addition, follow up questions have been asked based on the responses to obtain a full story from each response.

Questions

Introductory question

Could you please introduce yourself and explain your involvement and the role of your organization/agency in the project?

Effectiveness

1) In your opinion, what has been the greatest achievement in the project to date? And why?
2) What were the challenges in delivering project? How could we overcome these challenges?
3) What factors have contributed to achieving intended outputs and outcomes?
4) What worked so well and what didn't work so well? and why?

Impacts

5) What sort of impacts did the project deliver to its stakeholders?
6) What trends do you foresee in the implementing sustainable energy measures in housing in Uzbekistan?

Relevance

7) In your opinion, to what degree the project activities are aligned to the needs of the participating stakeholders?

8) In your opinion, to what degree the project activities are aligned with the strategic plans and strategies of the participating stakeholders?

Efficiency

9) In your opinion, has the project been delivered on time and on budget? Has there been anything underachieved or overachieved within agreed framework of the project, and what are the reasons/explanation for it?
10) In what ways has the project been adaptive to emerging issues and opportunities? Examples?

Sustainability

11) Do you foresee any social, financial or political risks that may jeopardize sustainability of the project outputs and outcomes?
12) What would happen to the project output and benefits when the GEF funding finishes?
13) Going forward, how do you see the capacity of participating stakeholders to pursue delivering on related outcomes?
14) What lessons have been learnt for the project in achieving outcomes?

Closing

- In what ways gender has been mainstreamed in the project? Do you have any gender-related concerns?
- Anything else you would like to add that we haven't covered?

Thank you for your kind participation!

2361

Annex 5 TE Mission itinerary and agenda

Time	Action/Meeting		
10 June - Monday			
10:00 – 10:20	**Briefing with Anas Fayyad Qarman, UNDP RR a.i.**		
10:20 – 10:50	**Meeting with UNDP ECA cluster and SPIU**		
12:00 – 12:30	**Meeting with the representatives of Qishloq Qurilish Loyiha, LLC** Familiarization with joint project activities Mr. Sapabek Sapayev, Deputy Director, Chief Engineer Ms. Alla Urazaeva, Head of the Department for Development of Engineering Communications Projects		
13:00 – 14:00	**Lunch**		
14:10 – 14:40	**Meeting with representatives of the Intersectoral Extrabudgetary Fund for Energy Saving under the Ministry of Energy of the Republic of Uzbekistan (the Fund)** **Mr. Elzod Rakhmanov, Director** **Mr. Akhmedov Obid, Head of Department of the Fund.** Familiarization with joint project activities		
15:00 – 15:30	**Meeting with representatives of** the Scientific Research Institute of Technical Regulation and Standardization under the Ministry of Construction and Housing and Communal Services of the Republic of Uzbekistan Discussion of joint project implementation and future opportunities Mr. Sherzod Sodiqov, Director Mr. Jamshid Saidov, Deputy Director Mr. Shokhjakhon Islomov, Department Head		
16:00 – 16:30	**Meeting with the representatives of the Business Development Bank** Familiarization with joint project activities **Azam Tillayev, Head of Business Development Department** **Ulugbek Tilavov, Manager of Retail department** **Umid Alimov, Head of Retail Business Department**		
16:30 – 17:30	**Travel from Tashkent city to Nurafshan city by project car**		
17:30 – 18:00	**Site visit to Tashkent Region** Visit to the Nearly Zero Energy Building Не ездили		
18:00 – 19:00	**Travel from Nurafshan city to Tashkent city by project car**		
11 June - Tuesday			
11:20 – 12:20	**Travel from Tashkent city to Fergana city by air**		
13:00 – 14:00	**Lunch**		
14:30 – 15:00	**Meeting with the representatives of the Main Department of Construction, Housing and Communal Services of Fergana region in Fergana city** Familiarization with the activity of the project in the Fergana Region Karimov Begzod – Chief Architecture of Ferghana Construction Department		

15:30 – 18:00	**Site visit to Fergana Region, Paski Beshkopa MFY** Visit to residents of 1-story houses with solar water heaters installed by the project subsidy: 1) Mirzahmetov Azizjon Karimovich, Paski Beshkopa Community chair, +998 91 1160984, 2) Sanoat Tilaboeva, head of Women unit of Paski Beshkopa Community 3) Mirzakulov Uluhbek, Mayer assistant for Paski Beshkopa Community 4) Kuziboev Murod, Head of construction of Rishtan disctrict 5) Habitants: Mamlakathon +998 90 8348797 and Mohira Juraeva Mamlakat Askarova, Madina Sirojidinovs		
	Stay in Asia Fergana Hotel		
12 June - Wednesday			
09:00 – 10:30	**Travel from Fergana city to Andijan city by project car**		
10:30 – 11:30	**Meeting with the representatives of the Business Development Bank branch in Andijan city** Familiarization with joint project activities 1) Khozhisultonov Samandar, Head of BRB bank of Andijan region, 2) Akmaljon, Kurgontepa BRB branch manager 3) Ravshanbek Ergashev, Khujabad BRB branch Manager		
11:30 – 13:00	**Site visit to Andijan Region** Meeting with beneficiaries of subsidies within the project's Green Loan Financial Mechanism 1) Zilola Abdulhamidova, Khujabod, Uzun str		
13:00 – 14:00	**Lunch**		
14:00 – 16:00	**Site visit to Andijan Region** Meeting with beneficiaries of subsidies within the project's Green Loan Financial Mechanism 1) Nazokat Odilova, Khujabod distrct, Turachek Community 2) Tahir Nizomov, Buloqboshi, 227 Turtol str., Qumariq Community, 3) Yuldashaliev Fahriddin, Chimbuloq Community, Khujabod distrct		
16:00 – 20:00	**Travel from Andijan city to Namangan city by project car**		
13 June - Thursday			
09:00 – 10:00	**Meeting with the representatives of the Main Department of Construction, Housing and Communal Services of Namangan region in Namangan city** Familiarization with the project activities in Namangan Region. Suppose to meet with Kasimov Elyor Rahmonberdievich, Chief Architecture of Namangan ((, but he was in Business travel to MinStroy		
10:00 – 11:00	**Travel from Namangan city to Uychi city by project car**		
11:00 – 13:00	**Site visit to Pastguzar MFY** Meeting with residents of 4-story apartments buildings with solar panels installed by the project subsidy Nodirbek, Pastguzar Community chair, Habitant, Zulhumor,		
13:00 – 13:30	**Travel from Uychi city to Namangan city by project car**		
13:00 – 14:00	**Lunch**		
19:00 – 23:44	**Travel from Namangan city to Tashkent city by train**		

14 June - Friday			
09:00 – 13:00	**Working at UNDP Country Office**		
14:30 – 15:00	**Debriefing with Anas Fayyad Qarman, UNDP RR a.i.**		
TBC	Departure from Tashkent International Airport		

2362

2363

Annex 6: TE Rating scales

Evaluation criteria and ratings: The standard evaluation criteria according to UNDP/GEF evaluation policy are Relevance, Impact, Effectiveness, Efficiency and Sustainability. The different scales for rating various criteria are shown in the tables below.

Table 10: TE Rating Scales & Evaluation Ratings Table

TE Rating Scales	
Outcome Ratings Scale - Relevance, Effectiveness, Efficiency	
6 = Highly Satisfactory (HS)	Level of outcomes achieved clearly exceeds expectations and/or there were no shortcomings
5 = Satisfactory (S)	Level of outcomes achieved was as expected and/or there were no or minor shortcomings
4 = Moderately Satisfactory (MS)	Level of outcomes achieved more or less as expected and/or there were moderate shortcomings.
3 = Moderately Unsatisfactory (MU)	Level of outcomes achieved somewhat lower than expected and/or there were significant shortcomings.
2 = Unsatisfactory (U)	Level of outcomes achieved substantially lower than expected and/or there were major shortcomings.
1 = Highly Unsatisfactory (HU)	Only a negligible level of outcomes achieved and/or there were severe shortcomings Unable to Assess (UA) The available information does not allow an assessment of the level of outcome achievements
Monitoring & Evaluation Ratings Scale	
6 = Highly Satisfactory (HS)	There were no short comings; quality of M&E design/implementation exceeded expectations
5 = Satisfactory (S)	There were minor shortcomings; quality of M&E design/implementation met expectations
4 = Moderately Satisfactory (MS)	There were moderate shortcomings; quality of M&E design/implementation more or less met expectations
3 = Moderately Unsatisfactory (MU)	There were significant shortcomings; quality of M&E design/implementation was somewhat lower than expected
2 = Unsatisfactory (U)	There were major shortcomings; quality of M&E design/implementation was substantially lower than expected
1 = Highly Unsatisfactory (HU)	There were severe shortcomings in M&E design/implementation Unable to Assess (UA) The available information does not allow an a
Implementation/Oversight and Execution Ratings Scale	

6 = Highly Satisfactory (HS)	There were no shortcomings; quality of implementation/execution exceeded expectations
5 = Satisfactory (S)	There were no or minor shortcomings; quality of implementation/execution met expectations.
4 = Moderately Satisfactory (MS)	There were some shortcomings; quality of implementation/execution more or less met expectations.
3 = Moderately Unsatisfactory (MU)	There were significant shortcomings; quality of implementation/execution was somewhat lower than expected
2 = Unsatisfactory (U)	There were major shortcomings; quality of implementation/execution was substantially lower than expected
1 = Highly Unsatisfactory (HU)	There were severe shortcomings in quality of implementation/execution Unable to Assess (UA) The available information does not allow an assessment of the quality of implementation and execution
Sustainability Ratings Scale	
4 = Likely (L)	There are little or no risks to sustainability
3 = Moderately Likely (ML)	There are moderate risks to sustainability
2 = Moderately Unlikely (MU)	There are significant risks to sustainability
1 = Unlikely (U)	There are severe risks to sustainability
Unable to Assess (UA)	Unable to assess the expected incidence and magnitude of risks to sustainability

Annex 7: list of persons consulted

1.	UNDP Country Office in Uzbekistan	Mr. Anas Fayyad Qarman Resident Representative a.i. UNDP in Uzbekistan
2.	UNDP Country Office in Uzbekistan	Mr. Bakhadur Paluaniyazov, Environment and Climate Action Cluster Leader
3.	UNDP Country Office in Uzbekistan	Mr. Isroiljon Khasanov, Programme Analyst on Energy, Environment and Climate Action Cluster
4.	Rural Housing Project	Mr. Sherzod Kattakhodjaev, Project Manager
5.	Rural Housing Project	Mr. Ildar Yunusov, National Technical Analyst
6.	Rural Housing Project	Mr. Dilshod Ruziev, Task Manager on Finance Component
7.	Rural Housing Project	Ms. Zulfiya Mamadalieva, Task manager on domestic supply chain
8.	Rural Housing Project	Ms. Gulnora Idrisova, Task Manager on building designs, codes, and standards
9.	Rural Housing Project	Mr. Nurillo Abdunabiev, Task Manager on Promotion of Low-Carbon Rural Housing and Settlements

10.	Rural Housing Project	Mr. Javodilla Khasanov, Admin and finance assistant
11.	Rural Housing Project	Mr. Oleg Khmelyov, International Consultant on Green Loan Financial Mechanism
12.	Qishloq Qurilish Loyiha, LLC	Mr. Sapabek Sapayev, Deputy Director, Chief Engineer
13.	Qishloq Qurilish Loyiha, LLC	Ms. Alla Urazaeva, Head of the Department for Development of Engineering Communications Projects
14.	Intersectoral Extrabudgetary Fund for Energy Saving under the Ministry of Energy of the Republic of Uzbekistan (the Fund)	Mr. Elzod Rakhmanov, Director
15.	Intersectoral Extrabudgetary Fund for Energy Saving under the Ministry of Energy of the Republic of Uzbekistan (the Fund)	Mr. Akhmedov Obid, Head of Department of the Fund.
16.	Scientific Research Institute of Technical Regulation and Standardization under the Ministry of Construction and Housing and Communal Services of the Republic of Uzbekistan	Mr. Sherzod Sodiqov, Director
17.	Scientific Research Institute of Technical Regulation and Standardization under the Ministry of Construction and Housing and Communal Services of the Republic of Uzbekistan	Mr. Jamshid Saidov, Deputy Director
18.	Scientific Research Institute of Technical Regulation and Standardization under the Ministry of Construction and Housing and Communal Services of the Republic of Uzbekistan	Mr. Shokhjakhon Islomov, Department Head
19.	Business Development Bank	Mr. Azam Tillayev, Head of Business Development Department
20.	Business Development Bank	Mr. Ulugbek Tilavov, Manager of Retail department
21.	Business Development Bank	Mr. Umid Alimov, Head of Retail Business Department
22.	Main Department of Construction, Housing and Communal Services of Fergana region in Fergana city	Mr. Karimov Begzod – Chief Architecture of Ferghana Construction Department
23.	Business Development Bank branch in Andijan city	. Faruh Abdurasulov, deputy head of BRB bank of Andijan region,
24.	Business Development Bank branch in Andijan city	. Akmaljon, Kurgontepa BRB branch manager
25.	Business Development Bank branch in Andijan city	. Ravshanbek Ergashev, Khujabad BRB branch Manager

2371

Annex 8: Signed UNEG Code of Conduct form

Independence entails the ability to evaluate without undue influence or pressure by any party (including the hiring unit) and providing evaluators with free access to information on the evaluation subject. Independence provides legitimacy to and ensures an objective perspective on evaluations. An independent evaluation reduces the potential for conflicts of interest which might arise with self-reported ratings by those involved in the management of the project being evaluated. Independence is one of ten general principles for evaluations (together with internationally agreed principles, goals, and targets: utility, credibility, impartiality, ethics, transparency, human rights and gender equality, national evaluation capacities, and professionalism).

Evaluators/Consultants:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence, and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals, and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings, and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.
8. Must ensure that independence of judgement is maintained, and that evaluation findings and recommendations are independently presented.
9. Must confirm that they have not been involved in designing, executing or advising on the project being evaluated and did not carry out the project's Mid-Term Review.

Evaluation Consultant Agreement Form

Agreement to abide by the Code of Conduct for Evaluation in the UN System:

Name of Evaluator: _____Mohammad Alatoom _____

Name of Consultancy Organization (where relevant): _____

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at ____June 2024_____ (Place) on _____ DocuSigned by: __ (Date)

Signature: _____Mohammad Alatoom _____ Mohammad Alatoom

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Annex 9: Signed TE Report Clearance form

Terminal Evaluation Report for 'Terminal Evaluation of UNDP/GEF 'Uzbekistan - Market Transformation for Sustainable Rural Housing in Uzbekistan (PIMS 5392). Reviewed and Cleared By:

Commissioning Unit (M&E Focal Point)

Name: Mukhabbat Turkmenova

Signature: DocuSigned by: Mukhabbat Turkmenova ED2C849C12E94EC... Date: 28-Aug-2024

Head of Environment and Climate Action Cluster

Name: Bakhadur Paluaniyazov

Signature: DocuSigned by: Bakhadur Paluaniyazov 4C8DF1ABFF6649E... Date: 28-авг-2024

Regional Technical Advisor (Nature, Climate and Energy)

Name: Jana Koperniech

Signature: Signed by: Jana Koperniech ED5C241EBA2C457... Date: 28-8-2024

Annex 10: Co-Financing for The Project by Name and By Type

Annex 11: Core Indicators (in a separate file)

Annex 12: TE Audit Trail (in a separate file)